This project has received funds from the EU’s Horizon 2020 research and innovation programme under Grant Agreement No 635577. Responsibility for the information and views set out in this report lies entirely with the authors.

Reproduction of the information contained in this report is authorised provided that the source is acknowledged.

Picture front page: “Sugar Beets Field”, Gilles San Martin (Namur, Belgium) and “Apple and Pear Diversity”, Alexandre Dulaunay (Belgium)
## Contents

EXECUTIVE SUMMARY ................................................................................................................................. 12

1 Introduction .................................................................................................................................................. 45
   1.1 Dominant conditions and trends in the Italian Agriculture ............................................................. 46

2 Media Content Analysis ............................................................................................................................ 50
   2.1 Regulatory and policy conditions ........................................................................................................ 51
   2.2 Factor conditions .................................................................................................................................. 53
   2.3 Demand conditions ............................................................................................................................... 55
   2.4 Finance and risk management conditions ........................................................................................... 58
   2.5 Socio-institutional conditions ............................................................................................................... 60
   2.6 Socio-demographic conditions ............................................................................................................ 62
   2.7 Ecological conditions ........................................................................................................................... 63
   2.8 Technological conditions ....................................................................................................................... 64

3 Italian Case Study A: The analysis of regulatory and market conditions for wine producers in Tuscany ................................................................................................................................. 67
   3.1 Case study introduction ......................................................................................................................... 67
       3.1.1 Vineyard area and wine production in Italy ..................................................................................... 68
       3.1.2 An introduction to Tuscany ........................................................................................................... 71
   3.2 Policy and regulatory conditions ........................................................................................................... 73
       3.2.1 The CAP through the various reforms of the wine CMO ............................................................. 73
       3.2.2 The National legislation ............................................................................................................... 77
       3.2.3 The Regional legislation .............................................................................................................. 79
       3.2.4 Rural development measures ....................................................................................................... 80
       3.2.5 The architecture of the control systems and the role of ICQRF .................................................... 80
       3.2.6 The role of Chambers of Commerce in the control and certification system ......................... 81
       3.2.7 The role of local consortia ........................................................................................................... 82
       3.2.8 Organic wine legislation .............................................................................................................. 82
   3.3 Market conditions ................................................................................................................................. 84
       3.3.1 The Tuscan wine production ......................................................................................................... 84
       3.3.2 Characteristics of the supply chain ............................................................................................... 88
       3.3.3 Analysis of the demand ................................................................................................................ 91
       3.3.4 European and national standards for quality .............................................................................. 93
       3.3.5 Role of the export ......................................................................................................................... 94
3.3.6 Financial sustainability and market risk .............................................................. 95

3.4 Key CSP identified in the literature, media and interviews .................................. 97

3.4.1 SWOT analysis – the wine sector in Tuscany ................................................. 97

3.4.2 Policy and regulatory conditions ..................................................................... 98

3.4.3 Market conditions ............................................................................................ 98

3.4.4 Be independent to develop uniqueness ............................................................ 100

3.4.5 Be bio as a lifestyle that contributes also to find new spaces on future markets ... 100

3.4.6 Role of the export and future governance of the sector .................................... 100

3.5 Wine Tuscany - focus groups and workshop ....................................................... 101

3.5.1 Threats and Opportunities of the Tuscan wine production .............................. 106

3.5.1.1 Demand conditions ..................................................................................... 106

3.5.1.2 Price level ................................................................................................. 108

3.5.1.3 Technological innovation ......................................................................... 109

3.5.1.4 Market accessibility ................................................................................... 110

3.5.1.5 Market bottlenecks .................................................................................... 110

3.5.1.6 The need of stable relationship and the presence of “privileged” channels . 111

3.5.1.7 The Export and intermediaries contacts .................................................... 112

3.5.1.8 Environmental factors ............................................................................. 115

3.5.1.9 Regulation and policy .............................................................................. 116

3.5.1.10 Production factors .................................................................................. 117

3.5.1.11 Socio demographic changes .................................................................... 117

3.5.1.12 Availability of financial resources and credit ........................................ 118

3.5.2 Response strategies ....................................................................................... 118

3.5.2.1 In response to demand conditions ............................................................. 118

3.5.2.2 In response to technological progress ....................................................... 121

3.5.2.3 In response to price volatility ................................................................... 121

3.5.2.4 In response to the increasing of bureaucracy .......................................... 122

3.5.3 Summary of the questionnaires: adherence to the conditions and strategies analyzed according to the participants in the workshop ........................................ 122

3.5.4 The future ...................................................................................................... 123

3.5.5 The development of Tuscan wine scenarios .................................................... 125

3.5.6 Understanding wine producers’ institutional arrangements (Focus Groups + interviews) ........................................................................................................... 129

3.5.7 Understanding wine producers’ institutional diagrammatically .................... 131

3.6 Insights from the producer survey A .................................................................. 133
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.4</td>
<td>Environmental issues</td>
<td>212</td>
</tr>
<tr>
<td>6.3</td>
<td>Market conditions</td>
<td>213</td>
</tr>
<tr>
<td>6.4</td>
<td>Key conditions identified in literature, media and interviews</td>
<td>214</td>
</tr>
<tr>
<td>6.5</td>
<td>SWOT Analysis</td>
<td>215</td>
</tr>
<tr>
<td>7</td>
<td>Case Studies references</td>
<td>216</td>
</tr>
<tr>
<td>7.1</td>
<td>Media Analysis References</td>
<td>216</td>
</tr>
<tr>
<td>7.2</td>
<td>Wine, Fisheries, Aquaculture, Pears and Mussels references</td>
<td>216</td>
</tr>
<tr>
<td>7.3</td>
<td>Appendices Wine</td>
<td>226</td>
</tr>
<tr>
<td>7.3.1</td>
<td>Appendix 1: Wine interviewees</td>
<td>226</td>
</tr>
<tr>
<td>7.3.2</td>
<td>Appendix 2: Supplementary Wine interviewees</td>
<td>227</td>
</tr>
<tr>
<td>7.3.3</td>
<td>Appendix 3: Wine focus group summary data</td>
<td>228</td>
</tr>
<tr>
<td>7.3.4</td>
<td>Appendix 4: Wine Tuscany focus group schedule</td>
<td>230</td>
</tr>
<tr>
<td>7.3.5</td>
<td>Appendix 5: Wine production in Tuscany workshop agenda</td>
<td>234</td>
</tr>
<tr>
<td>7.3.6</td>
<td>Appendix 6: Wine production in Tuscany workshop attendees and questionnaire respondents</td>
<td>236</td>
</tr>
<tr>
<td>7.3.7</td>
<td>Appendix 7: Tuscan wine sector – workshop questionnaire</td>
<td>237</td>
</tr>
<tr>
<td>7.4</td>
<td>Appendices Pears</td>
<td>241</td>
</tr>
<tr>
<td>7.4.1</td>
<td>Appendix 1: Pears interviewees</td>
<td>241</td>
</tr>
<tr>
<td>7.4.2</td>
<td>Appendix 2: Pears questionnaire</td>
<td>242</td>
</tr>
</tbody>
</table>
List of Figures

Figure 3.1. Vineyard area in Italy - ha/1000 – ISTAT ................................................. 68
Figure 3.2. Wine production in Italy (Million hectolitres) - ISTAT .................................. 69
Figure 3.3. Tuscany location map ................................................................................ 71
Figure 3.4. Pyramid of quality wines ............................................................................ 78
Figure 3.5. PDO (DOC, DOCG) wines in Tuscany ....................................................... 85
Figure 3.6. PGI wines in Tuscany ............................................................................... 86
Figure 3.7. Distribution (%) of PDO wines among Tuscan Provinces ......................... 87
Figure 3.8. Tuscan wine supply chain ......................................................................... 89
Figure 3.9. Estimation of per capita wine consumption ............................................... 92
Figure 3.10. Examples of common organic and biodynamic certification ................... 107
Figure 3.11. Spatial distribution of diversification of marketing channels .................. 113
Figure 3.12. Wine producers’ institutional arrangements in Tuscany ......................... 131
Figure 3.13. Vineyard size of the wine producers covered in the survey sample (N=110) .... 135
Figure 3.14. Type of agreement (formal or informal) for the main sale (N=110) .............. 138
Figure 3.15. Characteristics of the sale agreement (N=110) ........................................ 139
Figure 3.16. Standards required by the main sale agreement (N=110) ......................... 140
Figure 3.17. Degree of satisfaction by the main sale agreement (N=110) ..................... 141
Figure 3.18. Relationship between the main sale agreement and preservation of the Environment (N=110) ................................................................. 142
Figure 3.19. Relationship between the main sale agreement and connection with Society (N=110) .................................................................................... 142
Figure 3.20. Relationship between the main sale agreement and the Economic performance (N=110) .................................................................................... 143
Figure 3.21. Factors that influence producers’ strategies (N=110) ................................. 144
Figure 4.1 Fishing ports in Tuscany (retrieved from: ARPAT, 2008) ............................ 152
Figure 4.2 Marine aquaculture sites in Tuscany (orange spots) .................................. 155
Figure 5.1. Pear consumption in some Eu Countries. Our Elaboration on Eurostat data .... 177
Figure 5.2. Innovation in product: new variety ............................................................. 183
Figure 5.3. Innovation in product: packaging ............................................................... 184
Figure 5.4. Opera consortium................................................................. 185
Figure 5.5. Analysis of the market ........................................................... 188
Figure 5.6. Access to credit........................................................................ 189
Figure 5.7. Financing systems....................................................................... 190
Figure 5.8. Formal/Informal agreements between Farmers - Retailers .......... 191
Figure 5.9. Formal/Informal agreements between Cooperatives - Retailers .... 191
Figure 5.10. Safety requirements - all categories (PGI, Organic, Conventional, High quality).. 192
Figure 5.11. Safety vs quality requirements – Organic vs Conventional ........... 193
Figure 5.12. Impact of policies...................................................................... 194
Figure 5.13. Impact of policies for producer categories.................................. 194
Figure 5.14. Sales channels.......................................................................... 201
Figure 5.15. Aspects promoted by the production choices in relation to the main sale agreement/membership in collective organization (count) ......................... 204
Figure 5.16. Strategies for the development of pear farming within the context of your farm business in the coming 5 years ........................................................................... 204
Figure 5.17. Expected changes to be implemented in the coming 5 years. Market related changes (Count) ........................................................................................................ 205

Figure 6.1. Distribution of mussel plant along Emilia-Romagna Region and Northern Marche (Source: “Studies and operational proposals in the shellfish industry in Emilia-Romagna” Final Report Progetto EcoSea)........................................................................... 208

List of Tables

Table 1.1. Size of the sample .......................................................................... 45
Table 2.2. Size of the sample .......................................................................... 50
Table 3.1. World wine consumption (million hectolitres)................................. 91
Table 3.2. Cumulative performance of the major Italian wine producers ........... 95
Table 3.3. The distribution of respondents across the Tuscany Provinces (N=110) ........ 135
Table 3.4. Distribution of the age of farm owners and level of education (N=106) .......... 136
Table 3.5. Price determination factors (N=106) ............................................. 139
Table 3.6. Costs related to the main sale agreement (N=110) ......................... 140
Table 3.7. Production related changes (N=106)................................................................. 144

Table 3.8. Market related changes (N=106)......................................................................... 145

Table 4.1. Fishing systems regulated by license in Italy according to Article 11 (Ministerial Decree 26/07/95). Adapted from Ferretti (2011)........................................................................ 148

Table 4.3. Catches, revenue and prices according to fishing system in Tuscany and percentages at a regional level (2012 data from MIPAAF-IREPA)......................................................... 153

Table 4.4. Fishing activity, physical and economic productivity according to fishing systems in Tuscany (MIPAAF-IREPA 2012 data; adapted from DINTEC, 2015)........................................ 153

Table 4.6. List of examined marine species and related fish stock state in GSA 9 (Tuscany marine area), period 2010-2012 (adapted from: STECF (2013), (2014); GFCM-SAC, 2014; FAO, 2015). ......................................................................................................................... 161

Table 4.7. Registered Companies within the fisheries value chain in Tuscany (Infocamere data from January 2015; source Dinotec, 2015) .................................................................................. 163

Table 5.1. Number of farms with pear cultivation per Province and area classes............... 172

Table 5.2. Impact estimation of homogenization process in Italy according to different geographical area (Canali 2013). ............................................................................................ 175

Table 5.2. Status of farmer, age and level of education......................................................... 200

Table 5.3. Type of sale agreements....................................................................................... 202

Table 5.4. Characteristics of the agreement ......................................................................... 203

Table 5.5. Specific production/quality standards that you have to comply with, required by the buyer/collective organization. (Number of interviewees) .................................................. 203

Table 5.6. Expected changes to be implemented in the coming 5 years. Production related changes (Count)...................................................................................................................... 205

**Abbreviations used**

AOP: Associations of Producer Organizations

ARPAT: Agenzia Regionale per la Protezione Ambientale della Toscana (Regional Agency for Environmental Protection of the Tuscany Region)

ACC: Agri-chains Competence Centre

ASP: Amnesic shellfish poisoning

AUSL: Local Sanitary Agencies
BRC: British Retail Consortium
B2B: Business to Business
CCI AA: Chambers of Commerce and Industry
CCPB: Inspection and Certification Body for agrifood and “no food” products
CAP: Common Agricultural Policy
CE: Comunità Europea (European Community)
CFP: The Common Fisheries Policy
CMO: Common Market Organization
CREA: Consiglio per la ricerca in agricoltura e l’analisi dell’economia agraria
DM: Decreto Ministeriale (Italian Ministerial Decree)
DINTEC: Consorzio per l’Innovazione Tecnologica
DTC: Direct to Consumer
EBITDA: Earnings Before Interest, Taxes, Depreciation and Amortization
EC: European Community
EFF-FEP: The European fisheries fund
EFSA: European Food Safety Authority
EMFF: European Maritime and Fisheries Fund
ER: Emilia-Romagna
EU: European Union
FADN: Farm Accountancy Data Network
FAO: Food and Agriculture Organization of the United Nations
FARNET: Support Unit of the European Fisheries Areas Network
FEP: Fondo Europeo per la Pesca (European Fisheries Fund-EFF)
FIBL: Organic Farming Statistics
GAC: Gruppo di Azione Costiera (Coastal Action Group)
GDP: Gross domestic product
GF CM: General Fisheries Commission for the Mediterranean
GSA: Geographical Sub-Area
GT: Gross tonnage
ha: hectares
HHI: Herfindahl-Hirschman Index
HO.RE.CA: Hotel, Restaurant, Café
IFOAM: Federazione internazionale dei movimenti per l’agricoltura biologica (Organics International)
ICQRF: Italian Inspectorate for Quality Protection and Fraud repression
IMP: Integrated Maritime Policy
INEA: Istituto Nazionale di Economia Agraria (National Institute of Agricultural Economics)
IREPA: Istituto di Ricerche Economiche per la Pesca e l’Acquacoltura (Institute for Economic Research in Fishery and Acquaculture)
ISMEA: Istituto di Servizi per il Mercato Agricolo Alimentare (Institute for Services for the Agricultural and Food Market)
ISO: International Organization for Standardization
ISTAT: Italian National Institute of Statistics
kW: Kilowatt
LTD: Private Limited Company
L.R.: Legge Regionale (Regiona law)
MIPAAF: Ministero delle Politiche Agricole Alimentari e Forestali (Italian Ministry of Agricultural, Food and Forestry Policies)
MRL: maximum pesticide levels
NGO: Non-governmental organization
NUTS: Nomenclature of Territorial Units for Statistics
OIV: International Organisation of Vine and Wine
PDO: Protected Designation of Origin
PGI: Protected Geographical Indication
PSL: Piano di Sviluppo Locale (Local Development Plan)
PSP: Paralytic Shellfish Poison
PO: Producer Organization
QWPSR: Quality Wines Produced in Specified Regions
Reg.: Regulation
RDP: Rural Development Programme
SGMED: Sub Group on Mediterranean
SPA: Special Protection Areas
SQNPI: System of national quality for the integrated production
STECF: The Scientific, Technical, Economic Committee for Fisheries
UAA: Utilized Agricultural Area
UK: United Kingdom
US: United States
WTO: World Trade Organization
EXECUTIVE SUMMARY

Wine, Fisheries and Aquaculture for Tuscany, Pear and Mussels for Emilia-Romagna

Introduction

The aim of this report is to examine the relevant policy, market conditions and institutional arrangements influencing the sustainability of the four Italian sectors (wine, fisheries and aquaculture, pear and mussels), as part of the EU-funded Horizon 2020 project, Sufisa (Sustainable finance for sustainable agriculture and fisheries).

This executive summary has been developed from a much larger report, which is available from: http://www.sufisa.eu/publications (project reports).

Data collection methods: Wine in Tuscany

With regards to the Wine sector in Tuscany, the analysis focused on wine as a main product. In this vein, we analysed those estates that maintain the control over everything including the agricultural (i.e. growing grapes), industrial (i.e. processing via fermentation, blending, aging and bottling) and service phases (i.e. marketing and distribution). We included the cooperatives that purchase grape or bulk wine and carries out the processing stage with the aim to sell the end product (wine) under their own label and the "virtual" wineries that outsource everything and produce wine at bonded hosted or shared facilities.

In a first step, we conducted a media analysis covering national, regional and specialised media from 2012 to 2016, as well as a desk-based analysis of market and policy conditions, supplemented with 15 in-deep expert interviews. In a second step we carried out one focus group (FG) with Tuscan small and medium-sized organic wine producers, followed by a second focus group that was only partially carried out with large Tuscan wine producers and Cooperatives in the Tuscany Region headquarters in Florence. We therefore decided to integrate the second FG with additional interviews to those large-scale wineries that could not participate in the meeting. Lastly - due to the difficulty of involving in a "SUFISA" workshop wine producers and industry experts already engaged in the vintage period 2017 and consequent processing (i.e. september-november) – the participatory workshop was held in a later period. In particular, the project coordinator and WP2 leader were promptly informed and gave their consensus for carrying out the workshop activity in a later period and within a wider workshop on sustainability organized by the industry experts. Thus, the FGs and the case study results have been presented and discussed the 4th November 2017 at the University of Siena within the context of the "Sangiovese Purosangue" workshop on sustainability of the wine industry in Tuscany. In order to gather more comments and information, during this activity we provided - at the end of the workshop - 14 questionnaires on the main themes presented and discussed with the actors, leaving space through open-response questions to receive also comments on future strategies for the wine industry. Finally, through the "Producer Survey" (task 2.6) we collected 110 questionnaires that report information on the qualitative/case specific outputs and issues from the wine case study in Tuscany.
Specific objectives of this task were to describe different typologies of IAs and their prevalence in the wine sector, to identify specific Institutional Arrangements (IAs) attributes that characterize the wine sector, as well as to analyse how different parameters of a given type of arrangement can shape the terms of the relationship between wine producers and buyers and explore mechanisms linking (internal and external) conditions to marketing strategies. Particular focus has been dedicated to assess the sustainability of a given IA. Finally, the survey aimed at identify future drivers of the wine-specific IAs. Through the survey we collected quantitative data at farm level that are representative of the Tuscan wine producers, with a focus on the most relevant case study issues (regulatory, market conditions related to arrangements within the supply chain, sustainability conditions and producers’ strategies) to allow the further identification, through comparative cross-regional analysis (undertaken by the WP2 leader and co-leader), of key regulatory and market conditions across case studies and commodity groups.

Data collection methods: Fisheries in Tuscany

In-depth interviews with producers and experts, combined with a context-specific literature review and a media analysis, helped identify the challenges and opportunities for the fishery sector in Tuscany. The fieldwork of this case study was conducted between May and December 2016, with interviews ranging from 45 min to 120 min in duration. Nine people were interviewed: 2 representatives of trawling fisheries, 3 small-scale fishers, and 4 stakeholders.

Data collection methods: Marine aquaculture in Tuscany

In-depth interviews to producers and experts, combined with a context-specific literature review and a media analysis, helped identifying the challenges and opportunities for the fishery sector in Tuscany. The fieldwork of this case study was conducted between May and December 2016, with interviews ranging from 45 min to 120 min in duration. Seven people were interviewed: 3 representatives of aquaculture enterprises and 4 stakeholders.

Data collection methods: Pears in Emilia-Romagna

A desk-based analysis of market conditions and regulations has been addressed by reviewing academic publications; government and policy documents; market technical and consultancy reports. Information gathered from article reviews are enriched by expert interviews. For several purposes of the SUFISA project (tasks related to “Asymmetric information analysis”, “Desk base interviews”, “Focus group”, “Participatory workshop” and “Survey”), Unibo has established relations with several fruit producers and organizations. Contact with local network has been established at very early stage of the project and coordinator with local networks related to pear and fruit sector in general. Unibo has also arranged several preparatory meetings, including agreement about providing farmer contacts’ and support to focus group organisations. One of the main Cooperatives that agreed in providing supports for the SUFISA Project is ApoConerpo. A specific meeting with them have been also dedicated in defining possible way of FG stratification. Although, it was not possible to organise the focus
groups directly with farmers in the way planned by the project. After notifying the encountered difficulties to the coordinator and WP2 leader parties, Unibo has obtained the consensus from the Task leader of covering the topics expected in WP2 focus groups by mean of questionnaires.

Questionnaires have been distributed around participants at an important local exposition that took place on the 11th of May in Rimini (Macfrut), through event coordinators.

Macfrut is a leading exhibition for professional and famers operating in the fruit and vegetables sector in Italy and in Europe. At this purpose, Unibo has contacted different event coordinators who agreed in distributing the questionnaire to participants during four events that have taken place at the Macfrut exhibition. Twenty questionnaires have been collected. Among respondents 40% are farmers.

The questionnaire has been structured in order to cover the main common topics required in the focus groups guidelines and from the farmers’ point of view. Then a focus on the Institutional arrangements, in particular the existence of formal contract rather than informal agreement has been carried out. The questionnaire has been carried out anonymously in order to facilitate attendance.

**Data collection methods: Mussels in Emilia-Romagna**

In the first instance, a desk-based analysis of market conditions and regulations has been addressed by reviewing academic publications; government and policy documents; market technical and consultancy reports. Information gathered from article review is enriched by expert interviews. The mussel case study in Emilia Romagna represents a satellite case study therefore Focus Groups and Participatory Workshop are not expected.

**The Tuscan Wine sector**

According to the 6th Agricultural Census by the Italian National Institute of Statistics (ISTAT, 2010), in the recent decades, the area under vines in Italy has steadily declined (i.e. about 12%) and the country has lost about 48% of the vineyard area. Also, the number of farms declined during this period. In 1982, there were 1.6 million of winemakers. Then from 1982 to the last census of 2010 this number decreased to about one quarter (383,000) with an average farm size of 1.6 hectares per farm. In Italy around 48.2 million hectolitres were produced in 2015, about 6% more than the average of the past decade (45 million hectolitres) and 15% more than the poor 2014. The Italian production of PDO wines was 16.3 million hectolitres (i.e. the 40% of Italian production), scoring an increase of 4% compared to 2010 (i.e. 15.782 hectolitres million) and 6% higher than the historical average (i.e. from the 2005 to 2014 about 15 million hectolitres). On the contrary, the PGI wines have suffered a decline (-4%), going from 14.023 million in 2010 to 13.452 million hectolitres in 2014 (i.e. the 32% of the Italian production). Furthermore, there has been a progressive decline of table wine. ISMEA estimates that about 20 million hectolitres were exported across national borders. Thus, about half of the production of wine in Italy is exported (in 2013 the production was 44.7 million hectolitres). This data confirms the dependence of the sector on foreign demand (mainly from USA, Germany and United Kingdom). Noteworthy is the value of the export in 2013 that is
around 5 billion euro (i.e. about 15% of total agri-food exports in value). However, if we look at regional level, these trends have been very imbalanced between regions. It is worth to notice here the strong influence of the process of revision of the common market organisation for wine (Wine CMO). The EU legislator has promoted a rebalancing of the EU wine industry. On the other hand, thanks to the process of farm modernization with a positive role of the common agricultural policy (CAP), most of the declining trends can be related to an increase in productivity, denoting an improvement of Italian organizational and production models towards greater efficiency.

Tuscany represents one of the areas where wine played a key role for the Italian sector, both economically and culturally. The population of the region is about 3.7 million inhabitants (2016) and the regional surface is 2,298,704 hectares, of which the total agricultural area is 1,295,120 hectares and the utilised agricultural area is 754,345 hectares. The total grape area of the Region is around 59,838.88 ha (almost 8% of the Regional utilised agricultural area and 14% of the national grape area).

Over the centuries, the geographical position of Tuscany, the morphological and climatic characteristics of the soils, the influence of the Tyrrhenian Sea together with social, economic and historical factors have favoured the development of the Tuscan viticulture, contributing to develop a rich and well-known terroir globally recognized as a brand by itself. In this system, the production of wine represents an important factor of territorial identity. Despite the steady decline of the domestic demand and the relative reduction in the area planted with vines (i.e. between 1982 and 2010, the Tuscan area planted with vines decreased by 37% compared to 45% at national level), according with ISTAT, the Tuscan production has been growing during the last years (i.e. about 8% over the average production of 2009-2013) reaching 2.8 million hectolitres. The success of Tuscan wines is also based on an extremely specialised and diversified structure of the production system driven by the terroir characteristics in which were developed brands with high quality standards and worldwide reputation. According with official statistics the number of active estates that produces wine in 2008 was around 8.4 thousand with an average size of 2 hectares. The majority of producers identify in wine production their core activity, while the others are grape growers who sell their grapes to cooperatives and other specialised wineries. The fully integrated estates generally produce wine with their own grape production; however, depending on the vintage, they may also purchase grapes from grape growers within a long and stable supply relationship. Cooperatives and virtual wineries generally source their grapes from grape growers or purchased bulk wine. Their action differs from the integrated companies and their strategies, albeit differentiation, appear to be more related to financial leverage. According to Goodhue et al. (2013) the competitive advantage of a fully integrated firm is more related to the decision toward vertical integration or supply chain choices that can increase the control over transaction costs, branding and differentiation, which are narrowly linked to the different characteristics of the territories.

In this structure, the diversification strategies and the search for both horizontal and vertical coordination played a key role supported by the positive results obtained by the export. According to ISTAT data, in 2015 the Tuscany region held 17% of national exports of bottled wine. Thanks to the great capacity to export products outside the Region and to reach the international outlets, Tuscan producers have encountered fewer obstacles to find the necessary resources to maintain investments and innovation despite the recent general crisis and the related lack of liquidity in the industry. In 2015 the value of the export was about 902
million of Euros with a growth of 19% from 2009 that is above the average national growth of 5%, and the red PDO category gave his greatest contribution to this trend (about 504 million of Euros).

Wine: Policy and regulatory conditions

The EU regulations, together with national and regional laws, define many aspects of the wine industry (BMTI, 2008), leading to stiffening and excessive bureaucratic burdens for producers. During the last decades, the European Commission has promoted a process of standardisation with the aim of facilitating trade and protecting the common market, including the effort to protect consumers from the potential fraud on the origin and quality of wines (Gaeta and Corsinovi, 2014). First, the EU legislation introduced the rules for the production and control of the development of wine-growing potential, establishing a limit on planting new vines and a system of allocation of planting right. Second, it set the rules for the oenological practices and treatments, the system of prices and market measures, the agreements for trade with third countries, the rules relating to the movement and to the release for consumption. Third, it introduced the concept of quality wines produced in specific regions, merging the definition of quality wine with a system of rules that associates the quality to the origin. During this period, the intention of the European legislator was to stabilize the wine supply and to preserve the internal product in order to meet the consumers’ quality requirements (given the heterogeneity of the consumers’ tastes). Academic literature (Malorgio and Grazia, 2007, pp.300-307) points out the importance of regulation to strengthen “the minimum quality standard” and to homogenize the production systems (in terms of specific production requirements and quality characteristics) within the same Appellations in order to give clear “quality signal” to the consumers. Afterwards, to meet these needs, the European Union has launched a new reform process to support the wine sector. With Regulation Market Regulation 1234/07, the European legislator provided the unification and the simplification of the previous 21 CMOs, including that of wine, into a single CMO. The objectives of the new regulation were to increase the competitiveness of EU wine producers, regain market shares, restore the balance between supply and demand and simplify the regulations. The reform was focused on diminishing incentives for grubbing-up of vines (i.e. for 400,000 ha), on abolition (transient, in the space of a few years) of planting rights, of the aid for distillation, storage and the use of musts. Then it was included the displacement of part of the available resources on the second pillar of the CAP and in particular of the aids for early retirement incentives for agro-environmental measures and aid for farm modernization. With regard to regulatory measures, it has been simplified the qualitative distinction of wines into two categories: wines with geographical indications; wines without geographical indication. The labelling rules have also been simplified, allowing the labelling of information so far banned, such as grape variety and the vintage year for all wines. Then, the expiration of the system of planting rights, potentially, postponed after two years, being at the discretion of the member states to maintain it in force until 2018. During a second phase of reforms, the EU finalised some aspects of the process of simplification started in 2007. Within the Commission implementing Regulation (EU) No.561/2015, a new scheme of authorisations for vine plantings was introduced, which should not apply for those Member States where, although the planting rights apply, the vine planting area is below a certain threshold.
At national level, with the DL 61 8/4/2010 the legislator sought to harmonize the national legislation following the European process of reform, merging the previous DOC and DOCG denominations into the PDO and assimilated the PGI designation to the IGT, including a change in the name of the table wine in "common wine". The national regulation mainly refers to the “production codes” for each designation of origin class with regard to the grape variety, the viticultural techniques, the climate, soil conditions (terroir), the acidity control and sweetening process and the sulphur dioxide content. Moreover, it also followed that with the DM 12272 12/15/2015 the national legislator reformed the licensing procedures for planting new vines in implementation of Reg. (EU) No.1308/2013.

Another important milestone in the national wine legislation regards the recent evolution of organic wine regulations. With the DM 12 July 2012, the legislation sets out the substances and products that can be used in organic production (i.e. Annex VIII of Reg. EC No.889/2008). In addition, it also provides restriction and prohibitions on certain oenological practices, as well as rules on labelling. Thus, the legislation on organic wine is harmonized within the main legislative references for the sector. Thanks to this reform for the wine has been possible to apply the Community rules on organic production, from the vineyard to the bottle, guaranteeing transparency to the consumers and the protection of the wine growers who apply the organic concepts to both the vineyard and the winery. The regulation has also allowed imports of organic wines from third countries with production standards and inspection and certification systems equivalent to those existing in the EU.

The reference point for the Regional legislation is the Regional Law n.68 30 November 2012 that disciplines the management and control of wine-growing potential. In addition, the resolution of the Regional Council No.382 of 28 April 2003 (Annex A) provides a list of the suitable grape varieties for cultivation.

With regard to the controls, during the years the legislator has allocated by law this important task to another organisation. Law or ministerial decree through the Inspectorate for Quality Protection and Fraud repression (ICQRF) decides the authorizations of the competent bodies (i.e. Chambers of Commerce and Industry CCIAA and PDO Consortia). As revealed in the media analysis for the wine industry, this ministerial office plays an important role in the protection of certified products and prevention of fraud.

It is worth to notice that with the Ministerial Decree No.293 of 20 March 2015, the Ministry of Agriculture has been adopted the provisions for the keeping of records in dematerialized form in the wine sector. Thus, all wine producers in Italy are therefore obliged to the compliance with the electronic register and to the transmission of all the operations carried out on farm to the ICQRF. This standard has raised major concerns, for its effective implementation and considerable controversy, confirmed by the concerns expressed by those producers that were interviewed.

At Regional level, it is worth to mention also the relevant role expressed by the rural development plan (RDP) of Tuscany Region 2014-2020 that offers various support measures for the Tuscan wine producers. The RDP support includes packages of measures that include the accession to the quality schemes (measure 3), packages aimed at boosting investments in tangible fixed assets (measure 4) and aid for start-up of young farmers (measure 6). Then the RDP offers measure directed to improve the quality of Tuscan production preserving the environment and landscapes through the agri-environment payments (measure 10), or through the support of organic farming (measure 11). Finally, there is a package of measure to
support farmers cooperation (measure 16), in which are provided several measures linked to investments. This type of measures found a remarkable response from regional producers that we interviewed.

**Wine: Markets and marketing**

Wine represents one of the oldest and highest regional vocations of the Tuscan culture and the well-known landscapes of Tuscany furnish one of the most suitable locations to express quality wines. The 57 designations of origin represent this union between history, territory and quality, making Tuscany one of the most important regions of Europe for its wines. Despite that the cultural and historical legacy influenced the developments of many PDO labels, nowadays more and more producers seem to prefer the Tuscan PGI label for their wines. This choice is partly related to more freedoms associated with the production code for PGI wines compared to the one for PDO, for which producers’ choices have been mostly constrained. The growing diffusion of PGI brands reveals a trend related to differentiation that is highly accentuated in the sector. Several conditions, such as the over-regulation, the declining demand, pressures on sale prices and the increase concentration in the market drives Tuscan wine producers to adopt several differentiation strategies and the developing of new forms of coordination through producers’ networks and new consortia (i.e. AVITO, Biodynamic Lucca).

While the focus was on the maintenance and valorisation of the classic grape varieties within the PDO system, they added to the mix of regional grape several foreign varieties in order to respond to the rapid changes of consumer tastes and consumption patterns. In this context, most of the Tuscan producers tried to carve out their own uniqueness, developing a product linked to the territory and at the same time following the market changes. Structural factors, as well as the physical and socio-cultural characteristics of the territories, have a significant impact on firms' investment and quality choices. The opportunity to adopt a Geographical indication (i.e. PDO or PGI label) linked to the presence of a rich and well-known terroir - that allows producers to develop specific assets and making products unique and inimitable (Ditter and Brouard, 2014) - can increase the firms' ability to differentiate successfully. According to Charters (2010) the terroir produces a comparative advantage that is characterised by inimitable natural resources endowed with local history and culture, specific knowledge, organizational and institutional connections between producers and barriers to entry. Differently, a low presence of these factors can limit the range of viable strategic alternatives to differentiate successfully (Newton et al., 2015).

In traditional and mature markets like wine, the search of a unique competitive advantage based on resources capabilities and quality (Edelman et al., 2005; Gimeno-Gascon et al., 1997) is considered no longer sufficient and not financially sustainable (Newton et al., 2015). Today the competition pushes wine producers to search and achieve several advantages based on prices, quality, on the capacity to realize investments in R&D, innovation, training, infrastructures, branding as well as creating more stable relationships with global distributors and supply networks (Visser and Langen, 2006). Thus, in order to be competitive firms, need to develop innovative products and processes that can support the growth on new markets (Chang et al., 2011): in other words, firms need to differentiate (Porter, 1985). Banker et al. (2014) confirms that firms with a proactive differentiation strategy obtain higher performance than those with a cost leadership strategy. Although the ability to differentiate appears as a key solution among several strategic alternatives (i.e. innovation, partnership, territorial
integration etc.), it may be challenging to do so according with the type of firm and its specific characteristics (Hammervoll et al., 2014).

Despite the rising importance of the sector for the regional economy, during the decade 2000-2010 the number of farms and the grape area decreased, respectively of the 54% and of the 3.2%, while the average grape area per farms is increased of about the 108% (in Italy increases about 82%). The production of wine in 2010 in Tuscany was about 2.8 million hectolitres (must excluded) representing the 6.2% of the national wine production (44.7 million hectolitres excluded must). In the 2014, this level slightly reduced of about the 9% (2.5 million hectolitres), while the region is still among the most productive region of Italy. In 2010, approximately 84% of production was concentrated in four provinces (i.e. Siena 30%, Florence 31%, Grosseto 12% and Arezzo with 9%). Of this production, about 62% was PDO wines (1.7 million hectolitres), 25% were PGI (0.7 million hectolitres) and the remaining was common wine for 12% (0.35 million hectolitres). With regard to the typology, in 2010 the Red wine and the Rosé were the most produced (2.4 million hectolitres) around 90%, while the White just 0.4 million hectolitres.

If we look at the structure of the sector, compared to other regions of Italy (i.e. Emilia-Romagna and Veneto), we notice that is mainly characterized by small and medium-large vertically integrated producers, which carry out all phases including the sale and distribution.

Although less than in the other regions, the media analysis has revealed that there are also large cooperatives, concentrated mainly in the Chianti area, since the main bottled wine in Tuscany is Chianti with 4.5 million bottles, almost entirely directed to large retailers. In addition, this aspect has been confirmed by many regional producers that have been interviewed:

“This difference between organizational and decision-making models is highly related, as confirmed by those producers that we interviewed, by the different product’s features and their direct influence on transaction characteristics and production costs”

(Wine Interviewees 3, 5, 6, 7, 8, 10, 11, 12).

However, the degree to which transaction characteristics influence the design of governance structures depends on the farmer’s specific assets, whether new assets or skills are necessary and are produced in-house and whether are delivered by third party (Hobbs and Young, 2001). The characteristics of the Tuscan territory have pushed producers toward strategies and investments related to quality. Producers have pursued higher quality productions with larger operative margins. Thus, in order to achieve a predetermined level of quality, they chose a vertically integrated business model. Within this model, they maintain the total control over all stages of production, including also those not directly linked to the production process as the promotion of tourism and territory. Then the differentiation occurs according with the local factors and the image of Tuscany that that they want to communicate to consumers.

The sector is witnessing profound changes linked to the evolution of lifestyles and to the general economic downturn. According to the OIV data (2007-2012), the analysis of per capita consumption indicates that we are moving towards an average level of 20-25 litres of wine per capita, recording year by year a progressive demand decline: “consumers look for higher quality products and prefer to drink less but well” (W: Interviewees 8). The literature review and producers’ interviews highlight the increase of concentration on the distribution side (Santiago and Sykuta, 2016) in favour of large players, which can offer to the consumer a wider
choice and ease of access. The increase of concentration creates bottlenecks for medium size and smaller producers seeking to access the retail market. Moreover, the modern trade (i.e. large distributors or retailers) is the channel that has the highest bargaining power able to impose particularly stringent requirements in terms of price, quantity and quality.

These trends are likely to influence the institutional arrangements of the industry, the organization of the supply chains, the producers’ distribution modes and the regulation governing them. In addition to the uncertainty of demand, high barriers on the outlet markets and pressure on sale prices, the regional producers often face also the structural weaknesses of the supply chain due to excessive fragmentation; in fact, the extreme atomization of the supply chain that characterizes the regional industry does not facilitate the development of clusters nor other forms of coordination (Humphrey and Schmitz, 2002). This kind of situation appears when there is a common strategy in which investments on the marketing and trade side lead to a weaker bargaining power of producers with respect to large wholesalers and distributors.

In this extremely competitive environment, an alternative to the modern trade, particularly relevant for small and medium-sized wineries, can be the contact with third-party agent such as wholesale intermediaries or export brokers. From this point of view has emerged the key role of institutions in creating the contextual conditions to develop these linkages. In this vein, the Tuscany Region decided to create an annual international reference event for brokers worldwide interested in Tuscan wines, called "Buy Wine". For the regional administration, the scope of this meeting is to encourage the development of the relationship between regional producers and the international importers. Another option could be the differentiation of sales channels on a more regional basis (Ilbery et al., 2016) focusing on local food networks in which organize the retailing and consumption of wine in order to achieve better returns (Brunori et al., 2012).

The diversification strategies and the search for both horizontal and vertical coordination also benefited from the positive role played by the export. According to ISTAT data, in 2015 the Tuscany region holds 17% of national exports of bottled wine. Thanks to the great capacity to export products outside the Region and to reach the international outlets, Tuscan producers have encountered fewer obstacles to find the necessary resources to maintain investments and innovation despite the recent general crisis and the related lack of liquidity in the industry. The latter is strongly linked to the difficulty to receive payments by local buyers in a reasonable timeframe. This threatens the economic viability of many small producers that are forced to remain financially exposed for long periods, involving financial and business risks.

Finally, it is worth to mention one interesting trend that emerged from the discussion with producers and from the analysed sources that regards the recent attempt of increasing concentration and consequently bargaining power from several producers and consortia for protected denomination of origin through a greater coordination effort and reassembling of new producer networks. Two concrete and opposite examples of this trend are the hyper consortia "AVITO" and the network of organic producers "Biodynamics Lucca". The common strategy, even if at different scales, is that of consolidation, networking to gain more bargaining power within the supply chain and with market and institutions. Alternatively, according to some respondents, it emerged also the trend of a greater concentration with vertical integration operated by large distributors that can easily access to financial resource in order to maintain control over the supply chain. According with some interviewee in the future
there will be also the role played by the modern trade that will absorb within the supermarkets most of the highest quality productions, creating specialized shelves in which specialised operators will drive the consumer choices. All of these interpretations suggest that there is a trend over consolidation and concentration despite the observed high fragmentation derived from the analysed diversification strategies. The aim of this new dynamic is to strengthen the regional supply chain and consequently the positions occupied by the different producers in relation to the markets.

Wine: Focus groups and workshop feedback: drivers, strategies and future performance

A series of two focus groups (FGs) integrated with 4 additional interviews were held with Tuscan wine producers over the period December 2016 and July 2017, to consolidate the results of the previous analysis of regulatory and market conditions (see sections 3.2-3.3 above) with additional information on producers’ diverse experience data. As mentioned previously, due to the difficulties to involve the main wine actors of the Tuscan sector during the vintage time, we decided to participate later in a wider workshop on sustainability with relevant stakeholders in which we have presented and discussed the main findings from the research activities. Thus, the activity as been carried out the 4th November 2017, at the University of Siena, during the workshop “Sangiovese purosangue”, following reflection on the FGs data, with the aim of corroborating and improving the findings from the research activities carried out as well as for gathering further information regarding potential trends and scenarios describing the future sustainability of the Tuscan wine sector.

Analysis of the data revealed several strategies in response to four key groups of conditions that required further examination, each of which is now taken in turn.

First. Strategies in response to demand conditions.

With regard to the key demand conditions producers highlighted response strategies related to the promotion and communication of the territory and of its organic production. Moreover, they also stressed the need for joint action at regional level that can include the promotion of marketing skills. Almost all producers in both focus groups and workshop have repeatedly expressed that any promotion strategy should be more strongly supported within a common framework at regional level. Institutions are considered key to help producers to overcome the individualities of the territory and consolidate the regional supply chain.

Alternatively, some producers have highlighted that another possible strategy is the development of new business networks or producers’ associations capable of creating a common action front. Two examples of these coordination efforts are “AVITO” and the network of organic producers “Biodynamic Lucca”.

Second. Strategies in response to technological progress

Producers’ opinions converge to the consideration that technology should contribute to increase the efficiency of their companies, thus their strategies should on farm modernisation issues that can increase the environmental and economic sustainability of their productions.
On the marketing front, social media innovation could contribute to increase the contact with demand. This advancement should be accompanied by greater effort on consumer education. All producers converge in both focus groups and workshop on the importance and role of the institutions in promoting these strategies. The workshop highlighted the importance of the past research project on clonal selection such as “Chianti Classico 2000” that was developed thanks to a considerable joint effort between producers, institutions and universities. Out 25 varieties developed (i.e. Sangiovese, Canaiolo and Colorino), 7 varieties of Sangiovese today contribute to make Tuscany famous in the world of wine. Building on this joint effort, many actors have called for a return to collaboration in the search for new resistant varieties, capable of performing better against climate change and more suited to change in environmental conditions and consumer patterns.

Third. Strategies in response to price volatility

With regard to price volatility, the actors in both focus group agreed on the need to create a common offering front with common promotion mechanisms that could enhance the reputation of companies and territories. During the workshop it has emerged the need to focus on collaborative efforts that can lead to the creation and formation of new sales networks and local intermediaries, with more qualified staff to face the new market scenarios.

Fourth. Strategies in response to the increasing of bureaucracy

In order to reduce individual efforts towards the burdensome regulation, participants agreed on the need to promote collective approaches. Through collective action and the share of individual resources, they could create those skills and services that can reduce individual administrative costs and efforts while creating training services to improve individual ability to deal with bureaucracy.

Some of the key issues raised in the focus groups and interviews that would help ensure the future viability of the wine sector, include:

- Creating collective approach on the supply side.
- Developing common marketing tools.
- Reducing the excessive bureaucracy.
- More dialogue with institution, need for more support on credit side
- "Promoting the real value of our territory, promoting better the product characteristics and not only the methods".
- "Strengthen the regional supply chain ".
- Consolidation patterns and networking to gain more bargaining power

The future sustainability of the Wine sector

Any discussions about the future of wine making in Tuscany inevitably involve looking at what declination of sustainability the wine sector will focus on. As such, the future viability of the wine sector was discussed at length in both the FGs and the workshop, where for the latter activity it assumed a special focus on the environmental, economic and social dimension of sustainability. If on the one hand the workshop has contributed to consolidating the results
that emerged from the previous activities, in terms of conditions the industry faces and strategies in response to these conditions, on the other hand the workshop has enriched the discussion by introducing some elements of novelty. Three of the workshop participants, in particular, were adamant that, in order to face climate changes and preserve the territory where production takes place, producers must invest in research together with the universities of the region and regional institutions. According to those participants, investments should address innovation on clonal selection and viticultural practices that can increase the conservation of the soil, bio-diversity and the chances to obtain even more quality wines: “We need to make a team, or to create more stable relationships within the sector and with external actors such as Universities and Regional bodies. We need to invest more into research to increase what we call the durable material, such resistant species of grape that can help producers to reduce pest treatments. In the past we did a great job with the project Chianti Classico 2000; we were able to create 25 grape varieties (within Sangiovese, Canaiolo, and Colorino) and today they continue to give us excellent results on the wines we produce and we are able to export. But we can not stop here, we must reinvest ourselves in research to deal with new environmental issues and we must always remember that one thing is good wine, another thing is quality wine”.

Likewise, in the FGs, the research of quality and the need to increase the quality wines was often mentioned as being pivotal to the future of the wine sector in Tuscany, as well as for the wine sector more generally.

On the quality front and on the environmental side, organic could be a regional priority for workshop participants: "however, we must not marry biological production by faith, but it must be integrated with specific knowledge”. Nowadays the organic production is double-digit growth (i.e. 10% annually) and Italy is currently one of the leading countries, but there is still a long way to go in the wine sector. More attention needs to be paid to vineyards, especially on soils and the values of the territory need to be represented. This vision also emerged in the first focus group where reference was made to a need for bio producers to represent their view of organic production with moral principles against the market view of organic as a mere marketing opportunity. “We do organic wine for the values it expresses, for us, the bio product as they know in many countries (i.e. Germany) is not premium price. For example, for German consumers the organic products must be cheaper, thus many of us that are converting to organic, as the German producers, we do not it just for the market” (ORGANIC2).

For these reasons, a new pattern has emerged in the course of the workshop, namely the "rational viticulture". A viticulture that is careful of the territory and its social and environmental values, as well as for consumer health (i.e. reducing sulphites and chemical inputs), capable of developing innovation and wine experts’ coordination through networks or new producers’ associations in order to be competitive on markets. While organic farming and the research on grape varieties can contribute to increase the environmental and social sustainability of viticulture in Tuscany, a large part of the discussion on rational viticulture also concerned precision farming to make vineyard practices more efficient, new irrigation techniques to cope with periods of extreme drought, hydraulic and agricultural techniques of land management to prevent erosion and soil management techniques such as cover crop to protect biodiversity.
As emerged in the FGs, all these aspects of environmental sustainability to be applied in the near future need a continuous aggregative effort, in the face of what has been repeatedly confirmed as an extremely fragmented condition of the sector.

Other key issues discussed - in relation to the needs of more coordination efforts in the wine sector - were oriented to the reduction of the bureaucracy burden, to developing technological innovations that can help producers in the management of vineyards and cellars, as well as to increasing the use of ICT on the marketing side in order to develop new and common marketing tools. On the marketing side, the need for greater training and the creation of knowledgeable supply networks was highlighted in the focus groups - and emerged with greater impact in the workshop – as a mean to gain more bargaining power and to meet the challenges that global markets require. Once again, through the workshop emerged the need of a common strategy, as well as common investments by both producers and regional institutions. However, an interesting aspect that was highlighted is the recognition of the value of Universities as they are considered able - if united and coordinated in this effort - provide the specific knowledge that wine industry needs.

When asked which strategies or policies could help to overcome the problems of the sector, several participants agree that the main focus should be on the marketing side. On this side, many participants have expressed the wish for greater territorial coordination between the public sector and companies. Moreover, in their opinion there is also the need to develop a greater capacity to use modern ICT technologies (i.e. e-commerce platform, web and social skills). After that, they highlighted the need for more action in territorial characterization of the products; this should be accompanied by further effort to improve the capacity to recognize and communicate product quality. All these efforts should be oriented to succeed in enhancing the present territorial diversity without giving up to local and distinctive features. Other aspects of consensus in the discussion and in the questionnaires involved the need for more communication and promotion activities, access to credit as well as the importance of environmental aspects and climate change as previously discussed: "There is a need for more organisational and coordination support, more effort to reduce collaboration risks and increase the ability to achieve common objectives".

A key aim of the workshop was to develop a range of scenarios regarding the future viability of the wine sector in Tuscany. In this respect, the idea of increasing the overall quality and efficiency of the system is central, as well as increasing the quality of the supply chain relationships through investments in vertical and horizontal coordination through the following actions:

- Consolidating the industry (i.e. AVITO);
- Investing in the quality of research and training;
- Investing to increase production efficiency and reduce administrative burden (i.e. development of new standards, technology and the use of ICT).

At the moment, we have identified a starting point in fulfilling the needs of more quality and coordination (expressed by the maturity of the system of designations of origin and the spread of organic farming standards). From this development point - under the spur of territorial differentiation strategies – it is possible to identify the first consolidation tendencies as well as further research perspectives on quality. On this basis, it is possible to suggest two main scenarios for the wine sector in Tuscany.
Before doing so, it is important to highlight several constraints that emerged from the analysis. First, the need of more communication between the private and public sector, if not satisfied, can undermine the transition to the most suitable scenario. Second, it is important to consider the need to define the rule and the framework for a “rationale viticulture” as well as the agro-ecology management practices or the organic ones. Third, it is important - in policy terms - to have clear the purpose of the wine sector (is it about to maintain and increase the ability of the territory to achieve several positive externalities within the development of the industry, making a meaningful contribution to the environment and rural societies, or simply focus in terms of its contribution to individual profits?). Fourth, it will be important to keep in mind how to better deal with the reduction of bureaucratic burdens that nowadays seriously constrain the sector - if compared with other italian agricultural sectors or to the situation in other wine producing countries. Fifth, the timescale involved for any of the possible scenarios to come may be as long as from 5 until 10 years. Bearing these constraints in mind, the two scenarios were developed as follows:

**Scenario 1: Retention of the Status Quo.**

*Following the main past drivers/conditions and strategies:*

1. Many small brand and companies – and few medium-large cooperatives - will come out of production due to financial difficulties.
2. Export will be increasingly affected by competitive pressure, starting to fluctuate year after year.
3. Progressive shifting production to organic products or products with lower chemical synthesis inputs.
4. Foreign companies will buy most local properties and productions.
5. Few producer associations or super brand will succeed in developing high quality products and will continue to represent the territory.
6. At the local level there will be no opportunity for young people to access the sector.

*Predicted impact on the wine sector in Tuscany:*

1. Insufficient market share to allow many small farms to survive;
2. Often inappropriate and burdensome legislation;
3. Insufficient opportunities for young entrepreneurs;
4. Tourism and other features of the territory will guarantee for a long time the maintenance of a status quo;
5. Growing territorial disparities: some denominations will lose their original meaning and the territories will be progressively occupied by other activities;
6. Foreign capitals will provide the support for the industry. More foreign labor will be needed.

7. There will be a loss of traditional and local values, supplanted by globally recognizable
Scenario 2: The development of a “rational viticultural” system

Following the future sustainability drivers/conditions and strategies:

1. New producer associations are developing, focusing on changing agricultural and marketing practices;
2. Different producers / consortia develop high quality products in accordance with the principles of more rational agriculture and respecting the environment and consumer health;
3. The emphasis is shifted from promotion to sales through specific training (new brokerage companies are established in the territories to deal with international sales);
4. Foreign capital continues to enter the sector but are often accompanied by investments by young local entrepreneurs who, thanks to favorable public policies, succeed in developing innovative and successful projects;
5. Several producers’ associations or producers’ networks collaborate with the regional institution to increase the sustainability of the sector;
6. The market, driven by producer and other actors of the supply chain - including new market intermediaries - will absorb part of this new and young local entrepreneurs.

Predicted impact on the wine sector in Tuscany:

1. Increase of export and market share, allowing many small brands to survive;
2. Reduction of burdensome legislation;
3. Increasing opportunities for young entrepreneurs;
4. Tourism and other features of the territory positively affect the developing of the sector;
5. There will be a greater consolidation of the sector that overcome the fragmentation and increase its bargaining power against external competitors;
6. Local and foreign capitals will provide the support for the industry;
7. Traditional and local values will be maintained by the new producers’ associations, creating new narratives and values that continue to increase the regional brands;

Wine key insights from producer survey

A sample of 110 effective respondents has collected selecting the most representatives wine producers of Tuscany. The report of the data is organized in the main six section of the survey: section A report the farm characteristics, section B survey describes the way producers sold their production according to the business’s year 2016, as well as the section C deals with the key type of agreement producers use for sale (formal or informal), section C1 deepen the relationship between the main sale agreement and sustainability (according to the SUFISA definition of sustainability), section D deepen the strategies and drivers of farming and it finishes with the section “X” that reports specific additional questions for the case study. The
interviewees have been the person in charge of running the farm (generally the farm owner or the chief winemaker).

The producers’ survey data reported a total agricultural area of 8.358 ha of which 2.209 ha are planted with vines. Of 110 respondents, about 4.5% has a vineyard area that is in the regional average of 2 ha. Most of the respondents (88%) have a vineyard size that is equal or less than 50 hectares, while 12% have a UAA for vines that exceed 50 hectares, confirming the high fragmentation of regional wine farms that was previously observed through the case study analysis. In line with our analysis of the sector, the majority of producers in our sample are family farms (the 43%) and the age of the farmers in our sample is in line with the average age of farmers in Tuscany. Noticeable, wine producers in Tuscany are, on average, highly educated, with 58.5% of respondents having completed an academic degree and 39% have achieved a higher school degree. A quarter of the respondents produce organic wine, underlining the trend that has emerged in the analysis of the sector. According to the 110 respondents, in 2016 they had 243.644 of wine to be sold, with an average of 2298 hl/farm (the minimum production being 15 hl and maximum 45.000 hl). In 2016 the average production sold per farm was around 60% of their production, with 57% of respondents having sold more than 60% and 43% of producers have sold less than 60%.

On the type of IA, the majority of respondents use individual sale channels (local markets, different Ho.Re.Ca. channels, as well as through traders/wholesalers and exporters) as emerged during FGs and interviews and prefer informal agreements that often coincide with sales orders. More than half of the producers interviewed said they were part of a PO, including PDO consortia, that mainly help them in networking and promotion activities, with rare design cases and just one case in which the PO purchases the wine from producers. Against this background, the survey reports the key role in the promotion by consortia of protection of origin. These organisations do not offer any sales tool but help the associated companies to participate in marketing events such as wine trade fairs or other B2B events. These events are of considerable importance for companies, thanks to which they are able to increase the number of annual sales and the number of contacts with international buyers.

According to respondents the average price is 8,5 euros/bottle, the minimum price is 2,7 euros/bottle and the maximum 25 euros/bottle. Then, on average 46% of the selling prices is composed of the cost of production, while for 42% of producers the cost of production represents more than 50% of the selling price. According to respondents the main factors that are included in price setting are quantity, production costs, quality and market. With regard to specific requirements of the sale agreement in terms of standards, the majority of producers agreed on “Quality” and “Safety” standards. Noteworthy, more than 60% of respondents are satisfied with the main sale agreement.

With regard to sustainability drivers, the wine producers of our sample have evaluated a positive impact of their marketing choices in relation to the maintenance of biodiversity, water quality and organic matter. However, it emerges that the type of marketing choices does not favor collaboration in the sector.

When producers look at the future of the sector many of them express a strong concern about changes in consumer tastes and patterns, as well as about climate change. When we asked respondents about their strategies in the coming 5 years, most of them (44%) answered they would cope with an expanding strategy, while 21% prefer a maintenance strategy.
Finally, some key elements deepened through the additional question regards are the increase of biodynamic production, the relevance of red wines in the region of which 80% are produced under PDO labels and almost 50% with PGI labels. Furthermore, respondents on average claim to sell part of their production for 18% through collective channels such as wine fairs (confirming the data harvested in section B), and for more than 10% through B2B events. With regard to B2B events, around 57% of the respondents said they increased their average sales volume thanks to their participation in these events and they also stated that they managed to enter new and promising markets (mainly Canada, Russia, Holland, Denmark, Singapore, China, Sweden, Brazil, Finland). Finally, 45% of respondents said they received through this B2B event purchase proposals at higher average prices, and 35% said that they developed more stable commercial relations.

**Fisheries sector in Tuscany**

Total production of the fishery sector in Italy in 2013 was about 340,000 tonnes, with a value of 1,760 million € in 2011 (Mipaaf, 2012). In 2013 nearly 30,000 people were employed on the 12,500 Italian fishery vessels operating in the Mediterranean with the small-scale fisheries being the most relevant segment for employment rate (Mipaaf, 2013). It is one of the most important fleets at European level – also considering the extent of the capacity (gross-tonnage GT) and engine power (kilowatts kW) - together with those of Greece, Spain, France and England. The average age of vessels is 32 years, while in Europe the average is 30 years. As for the geographical distribution of the Italian fleet, in terms of numbers of vessels there is a predominance of activities both in the lower Tyrrhenian Sea (GSA 10), with about 25% of vessels, and in the Upper Adriatic (GSA 17) with 13% of vessels. The Italian fleet capacity decreased in the last two decades due to EU adjustment measure oriented to regulate a physically and economically disproportionate fleet size along with a sharpening decline of fish stocks. This adjustment was meant also to renew technological quality and safety of working conditions on the vessels, as well as to improve fish products quality and fishing selectivity.

Tuscany is a region in west-central Italy and has a western coastline on the Ligurian Sea (in the north) and on the Tyrrhenian Sea (in the south), including the Tuscan Archipelago in which the largest island is Elba. The coastline represents an important tourist destination and is varied with mainly extensive sandy beaches and some rugged promontories; three natural protected areas are included in the coastline. The most important port in Tuscany is Livorno, one of the largest Italian and Mediterranean seaports, for traffic capacity, that is capable of handling all kind of vessels. Fishing activity in Tuscany is spread among 27 ports (European Parliament, 2008) with 600 vessels registered and 1053 active fishermen (FAO, 2015). In terms of number of vessels Tuscany has a smaller fleet than the national average. In 2012 fishing activity from Tuscany represented 8% of total Italian landings – with 41 million euros in revenues (Mipaaf, 2012), thus a market share of 4.5% over the total national market (FAO, 2015) - and is mainly led through small-scale fishing vessels (ca. 75%), trawl (ca. 20%), and few passive polyvalent (FAO, 2015). Trawling and the seiners (surrounding nets) are the most productive methods with, globally, 84% of catches and 68% of revenues in 2012. However, the greatest value species are caught by small-scale fishing systems and polyvalent passive: small-scale fishing alone obtained 14% of catches and 27% of turnover. The most used fishing systems are the static gears, followed by purse/surrounding nets and then the trawl system (PSL-GAC Toscana, 2015). Livorno and Viareggio are the most important fish markets of the region (ISMEA, 2013).
The fishing vessels with the greatest gross tonnage are concentrated in the ports of Argentario, in the southern part of the coast. However, the fishing fleet in Tuscany is fragmented in a number of ports and harbours that are extremely heterogeneous in terms of structure and size, with fisheries differently developed and structured for size and for specific production activities. The fishing activity in Tuscany - as throughout Italy and the Mediterranean - is conditioned by the large presence of multi-species stocks and by the possibility of using vessels of different sizes for fishing in the same areas with several fishing gears. Many ports and harbours function also for other purposes such as commercial, industrial, energy (fuel), passenger transport, tourism and pleasure.

In the last decade, the economic crisis led to a continuous decrease in the fishing fleet and in the number of fishermen, especially for trawling and purse seine (surrounding nets) fisheries. Also, the increasing role of marine tourism reduced the number of mooring facilities for fishing vessels, with serious problems relating the lack of adequate space and infrastructure for such activities (Bartoli and Rossetti, 2011). In 2012 the physical productivity of a Tuscan fishing vessel was lower than the national average with 13 tons and 67,300 € against 15 tons and 71,500 euro per year (DINTEC, 2015). In 2012 the whole catches of Tuscany fisheries were composed for 80% by fish, 12% by molluscs and 8% by shellfish. Fish accounted for 60% of sales, while 40% was due in equal parts from the sale of molluscs and shellfish. Fish production belongs mainly to the blue fish category. Over two-thirds of harvested species are composed of anchovies, sardines, hake and mullet. However, these four-main species represent only 40% ca. of the fresh fish turnover. Another 19% of revenue comes from the sale of red mullet, sole, swordfish, and other high value species, which represent only 9% of fish production in terms of quantities.

Policy and regulatory conditions

Italy is the third most supported EU country for the fisheries sector with 9.8% of the EMFF resources in EU-27 and 9.3% in EU-28 (i.e. 537 million euro at current prices in 2015). The funding increased compared to the 2007-2013 with a 10% rate (at 2011 prices). For Italy, the resources allocated to sustainable development, marketing and processing measures account for 79% of the available ceiling (CREA, 2015).

The main restrictions for fisheries activity in Italy are represented by the boat scrapping (dismantling) and the seasonal fishing ban. Between 2008-2013, the Italian fishing fleet has shown a decreasing trend: in six years the number of boats declined by about 6% - i.e. from 13,774 units in 2008 to 12,582 in 2013 – and a consequent fall of catches by about 44% between 2006 and 2013. The decrease reflects a long-term trend, mainly due to the application of EC legislation to adapt the fleet capacity to fish stocks. In 2004, total marine capture fisheries totalised 288,284 tonnes, while in 2012 they only reached 195,000 tonnes. The value of production in 2012 generated USD 1.2 billion, while in 2004 the same figure was USD 1.8 billion (FAO, 2015). The largest reductions started as a result of the 2002 reform of the Common Fisheries Policy (Regulation (EC) no. 2371/2002), which introduced a limiting system for the fishing capacity (CREA, 2015). This reduction of the fishing fleet capacity is confirmed also by the negative trend of engine power (kW - kilowatt) and average gross tonnage (GT - gross tonnage). New vessels are now allowed to be used only after the withdrawal of a corresponding capacity (in kW and GT). Consequently, it is possible to observe a progressive rising of the age of vessels. Fishing activity in Italy is also subject to the Mediterranean
Regulation (Reg. (CE) 1967/2006) that further contributed to the modification - and even to the abandonment - of several small-scale fisheries and had a direct impact on internal production through modifying fishing activity with larger mesh size, regulating distance from the coast as well as controlling minimum size of several catches. Other European Council’s control regulations and sanctions (Reg (CE) 1224/2009)) cover all operations from capture to sales and induced changes in fishing operations, including the traditional ones (FAO, 2015). The EMFF Italian Operational Programme for 2014-2020 includes implementing a number of measures relating to the following priorities: a) Promoting environmental, resource-efficient, innovative, competitive and knowledge-based sustainable practices for fisheries and aquaculture; b) Fostering the implementation of the Common Fisheries Policy; c) Increasing employment and territorial cohesion; d) Improving and processing; e) Support the implementation of the Integrated Maritime Policy (IMP). In 2014 the Fisheries Local Action Group “Coast of Tuscany” was funded and established with the aim of “supporting fisheries and aquaculture by increasing competitiveness, profitability and employment”. Moreover, in Tuscany 70 fishers were supported for carrying out fishing –tourism activity.

**Markets and marketing**

According to the Italian National Institute of Statistics (ISTAT) Italy is a net importer of fish products; in particular, Tuscany is a net importer of fishery products and aquaculture. Meanwhile, the exports in 2013 exceeded the 4 million €, growing to a significant extent on the previous year. The most important wholesale markets for fishery and aquaculture products in Italy can be identified with the largest cities such as Milan, Rome, Turin, Naples, and Palermo. Supermarkets and hypermarkets represent the largest share of retail sales, however traditional channels such as fishmongers and municipal retail markets have resisted better in Italy than in most other European countries. According to government reports at national (Ferretti, 2011; ISMEA, 2013) and regional (ARPAT, 2008; Regione Toscana, 2005) levels, in the last decade it has been observed that economic crisis impacted the local fisheries sector through a change in conditions such as demand and price level and volatility. In particular the demand for fish, together with fish prices, decreased sensitively (Ferretti, 2011), especially at a local level (Tuscany) in 2012 (ISMEA, 2013: p. 23). Moreover, the economic crisis led to a change in the production factors, including a considerable increase of the cost of energy, in particular higher fuel costs. Fuel represents the main production cost in fisheries activity. This global issue was also observed in a particular time frame (2007-2008) at a local level in Tuscany (ARPAT, 2008), especially for trawl fishing, and led to a number of adaptation and transformation strategies implemented by the primary producers such as the diversification of activities and the transformation of fish products (Ferretti, 2011), the implementation of short supply chain such as direct sales (ISMEA, 2013), further investing in technological innovation or internationalising their market (ISMEA, 2013), selecting more valuable catches as well as implementing recreational activities such as fishing-tourism (ARPAT, 2008).

**Interviews**

From interviews to primary producers and stakeholders emerged that the fisheries business sector in Tuscany is highly fragmented and, therefore, small-scale fisheries are isolated and not powerful on the market. Logistics and distribution organisation are weakly developed for
small-scale fisheries products and in some ports - especially in Viareggio - there is a lack of structures and public market places. Experts report weak business and computer skills of primary producers. Recruitment and generational replacement are difficult since fishing is not considered an attractive occupation. The vessels in Tuscany are old and unsafe and - since there are not considerable investments in the sector for fleet renewal by European policies or the private sector - there is a progressive reduction of the fleet size. Also, it is extremely hard for fishers to access credit from banks. The administrative burden is also deemed, by small-scale fishers, as a limitation to access public funding. With regards to catches, the Tyrrhenian Sea is characterised by a high variability of species among the seasons; furthermore, small-scale fishers suffer low catches due to stock depletion and intensive fishing by trawlers. Moreover, there is a strong competition between small-scale fisheries and trawlers – generally in favour of trawling – for marine resources as well as for sales prices. Trawlers can better compete on quantities, lessening sales prices that are getting lower also because of the power of wholesalers and local restaurants. Furthermore, the coast of Tuscany is composed by several touristic sites, which further contribute to make Tuscany a net fish importer, often obtaining fish supplies at lower prices from the eastern Italian coast, from aquaculture as well as from growing foreigner and cheaper fish markets. Small-scale fishers generally do not feel to be protected by the institutions against the intensive fishing activity of trawlers and from recreational fishing, which is considered to be uncontrolled. Also, recreational fishers are considered competitors - according to small-scale fishers - since they sell their catches at lower prices. Experts highlighted also the lack and the need of local quality and traceability labels for small-scale fisheries in order to better valorise fish products and to increase sales prices.

From interviews with fishermen and fisheries stakeholders operating in Tuscany it is generally recognised that the seasonal fishing ban for trawl fishing is no longer an adequate measure for protecting the stocks. In fact, stocks are still declining and many species would need to be protected in other period of the year. Also, one stakeholder considers this ban as “market opening” which is offered every year to fish import. There is a common understanding for zoning and fragmenting over the year the fishing ban according to scientific data and information related to the biology of the fish species and reproduction. Small-scale fishers are not concerned by this seasonal fishing ban and are allowed to fish during the ban while for trawlers it is forbidden. However small-scale fishers did not appear to perceive an advantage for having access to all the fish resource without the trawlers competition, except for the fact that during the ban period eventual infringements from trawlers fishing in the small-scale fisheries area would not be possible. With regards to the regulation for transparent goby fishing in Tuscany there is a general concern (observed from interviews and media analysis) that this fishing activity will progressively disappear as long as vessels will be dismantled since this fishing license is associated only to the boat. Furthermore, the fishers and stakeholders interviewed in Tuscany are concerned about the lack of human resources being trained or willing to practice the fishery activity since it is considered a hard work with working hours and patterns that do not fit “the modern life habits”.

Aquaculture sector in Tuscany

Aquaculture brings 48% of the total national fish production. Italy is among the main aquaculture producing countries of the EU, after Spain, France and Greece. The aquaculture sector in Italy includes both marine and freshwater farming. The current trend in the Italian
aquaculture development is the rising production of marine species, both molluscs and finfish. In 2013, the total national aquaculture production was assessed at 162,600 tonnes, composed of 38,800 tonnes (24%) produced in freshwater, and 123,800 tonnes (76%) in marine and brackish waters. Mariculture consists of finfish (11%) and molluscs (89%). Growth in aquaculture production is mainly due to the mastering of seed production techniques for European seabass and the gilthead seabream and to the application of new farming technologies (FAO, 2015). As a land based activity, Italian marine fish culture has been affected by the competition on the market from the fast-growing cage-farming industry in Greece: reduced power costs and availability of sheltered marine areas for intensive cage culture could decrease costs down to a much lower level than those in the Italian land-based farms. The diversification of the aquaculture Italian production is considerable, also thanks to a long and geographically diversified coast (Cataudella and Crosetti, 2011). Marine species (sea bass and sea bream, farmed in almost 10% of the aquaculture companies) and those of fresh water produce together more than half of the aquaculture Italian turnover, which is 699 million €. In recent years the production of mullet has regained importance as a result of a recovery in demand for the product, both for direct sale and for the processes of transformation (cured roe, smoked-fish, pickling). With regard to economic performance, the impact of subsidies on the total value of production is very low, and the most significant costs are related to livestock expenses (22%), followed by fishmeal costs (15%) and the costs of work. In 2012 there has also been a significant increase in energy costs (+ 12%). In contrast, livestock and fishmeal costs declined. The total costs in aquaculture business represent 71% of total revenues. The average value added in the 2008-2012 period was about 138 million €, presenting an increase of 32% compared to 2011. The number of companies has decreased from 2008 to 2011 by 15%, i.e. from 699 to 587. 55.3% of companies, which in 2012 were 587 in total, employ 5 or less workers, 23.8% have between 6 and 10 employees and only the remaining 20.9% have more than 10 employees (CREA, 2015).

Tuscany is characterised by a considerable production from aquaculture. Focusing only on aquafarming of saltwater populations and mariculture, the Tuscany production represents 20% ca. of the national production with mainly 12 aquacultures and 4 mariculture coastal installations farming mostly sea bream and sea bass (each species representing almost 50% of the aquaculture production). Although the production of sea bream and sea bass is relevant for the Tuscany fisheries sector at a national level, the region is rather an importer of fish and fish products. The farms that use marine water or brackish water are all located in the provinces of Livorno and Grosseto. The total production of marine and brackish aquaculture farms in Tuscany, both intensive and extensive, reached 3,082 tons in 2009 and 3,226 tons in 2010. Considering an average price of sales of 7.77 €/kg and 7.72 €/kg, respectively in 2009 and in 2010, the production value amounted to almost 24 million € in 2009 and 25 million € in 2010. The data from the last decade show three main trends for aquaculture in Tuscany:

- The declining number of active aquaculture enterprises (especially for small companies with marginal productions);
- The consolidation of the biggest companies historically existing in the area with a growing production up to 3,000 tonnes per year;
- The expansion of mariculture activities, even if it is extremely regulated and limited (the first mariculture farms have been added in recent years: in the Gulf of Follonica, near the island of Capraia, on the island of Gorgona and along the Monte Argentario coast.

32
The production centre in Orbetello plays a leading role in the national production scene. The company brand, “Pesce di Orbetello”, and its consortium, which includes four companies, gained commercial access to the big retail system, which engages over 75% of its production (around 2,000 tonnes of sea bass, gilthead bream and meagre), and facilitated the exports of its products (Gilmozzi, 2011).

**Policy and regulatory conditions**

With regard to subsidies from the EFP, their impact on the total value of production and on the economic performance of the aquaculture firm is estimated very low (CREA, 2015). The enterprises interviewed in Tuscany were funded through the FEP for investing in tools, machineries, cages, for the boats (for mariculture), as well as for enlarging the administration offices.

Landscape and territorial restrictions represent the main concern for the aquaculture producers who would further invest in mariculture activities in front of the coasts. The shore of Tuscany is a touristic area with several protected areas. The establishment of aquaculture facilities in coastal brackish areas engendered many disagreements, because of the environmental vulnerability of coastal wetlands, considered as the last residues of sensitive and peculiar ecosystems along the Italian coast. In some areas (i.e. the Gulf of Follonica) the authorities gave the permissions to a number of aquaculture enterprises for installing their cages for doing mariculture, while in other areas (in front of Orbetello) the restrictions for mariculture is harder to overcome. Producers feel the rigidity of the administrative burden, such as difficulties for asking institutions and obtaining permissions to expand their activity to the sea. In general, there is the perception of an overly bureaucratic processes and management.

**Markets and marketing**

The Italian aquaculture sector faces several problems including, amongst others, the intense competition from low priced seabass and seabream producers in other countries such as Greece and, to some extent, Turkey, as well as from developing countries. Aquaculture products are mostly sold fresh and whole, but some products are processed by the fish farmer in order to add value to the product. Aquaculture products are largely used by the catering sector. Indeed, Italy has become the reference market in the Mediterranean for fresh products from seabass and seabream production (FAO, 2015). European sea bass, gilthead sea breams and eels, species have always been greatly appreciated in Italian fish markets (Cataudella and Crosetti, 2011). As for the product marketing, there is a strong differentiation in distribution channels and the destination of the production depending on the farmed species and, therefore, the area of origin. The main marketing channels consist of the direct sales, selling to restaurants, retail outlets, while a limited share of the product is intended for primary processing (PSL-GAC Toscana, 2015).

Aquaculture in Tuscany has a strong focus on quality and environmental sustainability, as a competitive strategy in the challenging context of the national and international markets. Use of the best raw materials, compliance with environmental sustainability and an internal standards policy adopted by most of the local companies are meant to guarantee a quality
product, appreciated and valued both in Italy and beyond, as for all “Made in Tuscany” products. The voluntary decision to carry out regular water analysis and nutritional, chemical and microbiological analysis of the final product assures consumers of the quality, freshness and safety of the purchased product (Gilmozzi, 2011). With regards to the main aquaculture retail Consortium in Tuscany (Coopam) the voluntary certifications such as the independent own label, the ISO (9001 and 18001), including the adoption of the “Friend of the Sea” (FOS) sustainability label, are considered key for guaranteeing the supply to supermarkets, as well as durable business relationships with big retailers. Furthermore, organic aquaculture in Tuscany is not practiced and does not seem to be interesting for marketing strategies. A local aquaculture firm developed an organic production of sea bass and sea bream in 2009 but, at that time, such products did not find a sufficient demand from the market.

**Pear: Markets and marketing condition**

Recently the pear sector has shown some difficulties in the market. Italian market of pear has been characterized by varieties that are considered old and outdated. Instead, in Europe producers have over time developed new variety specializations. So far, the Italian goal has been to satisfy internal consumer requirements that were preferences oriented on Abate Fétel. However, the same variety has been object of a crisis in domestic consumption and in northern European countries, consumers do not appreciate this cultivar.

Producers are oriented in improving the quality of the product. However, together with retailers they face several issues in preserving the proper quality of the pear fruit, which is compromised during several stages of the supply chain: harvesting, storing and transportation. In addition, comparing with apples or other types of fruit, quality characteristics (taste, fragrance, texture etc.) are more related to the ripening stage and so on the harvesting time.

Eighty seven percent of Italian exports are delivered within the EU, while the remaining 13% goes to non-EU countries. Very often, access to new markets outside Europe is hampered by phytosanitary barriers, which actually hide true protectionist measures to defend local production. In particular, the export of pears from Italy to the United States is legally admitted but in practice, it becomes not feasible, because of several inspections to pass through both for economic and commercial reasons.

The export to Russia suffered a contraction with the establishment of the embargo. Export to China is also difficult. Chinese agri-food sector is subject to particularly restrictive sanitary standards. The authorities focus their attention to phytopathogens agent and to avoid their introduction, in some case, there is a total ban on import agricultural and food products.

**Pear: Environment**

One particular aspect that emerges with the restriction in the use of some of the chemical is that new incoming diseases such as Psilla, Bed bug, Xilella etc., which undermines productions, are difficult to keep under control” (L. Granata). In fact, in 2014 within Modena province, the production had a significant reduction because of Halyomorpha haly. Moreover, there is a lack of investment in research and development of new chemicals from the agrochemical companies that are not willing to invest for reducing these “emergency events”.

34
Due to climate changes and environmental factors some consequences have been highlighted:

- The maturation of several varieties is creating a partial overcapacity on the markets. In addition, always due to climate change
- An increasing in irrigation costs and fruit size does not meet qualitative standard required by the market.
- Problems in the regular development of fruits due to abnormal thermal changes after the time of setting.
- The severe damage caused by the Asian lynx (Halyomorpha halys), which is expanding the infestation zone.
- A decrease in production of pears, especially Abate Fétel and White William determined by high temperature changes that characterized the post-affiliation phase of fruits.

**Pear: Focus groups and workshop feedback: drivers, strategies and future performance**

Questionnaires and discussion during CCPB workshop event highlights three main strategies. Some of the main strategies highlighted during interviews have been confirmed; in addition, some aspects in relation to climate changes affecting quality and fruit have been point out.

**First: strategies in response to Markets, marketing and institutional arrangements**

In this situation, from the one hand, it becomes increasingly strategic to find and consolidate new markets. Italy can export without particular difficulties in markets such as Hong Kong, Canada, United Arab Emirates. However due to Russian embargo and Chinese phytosanitary barreirs, producers have now diverted their production to the Far East. Moreover, the Fruit and Vegetable Services Centre (CSO) of Ferrara is now prompting the export to Taiwan.

From the other hand the innovation of pear variety is a key strategy. However, because pear implants have a long-time rotation, with a remarkable initial investment and some unproductive years at the beginning of the implant life, the introduction of new variety must be carefully evaluated.

Innovation is needed not only in term of new variety but also in term of new technologies to be applied as agricultural practices. For examples, respondents also highlight the need of more subsides (to OP and farmers) to prompt innovation in pest management.

“Falstaff” represents a new variety developed by New Plant (which is a breeder centre funded by Apo Conerpo). This variety is protected by patent until 2017. New implants have been set up this year and the production has been started in 2017. The main difference is in the peel colour, which is red. According to panel test carried out, there are high level of appreciation amongst consumers for red peel colour.

In terms of the developing of new institutional arrangements (IAs) the need to develop new form of contractualization such as multiple chain contracts that allow integration between vertical and horizontal food chain has been stressed. These are prominent aspects for fruit producers in general because they can help to reduce farmer risks and provide more stability in their income. The pear supply chain is very fragmented. Experts agreed that more efficiency and organization should be achieved. The main strategy that have been pursued is the
aggregation of diverse existing groups in order to concentrate production and negotiation power; improve quality and organization of the supply chain. The results is “O-pera”, the organization that involves exclusively Italian Fruit Growers specialized in the cultivation of pears with the objective of becoming the reference point for the entire chain of pear in Italy. This action should allow opening to new markets, and open up new business opportunities.

Second: strategies in response to Policy, management and representation

At institutional levels, there are negotiation initiated by the EU and the Italian Government with Chinese local authorities to unlock some regulatory restrictions on apples and pears and the opportunity to strengthen protection legal on Chinese products land a designation of origin.

In addition, also the EU-wide initiative “Fruit school scheme”, aiming to encourage good eating habits in young people, is a tool that shows positive effect on fruit demand.

Pear: Producer Survey

The results of the Producer Survey (Task 2.6) are presented in relation to pear producers in Emilia Romagna Region. The questionnaire was composed of the following sections:

A. Farm business characteristics
B. Production and sales channels
C. Characteristics of the sale agreement and sustainability
D. Strategies and drivers of farming
E. Farmer characteristics

For the purposes of this report, data are analysed using descriptive statistics. The sample is composed of 105 farms located in province of Bologna and Ferrara. These provinces reflect the main productive area in term of pear production.

The survey highlights the following characteristics in relation to the farm and farmers:

The majority of farmers were male (99%)
The majority of farmers were between 51-65 (41%).
The majority in the range of 51-64 has the highest level of education
69% of farms were run by farmers who claim the status of owner & manager
Only 11 farmers were certified organic pear producers.
Family farms that sale to individual organization were the majority (52%)
Besides traders (44%) the second form of sales channels was auction (13%)

36
All farmers were members of a union.

Producers have membership in cooperatives and/or POs only if farmers sell to cooperative.

Almost the whole of farmers who belong to collective organization subscribe to the Cooperative rules. These rules consist of a long term written contract with membership, delivering and sale conditions. On the contrary, the engagement in contract on individual sale, especially for auctions, consists of contract agreement before or at time of sale.

Almost all farmers who belong to cooperative receive also technical assistance.

Data show the importance of complying quality and safety standards for all producers.

It is remarkable instead, the neutral answers concerning specific climate standards.

Farmers have mainly a neutral position on the environmental effects of agricultural activity. They are, instead, more involved in economic aspects stating that the type of agreement engaged for the majority of them, allow to maintain profitability and to invest in their farm.

In terms of future strategies, the majority of d farms do not have particular strategies in mind and they expect to maintain their existing scales of operation (70% of interviewees).

Among those who plan to expand their production, which are 24% of the total, the majority of them plan to invest in production facilities (ex. anti-hail nets) and to insure the crop.

Concerning market related changes, interviewees show to be more interested in the diversification of products/crops followed by the development of new sale channels, partnerships and the addition of value.

Mussels sector in Emilia-Romagna economy

There are about 200 companies that cultivate mussels in Italy. The region with the larger number is Liguria (about 65 companies/ businesses). In Emilia-Romagna, as well as at national level, mussels sudden developed in the 80’s, with the advent of technologies related to the “off-shore” implants. Italy is characterised by having a coastal profile poor of deep inlet. For this reason, the development of technology that allows offshore implant allowed cultivation to be extended to new areas.

Off shore implants have higher costs (both for their installation and management) compared to traditional long line in use along the coast. For these reason around the world there are very few places where this type of implant has been taken in use.

Among costs for their construction, the quality and robustness of the material to be used represents one of the main aspects.

In 2014, Emilia-Romagna produced 22,200 tonnes of mussels becoming the first region in Italy for mussel production. Emilia-Romagna has become the location of the most important manufacturing companies, equipment’s and boats for this activity. (Malorgio et al., 2012)
The census revealed that in Romagna Sea there are 27 companies with a mussel plant offshore in long-line. The province with the largest number of companies is Ferrara with 16 units, followed by Rimini with 6, Forlì-Cesena 3 and Ravenna with 2.

All together, these companies employ 314 production workers, of which 248 fixed and 66 temporaries. As for the fixed operators, the province with the highest labour force is Ferrara, with 129 units.

During last decades shellfish farming has become a prominent activity in Emilia - Romagna contributing not only to create a new occupation, but also to mitigate the fisheries crisis. In fact, a large number of Fishermen is converting all or part of their activities. This type of trend has determined a gradual change not only in term of production, but also in respect of marine resources management and exploitation.

**Mussels: Market and marketing conditions**

Due to the lack of POs, the difficulty in commercialization is remarkable. Companies committed themselves into emerging markets, especially abroad in the north of Europe. However, mussel varieties cultivated in Italy are not appreciated in most part of northern countries (Netherlands, Sweden, and Denmark) which preferences are oriented toward other mussel varieties. In fact, Northern European countries import mussels from Denmark and Ireland. An option offered is the reintroduction of mussel cultivated in Italy into existing growing of France and South of Spain.

The mussel is a seasonal product having some problems related to the fragmentation of the supply chain because of the lack of a solid organization among producers.

The core issue in mussel sector is not the production but the trade. In fact, producer organizations do not exist. This aspect complicates not only the commercialization but also the definition of price. The price of the product is defined in the area where the first harvest takes place, which is in Goro within Ferrara province. In this area, price is the lowest because mussels are grown simultaneously with clam reducing total production costs. Moving to Cattolica and Cesenatico the price increases, because of the labour costs, reaching highest values and suffering the competition from the other Italian area.

Mussel producers lack of commercial skills. The businesses deal almost exclusively with the production aspects while marketing is managed almost entirely by dealers.

The product can be placed on the market or directly sell to restaurant, to growing implants or to privates. Some areas of the Romagna coast have identified a common trader “Mititlicesenatico” and have applied for the certification. Growers of other area instead, have maintained an autonomous commercialization.

Spain represents one of the main competitors on commercialization. In particular, in Sapain Mussel market is characterized by the presence of Producer Organizations and absence of off shore implants allows keeping lower price compare to Italian once, which usually are estimated to be around 60-70 Cent/kg. The existence of Producer Organizations in Spain is strictly related to the mussel variety cultivated in those areas. In fact, this one requires a processing treatment before commercialization that variety cultivated in Italian area does not require.
Another competitor is represented by Greek market, more than Spain, because the Greek product reaches the maturity level in the same period of the Italian one, i.e. from May to September.

**Mussels: Institutional arrangements**

It can be noted that the most part of the concessions and consequently implants, are currently cooperative that, in most cases, entrust to companies associated to them for production facilities. These are micro businesses, traders, or L.T.D. companies, employing a small number of employees and that are equipped with one, rarely two boats to carry out the farming activities. In most cases, they shall independently carry out the marketing of the product and the investments for the improvement of facilities or purchase of machinery. Nevertheless, there are cases in which the members of one or more plants are brought together to market their product. This fragmentation is a major limitation in terms of product enhancement and, in most cases, does not allow having sufficient capital to cover new investments and to face crises caused by natural disasters. Although, this has not prevented certain dynamism in the last five years, in which they performed several, mainly modernization, investments (purchase of boats and ancillary equipment). (G. Prioli, 2011)

With regard to the management and processing operations, the production process can be summarised in three main phases: sewing, socking and harvest.

From the beginning of sewing, it takes a period of about 8 to 12 months to the harvesting of the finished product. The seed gathering occurs twice a year: late in the winter and then during the autumn. When the molluscs have reached a size of 2 to 2 ½ cm, which usually corresponds to summer season, the retrieval take place. For socking, plastic tubes are used.

The production of mussels has a main peak in the period from March to June, and this creates considerable problems for the organization of marketing. This is due largely to the influence, often concomitant of three main factors: the adoption of breeding technique, the natural replacement of young fish, and the performance of the reproductive cycle.

Because of the regulation in 2004, the public concessions have a different cost depending on if they are a private enterprise or a co-operative. Co-operatives pay a contribution of 0,4 Cent while an entrepreneur pays 1€. This aspect has an important impact in terms of cost to be corresponded to the Regional institution for the public concession.

This difference in price has determined a large conversion of private enterprises into co-operatives. This transformation is in fact, more from a formal point of view than practical, where the commercial management remain the same as in an enterprise.

**Mussels: Policy and regulatory conditions**

Subsidies in Aquaculture, depending on European Maritime and Fisheries Fund (EMFF), cover around 50% of the investment. However, since the majority of firms in this sector are small-medium size enterprises that do not have the necessary financial resources to cover the remaining part of investment, they need to apply for a credit access.

Mussel in order to be sold to the big retailer organization must pass through the inspection centre. At this stage, all sanitary controls are performed. Regulatory sanitary conditions are
established at regional level and then applied with different protocol at municipality level. The levels of control imposed by law are severe and frequent; however, the accomplishment of them is not homogenous in the Italian territory. The Adriatic Sea coast and offshore in the northern-centre part is highly controlled.

In these last few years, there has been a negative market trend mainly due to the adaptation to new productive and sanitary regulation introduced by EU.

**Mussels: Environmental issues**

Some of the main environmental issues related to the mussel growth is related to the dispersion of catabolism substance expelled by mussels that can reach the coast. In particular, in case of offshore implants, where the implant level is not as deep as in depth coastal zone, the sea flow lead back rests to the coast. On the other hand, mussel absorbed Nitrates and Phosphates, so they have positive effect on the Eutrophication. (G. Prioli, 2011)

**Mussels: Drivers, strategies and future performance**

*Strategies in response to market and marketing conditions:*

In particular, the adoption of Organic certification allowed some Italian companies to deliver their product to big France retailer (Carrefour). The growing conditions are very similar to conventional mussel growing except for the density. Even if there is not a return in terms of price, in fact, the ultimate price of the product does not change, the opportunity of place the product on the market represents a valuable aspect.

In Emilia Romagna, the label “Cozza di Cervia” has been developed. It is an organic product, which is internationally unique because of its organoleptic flavour and texture among the mussel production. Since December 2013, the Fenice Company has certified its production with the logo of organic product that guarantees the traceability of the organic sector. In addition, consumers are not educated in the quality recognition of the mussel product. Inform consumers on the quality of mussels would help in protecting local product.

*Strategies in response to credit condition:*

ISMEA represents a possible creditor able to give guaranty to the firms. The cooperative MARE.A is collaborating with political institution in order to help firms to gain access to convenient form of credit such as bond, insurance. Insurance is not a recognized instrument in this sector because of the lack of reference/information in respect of level of risk and failure cases in this sector.

**Wine in Tuscany References:**


ISTAT – Istituto Nazionale di Statistica (2010), La Toscana al 6° censimento Generale dell’agricoltura risultati definitivi [http://www.regione.toscana.it/censimentoagricoltura2010](http://www.regione.toscana.it/censimentoagricoltura2010)


Fisheries and Aquaculture in Tuscany References:

ARPAT (2008) *La pesca professionale, l’acquacoltura e lo stato delle risorse ittiche nel mare toscano*. Agenzia regionale per la protezione ambientale della Toscana, Livorno, Italy.


Pear in Emilia-Romagna References:
Altamura, V. “Abate Fetel: quanto rende la coltivazione”. Agricoltura, Gennaio 2015
Centro Servizi Ortofrutticoli. COSTI, PREZZI E COMPETITIVITA’ NELLA FILIERA PERO: UN’ANALISI DEI MAGGIORI SISTEMI PRODUTTIVI EUROPEI, 2010.
Palmieri, A. Pero, “Situazione italiana e previsioni per la campagna”. Informatore Agrario. 2015.

Mussels in Emilia-Romagna References:
Malorgio, G.; De Rosa, C.; Mulazzani L. “QUARTO RAPPORTO SULL’ECONOMIA ITTICA IN EMILIA-ROMAGNA – 2012” Osservatorio Economia Ittica, Regione Emilia Romagna
Prioli, G.,„Sviluppo e prospettive dell’allevamento dei mitili. Ecoscienza, 2011
Osservatorio Socio Economico della Pesca dell’Alto Adriatico La pesca e l’acquacoltura in Emilia Romagna
1 Introduction

The analysis, which is based on the conceptual framework developed in WP 1, aims at producing a more comprehensive view of the nature and dynamics of policy and regulatory conditions, market imperfections and their implication for sustainability of the four Italian sectors (wine, fisheries and aquaculture, pear and mussels). The first two sectors refer to our primary (wine) and secondary (fisheries/aquaculture) case studies in Tuscany. The second are the primary (pear) and secondary (mussels) case studies in Emilia-Romagna. The four case studies have their own sections with the Italian National Report since they represent four very different universes with their specific characteristics that we have tried to disclose through the research methodologies used and the gathered experience data.

The research started with the media coverage of primary producers’ sustainability profiles in Italy with regard to the specific groups of conditions identified in the SUFISA Conceptual Framework (WP1): regulatory and policy, factors, demand, finance and risk management, socio-institutional, socio-demographic, ecological, technological. The conditions identified within the media analysis provided in this report are representative of the two main case studies for Italy (wine and pear) and for the three satellite case studies (fisheries, aquaculture and mussels). In the SUFISA share point a wider and deeper National Media Analysis, the Media analysis for the wine case study and Fisheries and aquaculture satellite case studies are available.

Table 1.1 report the press coverage in terms of the types of sources analysed. The research focused on the years 2012-2016. For some sources, time range is less wide because of limits in archives availability; some texts produced in the previous years have been also selected when deemed particularly relevant or pertinent.

<table>
<thead>
<tr>
<th>Source type</th>
<th>Texts number</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialised magazines / websites / blogs</td>
<td>86</td>
<td>46</td>
</tr>
<tr>
<td>Generalist newspapers / magazines/ websites / blogs</td>
<td>36</td>
<td>20</td>
</tr>
<tr>
<td>Government, NGO, farmers’ organisations</td>
<td>40</td>
<td>21</td>
</tr>
<tr>
<td>Scientific articles</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td>TOT</td>
<td>185</td>
<td></td>
</tr>
</tbody>
</table>

Then the desk-based review involved analysis of key policies, regulations and market issues that impact on the four case studies. The review included academic publications (research papers, books and websites related to sectors and/or key regulations, policies, market issues); Government and policy documents and websites; market data, market research and consultancy reports; industry data/reports and NGO documents. The Common Agricultural Policy (CAP) and the Common Fisheries Policy (CFP) and were both reviewed in detail, as well as relevant regulations related to each sector, supplemented with analysis of policy documents. Market research and data on each commodity sector was also reviewed, as well as relevant industry data, including analysis of secondary data to examine socio-economic changes in both sectors over time.
The stakeholder interviews were intended to add more information on the desk-based review. The aim of the interviews was therefore to gain further experience data into the nature and complexity of market and regulatory conditions and emergent CSP issues through the four case studies. A total of 24 interviews were completed for the two primary case studies (i.e. 15 for the wine and 9 for the pear), to which several interviews were also carried out for the other satellite case studies. The interviews completed for each sector are listed in Appendix 7.3 and 7.4, with a summary of the type of stakeholder interviewed in each case. Most interviews lasted one hour, but many were longer than this, denoting interest and willingness to participate by the respondents, or at least to expose themes and issues relevant for them.

The structure for the rest of the report is as follows. The next section of the report provides a summary of the dominant conditions and trends in Italian agriculture. Then in chapter two is reported a summary of the key media analysis findings, both in general and in relation to the four case studies. The main part of the report is then made up of the four commodity case studies (i.e. the primary labelled as A and the satellite labelled as 1 for Tuscany and then the primary named as B and satellite defined as 2 for Emilia-Romagna), which review key regulatory and market conditions for wine, fisheries and aquaculture, pear and mussels respectively. Each case study contains also a SWOT analysis and short discussion which summaries the key issues/conditions emerging in the sector. Then, the two primary case studies end with the main key condition discussed with focus groups and workshops with producer and other actors in both commodity chains and with the producer survey (the section of insights from producer survey A refer to the primary - wine - case study for Tuscany and the section of insights from producer survey B refer to the primary - pear - case study for Emilia-Romagna). Each case study contains also a SWOT analysis and short discussion which summaries the key issues/conditions emerging in the sector. Then, the two primary case studies end with the analysis of the main key conditions discussed with focus groups and workshops activities with producer and other actors in both commodity chains (i.e. wine and pear) and the two-producer survey that have been delivered for wine producers in Tuscany and pear producers in Emilia-Romagna.

1.1 Dominant conditions and trends in the Italian Agriculture

Before examining the characteristics of the four case studies for the two Italian regions (wine, fisheries and aquaculture for Tuscany, pear and mussels for Emilia-Romagna), we try to highlight through this introductory chapter the major conditions and trends of agricultural and fishing activities on Italian territory.

In the last 50 years, according to the National Institute of Statistics (ISTAT, 2013), there was a progressive change in the role of agriculture within the Italian economy as well as in the rest of the European countries. If in the past more than 50% of the national wealth was derived from agriculture, according to data provided by the National Institute of Agriculture Economics (INEA) in 2014 the contribution of the Italian agriculture to the national GDP was just over 2.1%, slightly exceeding the average of the EU countries (i.e. 1.7%).

---

1 The document has been prepared by the UNIPI and UNIBO team. It has also benefitted from the feedbacks of the internal reviewer (AUA) and from the active contribution of other project partners.
On the one hand, this finding is further strengthened by the 3.3% growth of the value of the output in agriculture, forestry and fishing, measured at current prices, which allowed the sector to reach 56.1 billion euro, including secondary activities. On the other hand, the results achieved on the international outlets and the comparison with the agro-food systems and the performance of the other European countries highlights the importance of the export for the country. The presence on international markets represents the core for which the Italian firms are investing, and the Government is providing a support strategy aimed at giving aid to the Italian products.

The awareness of the importance of the agribusiness sector for the Italian economy, but also of its critical points (e.g. burdensome bureaucracy, generational change, difficulties in accessing to credit, the increase in quantities of unused production) have stimulated several responses from the public decision makers.

Thanks to the support received through the Rural Development Policy (RDP), the country has sought to strengthen the role of food supply chain (manufacturers, food industry, wholesale trade, retail trade and Ho.Re.Ca.) through the relaunch of investments. Indeed, according to INEA (2014), in 2013 the sector experienced a decrease in the gross fixed investments in the order of the 4%, while during the 2012 the decline was even more pronounced (-9.9%). Thus, the public support has concentrated the resources mainly on those sectors most in need, such as the livestock sector for meat and milk, the arable, the protein plants, durum wheat and olive growing, with the objective of gaining margins of efficiency and boost towards a growing variety of quality products recognized by the brand-name "made in Italy" brand. Furthermore, the search for greater efficiency in the agricultural and processing phases has been accompanied by the progressive encouragement towards a more sustainable and environmentally friendly farming model. Moreover, many other measures have been developed to support young farmers. For example, the Italian Government has provided support programs for young farmers, including tax deductions of 19% to people aged less than 35 who are renting land, and the reduction of 1/3 of the gross wage for more stable hiring (INEA, 2014). Finally, yet importantly, the Public effort has also focused on reducing the bureaucracy (e.g dematerialization of the registers and it has been also created the unique register of controls).

Despite these efforts, the 6th Agricultural Census (2010) reported major changes on supply side, which have seen a gradual decline in the number of farms over the last decade (-32%) reaching 1,620,884 farms. Moreover, there was also a limited reduction (-2.5%) of utilized agricultural area (UAA) to 12.9 million hectares, which led to an increase of the average size of the farm (7.9 hectares). According to the data provided by the Chamber of Commerce, the decline in the number of registered farms, during 2012, in the “Sector of Agriculture, Hunting and related Services” has concerned, the individual farms, which account for 90% of the whole population. At the same time, in the last decade there was a progressive increase in partnerships and corporations (+16.9%).

However, Italian agriculture is still characterized by a high prevalence of sole traders, despite their importance is reduced considering the UAA (76%) and the standard output (67%).

Conversely, partnerships, corporations and other types of farms, including cooperatives and associations, achieve 31% of the output and cultivate almost 18% of the UAA, although they represent only 3.6% of the farms surveyed. Thus, data confirmed a general growth of interest
in these most advanced types of farms (e.g. UAA was around 12% in 2000), although the transition is progressing gradually.

Furthermore, according with the figures released by the 6th General Agricultural Census 2010, the most common management model in Italy is the family farm. This family management represent the 98.9% of the total farms, thus cultivating 89.4% of the total UAA. This type of farms are crucial for the rural economy since they contribute from food safety to the environmental protection and to the production of public goods. However, in terms of structure these farms are small-sized (i.e. 7.2 hectares, against 79.2 hectares of the no family-run farms) with the prevalence oft he direct conduction by the farmer. More than 50% of these farms own less than 2 hectares and cultivates only 6% of the total UAA.

According to the census, about half of Italian farms falls under the minimum economic size (i.e. less than 4,000 euro of standard output - SO). Then, about one fourth reaches an economic size between 4,000 and 15,000 euro, while just a small percentage of 5.5% achieves significant economic sizes (over 100,000 euro of SO). Those farms that have economic dimensions exceeding 100,000 euro occupy 41% of the UAA, they use 27% of the working days and they produce 62% of the SO.

According with ISTAT (2013), in absolute terms, the majority of companies is concentrated in the Southern Regions (i.e. Puglia, Campania, Calabria and Sicily) with almost the 48% of Italian farms. Furthermore, the distribution of the Italian farms shows a strong polarization between the North and the South of the peninsula, denoting a different productive vocation of the Italian regions.

In 2013 the Italian agriculture recorded another negative trend with regard to the decreasing number of people involved in agriculture (-4.2%), with a much stronger decrease for the employees (-4.7%) than for the self-employed (-3.6%). However, during the same time the share of the part-time employees and the incidence of the foreign workers have increased, with a pronounced increase in the Northeast and with a high presence in the Centre, where one employee on four is foreign. The reduction in the number of people involved in agriculture led also to a decrease in the working-hours (1.6%), in recovery after the sharp decrease of 2012 (5.8%). These numbers denote a relative process of farm intensification that required from the resulting farms an increasing number of days per year in order to carry out their activities: from roughly 137 working days per farm, in 2000, they reached 155 working days in 2010.

If we analyse the income generated, the 2010 data show the recourse of extra-agricultural incomes to support the owner of the farm (i.e. 26% of the farms). In the 20% of the surveyed cases, the extra-farm employment prevails against the farm employment, while just in the 6% it prevails the employment in the farm.

Furthermore, in 2012 according to the estimates of the Farm Accountancy Data Network (FADN) the average net farm income amounts to 21,700 euro per year per household. Compared to the previous accounting year, there has been an increase in the value of output which, however, does not mean an improvement in the profitability by the Italian farms which is rather in decrease, albeit to a lesser extent (-1%), due to a substantial increase in current costs.

Finally, one factor that is worth pointing out is the different impact of public aid among geographical areas, between size classes and production systems (i.e. in the farms with
economic size which does not exceed 15,000 euro of standard output, the 50% of the overall farms, the incidence of the aid on the value added is around 25%). Moreover, the economic size affects proportionally the productivity and the profitability of the productive factors (i.e. land and labour). According to the census, the average value of the output for one hectare of cultivated land is estimated at 3,545 euro, of which 56% is converted into value added. For farms located in the Northern Italy, and for those located in the plain, farming remunerating 30,000 euro of net added value their working unit, while in other districts and altitudes, the average added value per working unit is so low that not even justify the adequate remuneration for a single unit of work.

With regards to the demand side, INEA (2014) reported a decreasing trend in food consumption at the national level. This negative trend is connected from the one hand with the recessionary condition, which the Italian economy has experienced since 2011, and on the other hand is linked to the change in consumer taste pattern and food demand. It is worth pointing out that the Italian economy experienced a decrease in volume of the GDP (i.e. in 2013 it was equal to -1.3% after having reached the -2.4% in 2012) together with difficulties in the labour market and the uncertainties about the economic future. These conditions have slowed down consumption as well as investments, thus triggering, once again, a contraction of the domestic demand. Then, this condition has been worsened by the growing increase of markets concentration and by the raising of entry barriers and external competition of new world producers on foreign markets. The balance and the main trigger to the growth of the GDP has been provided by the positive increase in the exports counterbalanced by a reduction in the imports.

Among changes of consumer habits, there have been new opportunities related to the increasing focus on quality and healthy products. The Law n.4/2011 “Provisions for the labelling and the quality of food products” has established the System of national quality for the integrated production (SQNPI), aiming at “ensuring a quality of the final product significantly higher than the actual commercial rules”. Thus, despite the concerns related to the economic crisis, the agribusiness sector continued to push the demand for quality certifications, in order to differentiate the Italian products and increase the selling perspectives on the foreign markets (INEA, 2014). Noteworthy is the increase in production and consumption of organic food.

According with FIBL-IFOAM (2012), Italy is one of the 10 greatest producer countries, and it stands at second place after Spain, among the EU countries, for the surface sown with organic farming. In Italy, the organic surfaces are increased in 2013 by 12.8% over 2012, reaching 1,317,177 hectares, which represents the 3.5% of the worldwide organic surface (SINAB, 2013). With regard to the market value, in Italy reached 1.9 billion euro in 2012, of which if we consider the value of exports, it becomes 3.1 billion euro. Italy is thus the 4th country among the EU countries, with an incidence on the community turnover of 9% in relation to the organic foods and products (IFOAM).

Finally, we must remember that through this first chapter we tried to review the most important characteristics of the Italian agricultural system, highlighting some emerging trends. In the next chapter, we will try, through the media content analysis among the scrutinised sources of information, to get into the detail of the most important debates in order to achieve a good representation of the conditions (factors, demand, regulatory and market) that affect farmers’ strategies and the relative performances.
2 Media Content Analysis

In the following sections, we analyse the media coverage of primary producers’ sustainability profiles in Italy with regard to the specific groups of conditions identified in the SUFISA Conceptual Framework (WP1) and enumerated as follows: regulatory and policy, factors, demand, finance and risk management, socio-institutional, socio-demographic, ecological, technological. The conditions identified within the media analysis provided in this report are representative of the two main case studies for Italy (wine and pear) and for the three satellite case studies (fisheries, aquaculture and mussels). In the SUFISA share point a wider and deeper National Media Analysis, the Media analysis for the wine case study and Fisheries and aquaculture satellite case studies are available.

In more detail, we report below (Table 2.1) the press coverage in terms of the types of sources analysed. The research focused on the years 2012-2016. For some sources, time range is less wide because of limits in archives availability; some texts produced in the previous years have been also selected when deemed particularly relevant or pertinent.

<table>
<thead>
<tr>
<th>Source type</th>
<th>Texts number</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialised magazines / websites / blogs</td>
<td>86</td>
<td>46</td>
</tr>
<tr>
<td>Generalist newspapers / magazines/ websites / blogs</td>
<td>36</td>
<td>20</td>
</tr>
<tr>
<td>Government, NGO, farmers’ organisations</td>
<td>40</td>
<td>21</td>
</tr>
<tr>
<td>Scientific articles</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td><strong>TOT</strong></td>
<td><strong>185</strong></td>
<td></td>
</tr>
</tbody>
</table>

Text analysis has been conducted with the coding process described in the guidelines. Yet, NVIVO software has been used for the gathering and organisation of the findings, whereas actual textual coding has been done manually. Codes have been organised in four levels grid:

- text coding (in the original language, directly highlighted from the texts);
- substantive coding (words or short sentences in English, representing, summarising or gathering text coding outcomes);
- theoretical coding (conditions or related areas of concerns);
- condition groups derived from the Conceptual Framework.

The general picture drawn by the Italian media with regard to the conditions influencing farmers' actions and strategic choices highlights several key elements that confirm the analysis conducted on the international scientific literature alongside others more country-specific sources. It is worth noting here that, due to the nature of most of the analysed media sources, conditions are mainly discussed in critical terms and with focus on the problems (i.e. inefficiency, burdens, constraints, missed opportunities) more than on good practices.
The media report addresses these prevailing perspectives since they reflect the nature of the national and regional debate, often representing key aspects influencing farmers’ decision-making processes and strategies identification.

2.1 Regulatory and policy conditions

Two dominant aspects regard the presence of a burdensome regulation that farmers have to cope with and the public support. For example, several analysed sources generally argue that farmers’ production choices often follow CAP and EFF-FEP funding opportunities (Rep6, AG2, IPS1). These conditions are obviously related, since the support in EU is mostly conditioned to the adoption of certain practices, requiring farmers’ compliance of more and more pervasive norms. These features, which are crucial not only for Italian farmers, assume in Italy some specific characters, generally debated in highly critical terms on the media from regional to the global scale.

With regard to this debate, we can highlight four areas of concern:

1. The heavy bureaucracy burden, in terms of time and effort needed to comply with all bureaucratic duties at different administrative levels, but also in terms of the inefficiency, irrationality and delays characterising the action of the public sector. This is often mentioned among the main burdens any farmer has to face.

2. Taxation, usually considered high, unstable and then difficult to consider in a business plan, and not well tailored on actual farmers’ capabilities and needs. Taxes on farms’ value added and on farms’ land occupation (both for agriculture activity and for rural buildings) are apparent and highly debated - especially on specialised media - examples of these concerns.

3. Food regulation, is often felt as being influenced by interest other than (and even opposed to) Italian farmers’ ones (agro-food corporation, large retailers, northern European farming sector). Complaints are recorded, for example, with regard to the contents of foods (use of milk powder for cheese production, sugar added to wine, etc.) and to safety, standards based on industrial food characters.

4. European legislation (CAP), international agreements and geopolitical tensions, again perceived as damaging farmers' interests. This is for example the case for the preferences granted to Mediterranean extra-European countries for fruits and vegetables and to the ban vs Russia, which heavily affected export-oriented producers.

The first point regards the heavy burden of bureaucratic duties and the overall inefficiency of political actions are two well known - we may say "traditional" - critical observation raised in the debate, especially in the Italian public sphere, among generalist and specialised magazines (CdS1). Bureaucracy burden is referred to as a "monster" which has "devoured" more than 100 thousand farms because of the costs for bureaucratic duties. Moreover, also public administration inefficiencies (i.e. delays) but also, and not least, the amount of time required to accomplished with all the formal requirements have a negative impact on production (it has been estimated that 100 working days per year have to be devoted to bureaucratic work in each farm) (AN5). Bureaucratic obstacles are also mentioned in relation to outsourcing processes (AG3), to the duties young farmers have to accomplish with (IA45, IZ1) and to the access to credit (AN14, Sol1). Furthermore, the political inefficiency is also criticised both in the
public sphere (i.e. the weak protection of Italian products that is addressed also for the fishery sector - EFM6), and in the policy one. At this level, the debates point out several criticisms about the Italian politicians' capability to support national interest at EU level and within CAP negotiations. With regard to protection of Italian food quality, often debated are EU regulations setting industrial-based standards, like the possibility to add sugar to wine or to produce cheese with milk powder without adequate information to customers (CON6). Beyond the specific contestations, the quality and information standards are highly relevant for strategies based on (concepts of) quality.

With regard to the second point, the inadequate (too high, distortive) taxation on farms, are underlined by one of the most representative farmers' organisations "Confagricoltura" (CON1). Taxation is actually another highly relevant area of concern and one of the conditions that certainly influence the amount of resources farms can dedicate to implement new strategies, but also the direction of the change. Strategies like acquisition or abandonment of portions of land, their form of possession (property, renting), and adoption of production favoured by tax reliefs are directly influenced by the taxation system. Specifically debated in Italy are the IMU - taxations on farming land occupation -(Sol4, Sol9, Sol11 applied to farming; MIP1 for public waters used for aquaculture); on value added (AN20, Sol4), on waste collection (TV3). All these issues are debated per se, but also in relation to the need of having, a fiscal system tailored on the farming sector peculiarities (Sol4, AN20 for the specialised or economic magazines; CON1 CON2 for farmers' organisations in the policy sphere). The assessment of the burden added by each taxation is sometimes contested: the IMU, strongly contested by many farmers' groups, is considered not so hard to cope with by "Coldiretti" (i.e. one of the most representative farmers' organisations), which argued that a battle in this field would divert energies which would be better employed against other taxation areas (Sol4).

In the third point, the debates are often mentioned in relation to farming conditions such as labour, quality and hygiene standards and environmental protection. The former is mostly debated with specific attention paid to the illegal and "black" work employment, which exploit workers' rights (usually migrant workers, as highlighted in the next section). Moreover, other debates focus on the complex regulation of those grey areas (cooperatives, daily work) in which workers are legally employed but in bad living and wage conditions (IA8). The farmers' organisations are concerned with this issue that tend to outcompete small family farming in particular (CON16). In the scientific sphere, these themes are addressed at a more theoretical level with regard to the neo-liberal and free market dominance shaping contractual relations among weak and strong chains actors (ARE5). With regard to hygiene and safety standards, the discussions focus on the conditions to be accomplished for food (but even cattle) transportation, storage and processing (IA10). If standards are set according to industrial standards, they may create problems for small-scale productions and artisanal processing. Other standards are related to the contents and processing methods that are allowed, and to the traceability of these methods. The possibility for example to produce cheese with milk powder, or to add sugar to wine, and then to sell those products without those methods being communicated to consumers, has been strongly criticised by Coldiretti as a threat to traditional productions and national farmers: "the alchemy on the ingredients have denaturalised even the most common types of food". These "tricks", adds Coldiretti's article, "are a damage to countries like Italy which rely upon their primacy in food quality and safety" (Col7).
Environmental regulation is raised with regard to specific points, as for example the regulation on tractor engines use (AN19) and for the balance between farming activity and environmental protection (farming in protected areas constraints farmers’ activities but it is an opportunity to develop a better integration with territory and multifunctionality) (MIP4). Again, similar issues are debated for waters: impacts of aquaculture and its dependence (mainly in the case of bivalves) on coastal protection measures (FED6). In order to reduce negative impacts on the environment other regulations fix production limits and quotas. The milk quotas long-standing conflict has been extensively debated on the media, even in the not specialised ones, being one of the few technical issues related to the farming sector to become well know to the bulk of the population, not least as a consequence of the milk producers’ mobilisations and the consequent political struggles (Rep11, CON14). Public intervention on farming environmental impacts go beyond the imposition of limits and constraints, to involve active policy measures aimed at encouraging green and sustainable practices. This is another highly sensitive and influential field, as farmers’ direct payments provided by the CAP first pillar are a crucial source of income for many farmers, as well as other forms of support, that are often linked to the respect of ecological standards. A report from the Ministry of Agricultural policies underline the relevance of this link (MIP4) with specific focus on diversification and permanent grass maintenance).

With regard to the fourth point, the number and variety of specialised sources on the public sphere that give information and release critical observations (IA30) witness the relevance of public support provided by the two CAP pillars. The high reliance of farmers on the CAP for their production choices is explicitly highlighted in the generalist newspaper la "Repubblica", which witnesses how the colours of the countryside are determined year after year by the changing CAP support pushing one-production vs another (Rep5). A frequently commented condition (or, to better define it, a driver of change) is the decline of direct farmers’ support, which leads to a market re-orientation for many farmers (ARE6). These processes lead to the consideration that European agriculture (and Italian in particular, being Italy one of the main beneficiaries of the direct payments schemes), is "changing its face" (Rep11).

Some specific regulatory conditions have to be finally mentioned with regard to the fishery sector. This sector is distinctive as it is more a form of harvesting of natural resources that an actual farming or grazing activity (like aquaculture). Yet, the impact of human fishing (and in more general terms, the impact of human presence) on the natural resources that are being exploited is so high that strict regulation on the extraction of those "resources" (the fish) is required. In fact, fish size limits and definition (and enforcement) of the biological recovery periods are about the most debated fishery-related issues on mass newspapers (Rep 2, Rep4, Rep7), among fishery organisations (FED2, FED7) and by governmental documents (MIP1). The criteria adopted to regulate fishery, as the "fishing effort" to be applied to the fishing boats, are equally debated as one of the main influential conditions affecting fishermen activities and perspectives (MIP1).

### 2.2 Factor conditions

Sources analysing factor conditions for farmers tend to focus their attention around some key inputs and assets: land, labour, energy. These seem to be the most debated - if not the most relevant - on influencing farmers' choices. Other factors (raw materials, skills and know how)
are also discussed, yet with minor frequency. Within raw materials, there are concerns about seeds that are worth to underline. Furthermore, a peculiar form of input can be found in the fish stocks available for fishing. These stocks are actually more than a productive factor: they are the direct source of final product (as already underlined, fishing is closer to harvesting than to farming). A last important factor, technology, is not considered here, as it deserves, for its specificity and complexity, a dedicated section.

With regard to the first factor, land issues are frequently discussed mainly in relation to farming land loss due to the trend of expansion of built areas and to the competition exercised by non-agricultural activities (AN16, CdS1). The critical point related to this aspect is that urbanization and overbuilding processes usually occupy the most favourable (i.e. close to urban centres and to transport infrastructures) and fertile (e.g. plains, irrigated) arable land (unlike abandonment, which obviously tends to impact less valuable portions of land). Moreover, this point has been at the core of a recent position paper by the Ministry of Agricultural Policies, which also highlights how abandonment is normally a reversible process, while urbanisation is not (MIP2). Moreover, the debate around this trend is related also to the negative effects on prices that farmers have to afford for buying or renting arable land (Sta2). The problem is present by the farmers’ organisation in relation to landscape and environmental issues, which are probably present in the non-specialised readers' imaginary. Coldiretti states "Italy has to protect its own agricultural richness and the availability of fertile land from urbanization and abandonment" also in order "to protect territory and citizens [...] from landslides and floods" (AN16). In a very different context, the insufficient portions of territory available for production has been also raised in the aquaculture sector by a document produced in 2013 by the Italian institute for Environmental protection focused on the Sicilian context.

Concerning Labour availability sometimes is discussed in the context of wider analyses of socio-demographic and economic trends with two parallel observations proposed by press articles not specifically related to farming. The first one is a sort of "return to farming" wave among young urban, usually highly educated people, willing to engage in agriculture to find job opportunities but also a better quality of life. At the same time, and with regard to quite different working conditions and contexts, there are enquiries and studies highlighting the crucial role of migrants for those under-qualified agricultural jobs that Italians are (or are supposed to) not willing to do anymore, so that many typical Italian products are told to survive thanks to these new workers. The hard working conditions these workers are exposed to have attracted even Amnesty International’s interest in a 2013 report calling for urgent action to tackle migrants’ severe exploitation in the Italian food sector.2

Quite interestingly, recent articles underline that a rising number of Italian people seem to be looking for these jobs after losing their occupations (or never finding one) because of the economic crisis (FQ1). Women are found in particular heavy and weak conditions, as witnessed by a recent media investigation (Rep13). “Traditional” features of this illegal or grey zone of agriculture work, which tend to outcompete legal and ethical farming is the “caporale”, the informal broker between daily workforce and farms. On this aspect, much debate has also grown locally and in unsuspected sectors like wine. In Tuscany, the majority of debates in the

2 Andrew Wasley: "Migrant workers face 'severe exploitation' in Italy's farm sector". Ecologist, 4th Jan 2013.
last years concern the recent findings on the use of illegal hiring system in the vineyards and the subsequent need of more severe regulations and controls. Many local generalist newspapers refer to the problem of illegal hiring “caporalato” that exploit workers' rights and oblige workers to bad living and wage conditions, creating problem of work safety and an unfair competition on costs with legal farmers.

A different problem in relation to labour is the loss of traditional knowledge, that plays a crucial role in the implementation of the diversification strategies aiming at qualifying products through the valorisation of traditional varieties and artisanal processing (Rep6). These competences have sometimes to be re-learnt or acquired ex-novo.

With regard to Energy, the media debate that surrounds this important input for farming represents this factor as an important cost than as an opportunity. The costs for fuel for transports and warming, linked to the cost of oil but also to the tariffs on energy, are often regarded by farmers’ organisations as a burden for the farms and the whole food chain, raising final product prices and expanding the price-cost squeeze (COL5). Specific attention is given to fuel costs for fishing (ISP1, VNY1).

Seeds deserve a special attention as they represent also symbolically the tension between artisanal small-scale farming and industrial models of organisations. Seeds are the source of future crops, and a source of control and autonomy in the farming activity. A specialised website raised the issue of oligopoly control on seeds, arguing that 5 corporations control 95% of the European seeds market. Some articles on the PDO regulation and potentials (Rep7) and maybe more influentially some interventions by the popular Slow Food founder Carlo Petrini highlights the importance of farmers' controls on their seeds: "do not allow the life patent owners, merely looking for profit, prevail over peasants, who only aim at preserve, improve and select the seeds for their farming" (Rep5).

Some more specific concerns are mentioned in regard to the markets for raw materials. In the pasta industry, one of the flagships of the made in Italy food, nearly half of the wheat is imported from abroad. This import is not only crucial to ensure adequate amount of wheat, but also to improve the quality through varieties differentiation (FA1). A similar situation used to be debated during the milk quotas regime, now expired, that hampered Italian milk production potential and forced to import almost 40% of milk from overseas, to be used for final consumption and to prepare cheese (Rep14).

Some final considerations are reserved to the fishing sector. The fish stock trends have already been discussed in relation to regulation issues. It is here just worth underlining the decreasing amount of fish, in particular for some species that are on the verge of extinction in the Mediterranean basin. This common concern for stocks decline is to a certain extent contested by a sector organisation (Federcoopesca) which argued on 2014 that stocks are underestimated, and that this leads to excessive limits to fishing (FED7).

2.3 Demand conditions

The media debate on demand conditions is quite rich and vibrant, in particular for the public sphere. This is not surprising, as the demand market conditions and their determinants are
popular issues also among non-specialised media. As an overall view, low farm-gate prices and unpredictability are the key features of this area of concern. Conditions influencing these features are also frequently debated, in particular economic crisis effects, market power relations along the chains, food market globalisation and increased competition, new social concerns and expected food chains outcomes.

Products prices decline is discussed with particular regard for fresh and raw products, like fruits and vegetables (AN9) and raw milk (Rep9), but also in general terms (AN7, AN11). From another point of view, also in Tuscany it has started a discussion on the possibility of increasing wine prices. Indeed, Fabrizio Bindocci, president of the super consortium of premium producers "AVITO", declared in a recent interview for a local specialised media “the next move is to raise the selling prices of our wines and this is one of the topics that we will face in the forthcoming meetings of AVITO" (S_10_TOS24c, 2016). Moreover, this negative trend in conjunction with the stable or increasing costs farmers have to afford for their inputs (see previous section) leads to price-cost squeeze and farm income reduction (IA14, CON9). It is worth noting that still in 2010 a substantial stability in the price-costs ration for farmers had been recorded (IA36), but recent years the situation worsened and pessimist attitude spread.

Price volatility is a parallel converging factor that makes even more difficult farmers' management. Thus, the potential determinants of this unfavourable trend, with specific regard to the demand conditions, as emerging from the analysis, can be summarised as follows:

1. The farm location is still considered as an important condition for some productions, for two reasons. First, the combination of soil, climate and other ecosystem characters that can support or hamper high quality production. Second, the proximity to end markets relevant for transport time and costs but also for the possibility to establish direct links with customers (ARE2) and to transport infrastructures, a particularly relevant issue for fresh produce (IA40).

2. An increased horizontal competition among primary producers, both within the EU and with extra-UE competitors (IA21). It is important in this regard the role played by the EU agreements with northern African countries already mentioned in the "regulation and policy" section which is perceived as a main threat given the similarities between Northern Africa and Italian products. This particularly affects farmers who are not able or in condition to process their products, as raw materials see their price particularly exposed to foreign competition (Rep9).

3. A growing vertical competition between actors playing at the various steps of the supply chains (farmers, agro-industry, retailers), in which farmers often are in the weakest position (IA21). Large retailers are often mentioned as the actors able to push down farm gate prices and to force producers to work at the limits of their economic sustainability if not below. Large distribution discount policies are underlined as a strategy with heavy impacts on producers (AGR3). The problem has also reached the non-specialised media, for example with regard to the milk sector crisis. Market power unfair relations in the sector are witnessed by the diverging trends between the slightly increasing milk prices for the final consumers and the declining farm gate prices received by the producers (Rep9, Sta2). Coldiretti president denounced in 2015 that if milk producers’ situation will not be effectively addressed Italy may lose "a national asset upon which a sustainable and durable economic recovery, beneficial for environment and health, could be built" (Rep9). Farmers' fragmentation is mentioned
as a factor that further limits the possibility of a re-balance in the difficult market confrontation with powerful downstream players (IA31). More pro-partnership attitudes are hence suggested within the policy and the scientific sphere, as brilliantly suggested by the title of a scientific paper (ARE8): "Competing on the agro-food markets, for the farms, means "cum petere" (in Italian language the roots of the verb "competerre" in the Latin expression "cum petere" = "demand together") are more easily recognisable).

4. The raising market volatility due to their internationalisation and financialization, with commodities that are being interested financial speculation (discussed in the following section). Market unpredictability links with internationalisation trends with their complex and sometimes-contradictory effects are well argued in an article published on the Agricultural supplement of the most influential economic newspaper "Il Sole 24ore". It is argued that "the quiet markets that had characterised EU environment now left the floor to nervous, unstable and highly interconnected markets, more and more sensitive to a wide and diversified range of factors, even far away from the agricultural system [...] like oil price, currency exchange rates, inflation levels" (AGS1). Geopolitical tensions, exemplified by the Russian ban with its potentially double-faced impacts - are also part of this new global market landscape (AN10). These trends create difficulties and risks but also opportunities, as suggested by the magazine in a competitiveness neo-liberal perspective, to exploit the new demand for commodities by some emerging and densely populated area of the globe. Moving towards more marketing-oriented and risk-management strategies should help Italian producers to cope with the new conditions (AGS1).

5. Economic crisis with its effects on demand patterns. The domestic demand stagnation has been mentioned as a factor of crisis for producers, and as a factor that should trigger an internalisation of their market strategies (AG3). Farmers' organisations showed concern for these trends: low internal demand, increasing unemployment, scarce investments and competitiveness loss are all features of the same recession trend, yet export can still be seen as a point of strength for the sector (Con3). This situation should push political intervention for an effective internal support and for an adequate representation of national interest in the CAP negotiations (Con1, Con2).

Another relevant set of conditions influencing demand's trends is related to global trade changes and geopolitical tensions. Market liberalisation is often regarded as a major driver of change, leading to a more intense horizontal and vertical (along the chain) competition in conjunction with support decline (Ags1, IA21). The bans vs Russia is a debated example of the impacts that geopolitical tensions can play have on Italian export-oriented producers, like in the fruit and vegs sector, with the following request for EU support in various forms to counterbalance embargo's effects (FQ2).

Beyond these often-unfavourable economic trends (yet capable to provide new opportunities for the farm able to grasp them), there are the emerging new social demands and expectation vis-a-vis farming that are shaping the development trajectories of many small and medium sized farms. These trends, described by a wide body of scientific literature both at national and international level, range from more environmentally friendly and ethical food production techniques (IA32, Rep6), to new farms products (biomasses, bio-energy) (Ags1, IA17), to new green services, like in particular domestic and public green collection in urban areas and waters management in peri-urban and rural areas (IA29). This multifaceted set of expectations
which leads farmers towards diversification and multifunctionality (but also towards a possible specialisation in green services with a shift in the core-business - IA29), is debated on the media as an emerging consumption trend and lifestyle which farmers have to profit of. The widespread presence of small scale and family-owned farms, in other regards a possible obstacle to development trajectories, provides a fertile pre-condition for the implementation of multifunctional development paths (CEEOL1). Opportunities are not only in terms of meeting new social requirements in relation to processes and products, but also in terms of replacing imports that are increasingly perceived as unethical (palm oil) with internal more sustainable productions (sunflower) (Rep6).

2.4 Finance and risk management conditions

Finance and risk management farmers' conditions are poorly represented on the media, most likely because of their technical and specific character. Not surprisingly, many of the sources where elements have been found in this area of concern belong to the policy/market and to the scientific sphere. There is an exception: the credit crunch many farmers seem to be exposed to, a socially sensitive issue, which has a certain presence even in non-specialised media. Farmers' risks also attract mass media attention when extreme weather events occur, but the discussion hardly extends to financial and insurance tools.

The most debated financial issues seem to converge within two areas of concern:

1. A persistent condition of agrarian credit shrinking that locks farmers in a credit crunch, making it difficult to manage cash flow cycles and investment.
2. An inadequate finance and risk management socio-institutional environment. Public intervention for agricultural risk management has a long tradition in Italy, but the emergence of new risks, as well as the increasing use of financial tools, requires innovative management (and expertise), which is rarely available.

With regard to the first point, the scrutinised sources highlight the reasons for which farmers are exposed to business risks. Some of them are already been described in the previous sections: less predictable market trends, price-cost squeeze in a context of weaker public support, delays in the payments that may become non-performing trade credits (AN3). Delays in payments are a condition that we also found through the interviews conducted locally within the wine case study. Where different producers mentioned the difficulties in the management related to the fact that they systematically do not receive payment and they have no extra resources to enable debt collection.

The second point is related to some other factors (i.e. extreme weather events, cash flow management tools) that will be described below. All these factors increase farmers' exposure to risk and their need to rely upon credit and insurance markets tailored on their needs, as well as to forms of public support.

Risk management tools are a crucial area of concern for farms. It has been underlined that public intervention in agricultural risk management has a long tradition in Italy (Enjolras et al. 2012) (AER1). For example, the "Fondo di Solidarietà Nazionale in Agricoltura" (National Solidarity Funds for Agriculture) created in 1974, delivers two types of services: financing of
insurance policy and ex-post payments when extreme events or other accidents have occurred: in case an exceptional event occurs, farmers are entitled to a compensation for the damages suffered. The above-mentioned risks are related to specific events or trends that can threaten farmers' financial sustainability.

A different area of concern that determines farmers' financial needs is represented by "structural" short-term cash flow problems, which can arise in relation to the seasonal mismatch between inward and outward cash flows (CON10). These problems also require access to short-term credit. A need for new risk management, insurance and cash flow management tools has been hence raised (ARE1), in a context in which an increasing farmers' interest for, and use of, financial services like credit, insurance, finance (PAGRI1) is not matched by an offer of tools (leasing, factoring, private equity) actually tailored on farms characters and capabilities (CON15).

The need of credit for long-term investments, at reasonable interest rates and conditions for access, is another widespread feature (AN14, IA2). Farmers express need for funds to be invested to cope with the crisis and to be ready to profit of the first signs of economic recovery (CON15).

Nevertheless, agrarian credit is shrinking, and farmers' credit crunch is witnessed by many sources analysed (AN3, AN14, IA1). The situation is made even more complex by the high indebtedness rates already showed by (mainly Southern) farmers with the private bank system (AN1) and by the new regulation adopted under the umbrella of the Basilea 2 agreement (IA1). As argued by a specialised magazine "banks hardly meet farms' financial needs [with] continuously raising costs and frequent cases of credit denial" (IA2). According to Copagri (an organisation representing about half a million of agricultural producers) the too heavy requirements, high interest rates but also the long time required to conclude the credit granting procedure are among the main facors hampering farmers' access to credit. "The farm" it is argued by Copagri "is a comprehensive endeavour, and if the financial tools part is missing, well known processes leading to farms' closure would be triggered again" (AN14). If seen in combination with the CAP second pillar implementation, this difficult credit access leads to distortion in the public resources allocation, favouring the willing-to-be beneficiaries more capable to co-finance in-house instead of the best entrepreneurial ideas. In short, there are some effective tools embedded in a positive tradition of rural credit and finance, but some problems arise with regard to the impact of the crisis and to the full exploitation of the new financial tools potentially available. Confagricoltura's President has summarised these observations as follows: "the quality of credit to farms worsened, as witnessed by the increase in short-term versus long-term credits, usually aimed at investments […] other financial tools like leasing and factoring, more adopted in other sectors, have met scarce success in agriculture, as well as the private equity" (CON15).

A possible strategy to overcome these problems is seen in cooperation and partnership. There is in Italy a traditional presence of rural credit and cooperative credit institutes scattered on the territory. Agreements between these financial institutions and farmers' organisations have sometimes played a role to have a smoother access to credit and other tailored financial tools for farmers that would hardly get them in a free credit market (CON10). In-house bodies have been created by the most representative farmers' organisations to face credit crunch and to support with their guarantees farmers' credit access (CON1).
With regard to the problem of credit access, the wine sector in Tuscany has some peculiarities and elements that differ from the situation of other sectors in the country. As emerged from the scrutinised sources, comparing to other sectors, particularly for Tuscany, the producers have suffered less from the general financial crisis. The negative financial aspects described above have been in some cases mitigated by the high value of productions and properties. Not lacking in Tuscany cases where the bottles acquire the value of options whose yields are often much higher than those offered by traditional equities. Furthermore, in other cases, are the high value of the land and of the estates (S_12_WSJ, 2015; S_13_WSJ, 2015) that provide guarantees for bank system and access to credit. It is worth adding that a hectare of land planted with brunello worth 350,000 euros (S_14_TOS24e, 2016). The opportunities that are related to the regional production system and to the type of products have allowed producers, in some cases, to be less affected by the general climate of distrust and difficulties. From the interviews, it was found for example that banks often seek after some producers to offer them investment loans on extremely favourable terms.

Again, some specific analyses can be mentioned in relation to aquaculture. As previously argued the sector shares some features with farming activity, alongside some peculiarities. Among the first ones the mismatch between economic and financial cycles has been mentioned, due to the biological cycles of breeding. This causes a specific need of capital to finance working capital (AJABS1). Among the peculiarities, the high investments needed to establish an aquaculture farm and the high capital intensity lead to the need to generate adequate cash flow to repay farms’ investment in fixed assets. In this fragile context, the occurrence of crises or accidents "may force companies to default, especially when firms are unable to cover debt repayment" (AJABS1). Hence, financial and policy measures have to be tailored for this specific technical and biophysical conditions.

2.5 Socio-institutional conditions

Socio-institutional conditions refer to a range of factors involving social groups’ attitudes towards cooperation and partnerships, networks, economic arrangements, formal and informal institution. Discussion on these issues is less frequent in the mass media but also in the specialised magazines, that more often deal with economic, financial or technical problems. Hence, the majority of pertinent sources have been found within the scientific, and to a certain extent within the policy/market spheres.

Socio-institutional conditions must be read in the light of their profound interaction with other groups of conditions. For example, the role of a pro-active and supportive attitude of the local administration is certainly important in itself, but also deeply interrelated to the actual contents of regulation and policies, whereas the presence of networks of innovation based on common commitments and mutual trust is clearly supportive to a technological condition like farms’ access to technology.

Administration efficiency and presence of socio-technical innovation system are actually two of the socio-institutional conditions emerging from the media analysis, alongside food chains existing arrangements and social capital, an umbrella definition gathering elements like trust, informal rules, producers’ organisations and their relations with other constituencies.
Criminality is another socio-institutional condition that deserves to be mentioned, as its influence of the primary sector is unfortunately relevant and witnessed in the selected sources. Finally, some international tension has to be mentioned in relation to the fishing activity in the Mediterranean. The efficiency and attitude of administration is assessed, when it comes to the fore, in usually negative terms. Farmers have to cope with heavy bureaucracy burden in terms of costs, efforts and time, and with delays in administration feedbacks (CdS1, IA20, IA45, I21). These conditions have been already mentioned in the "regulation and policy" section. What matters here, is that these inefficiencies are perceived as part of a general inadequacy of the public sector and the institutions. In this regard, more specific concerns arise with regard to advanced form of support institutions are supposed to give to farms. With regard to the farmers' participation to an important source of income and innovation like the agro-environmental schemes, it had been argued in 2008 that policy makers had limited experience on how farmers actually approached this opportunity (Jae1).

More recently, a Confagricoltura's position paper underlined that institutions were not always able to valorise or disseminate agricultural-born innovations (CON7). The position paper is actually a confirmation of the importance of the administration’s role in support to farmers' development and adaptation to a changing environment, but it identifies some weaknesses and areas of possible improvements. More efforts (not only in terms of resources, but also in terms of a clear political will) should be devoted to the cooperation between research bodies, enterprises and professional organisations. More originally, a paradigm shift is invoked, for which attention should be paid not only to the introduction of innovation into agriculture, but also to the valorisation of farmers' contribution to innovation (CON7).

If innovation is not only an outcome of individual skills and entrepreneurship, or of a public-supported innovation network, farmers' networking and partnerships are another social arena in which new solutions can be envisaged and implemented.

The cultural attitude to move beyond mere market competition in order to establish cooperation networks is mentioned as a key condition by an officer of Piedmont Region (ARE11). Similar concepts are expressed in more critical terms by the president of ISMEA - a public body delivering services to agro-food markets actors - who argue that "farmers are [individually] clever, but there is a problem of agricultural social capital [...] we must promote the theme of producers' organisation, which is crucial in countries like Spain and France".

Existing food chain arrangements represent important conditions influencing farms' strategies, while at the same time they are part of the strategies themselves, when farms decide to change the current state of art establishing new supply chains or transforming the existing ones. The trends towards further integration of agricultural production in the agro-food chains (vertical integration as well as higher reliance on external services) (PAGR1) and the diffusion of alternative food networks, but also their tendency towards conventionalisation (IJSAF1) are in this regard results of farm’s strategies, but also examples other farms can or need to follow in order to keep competitiveness.

A description of farming socio-institutional context would not be exhaustive without the presence of criminality and its involvement in agro-food chains being mentioned. The Ministry of Agriculture dedicated a report to the wide-ranging issue of crime in agriculture in 2015 that was also a theme debated by farmers' organisations as Coldiretti (Col2). The report highlights that criminality and corruption are important features of Italian socio-institutional landscape,
even in the primary sector, evidence that inspired the definition of "agro-mafie" (following the already existing "eco-mafie") to define a new attractive area of expansion of criminality. Some agro-mafie activities highlighted in the report, which are relevant for our analysis, are enumerated as follows (Col2):

- acquisition of agricultural assets (land, cattle, farms) though blackmail, extortionate interest rates and other illegal practices;
- black workforce management through the so-called "caporalato";
- management of inputs supply and products' storage and transports

With regard to fishery, a brief mention has to be dedicated to a specific condition: the tensions and conflicts that sometimes arise in relation to the presence on Italian fishing vessels in waters that are considered by northern African countries within their territorial borders. Fishing ones are actually not agreed or not clearly delimited, and some "free rider" behaviours can be also presumed. In a context of shrinking fish stocks, at least or some species, these conflicts even result in military confrontations (Rep2) and assume political relevance (ISP1).

2.6 Socio-demographic conditions

Changes in socio-demographic conditions are a minor component of farmers' conditions in the media analysis. This is probably due to their mostly indirect impact on farms' activity, which leads to address them in other groups. This is for example the case of the new demand patterns for agricultural products and services (IA14, IA15, IA29), which are accounted for in the "Demand" section. An emerging interest for "fishing tourism" is also witnessed (MIP3), which opens new pathways for fishing companies.

Similarly, the social attitudes towards GMOs can also be considered as a social feature influencing demand patterns, as well as the food scares and the emerging concerns for the wider impacts of the food supply chains.

It is just worth underlining here the social transformation lying behind those trends. The new demand patterns are seen as an outcome of wider changes in the social expectations vis-a-vis food, agriculture and rural areas. These elements are particularly strong in Italy with regard to the typicality of the products and to their being, part of a cultural heritage Italy can be proud of it. Issues related to the ecological impacts of food production and distribution are also present in the newspapers (IA32, IA41), yet they seem to be still not so crucial on influencing the majority of consumers' choices. The widening range of social expectations paves the way to diversification and multifunctionality, yet at the same, time as argued by two researchers after long conversations with farmers, they risk a sort of loss of identity, as they perceive that their specific core activity (food production) seems to be not recognised in its value (ARE2).

In a different perspective, the increasing demand for processed food (IA25) witnesses the changes in people everyday life, and encourages the supply chains actors (farmers and/or retailers according to the chain) to invest in that market segment.
Generational renewal is a more typical socio-demographic condition that influences farmers' strategies in various ways. On the one side, there is (or there used to be) a difficulty on finding Italian young people willing to work in the farming sector. At opposite, the role of migrants in that position is now dominant; on the other, the scarce interest showed by younger generations on inheriting their parents' farm influence the strategies as old generations are not necessarily designing their strategies in order to save the assets for the new generations.

These features are anyway changing, at least in the media perception, in consequence of the high youth unemployment rates and of a renewed interest for agriculture and rural life. A Coldiretti press article witnesses this growing willingness to become farmer among young people, even "new entrants from other sectors and different familiar backgrounds who chose to invest in agriculture" and reveal that, according to a survey, a surprising "one Italian out of three dreams his children becoming farmers" (Col4).

2.7 Ecological conditions

Some of the most debated ecological conditions represent wide-spread concerns whose influence goes much beyond the Italian borders and the farmers' environment. Global warming and desertification, sea warming and eutrophication, more frequent extreme weather events, like heavy storms, windstorms, draughts and freezes are often mentioned in the media, sometimes in relation to their impacts on farmers' activity. Eutrophication is regarded as a threat for the fishery sector, but in particular for aquaculture, which often takes place in lagunas and internal waters, more sensitive to that challenge (like in the Orbetello area - EFM5).

A specific area of concern can be seen in soil erosion and degradation. Climate change is a driver for it, alongside direct human interventions. One of the drivers is identified within the agricultural sector, as soil degradation is caused by demographic pressure, agriculture intensification and unsustainable natural resources use, with an increasing risk of desertification (REA2). The reduction of arable land is not only perceived as impoverished in qualitative term. It is also perceived as a reduction in quantitative terms, as mentioned in the factors' section. Overbuilding is a major cause for arable land reduction, as argued by a governmental document on the issue (MIP2). In the document, it is argued how urbanization and overbuilding occupy the most favourable and fertile arable land, unlike abandonment, which mainly regards less productive areas. Hydrogeological impacts due to overbuilding and soil sealing effects (landslides are more and more frequent events) are also underlined in the document.

A specific consequence of climate change together with the proliferation of global transportation that is breaking down biogeographical boundaries is represented by the "new pests" invasion. Species already present in the Italian countryside but now more aggressive, like the olive fruit fly, or the newcomer bacterium Xylella fastidiosa had a shocking impact on olive oil production in Southern Italy (especially in Apulia, Rep10), and still contested are the ways to cope with the problem avoiding further diffusion of those pests (CON11). Similar concerns are expressed in relation to the possible invasion of alien species in the Mediterranean Sea and in the rivers (ISP1).
Soil pollution is another critical condition farmer have to face. Although this can be considered a general concern, in some areas there is a specific alarm, which has gained ground on the media. At least two cases can be underlined.

Great coverage has been given in the last years to soil pollution in the "Terra dei fuochi" (Land of fires), in Campania region, where portions of countryside are used for illegal waste disposal (CdS3).

Some (minor) media coverage has been also given to marine oil extraction platforms impacts on the seas, due to human activities in general but mainly to the presence of oil extraction platforms and related transports, which are told to heavily affect marine wildlife and biological processes. The recent (2014) decree "Unlock Italy", giving green light to petroleum royalties to start drilling in the Italian territory (on the dry land but also on the seas) increased the concern for this risk (FED1).

Overfishing (due to increased global demand - for example red tuna is highly popular in Japan) and to the availability of more effective tools to indentify fishes shoals and schools and illegal trawling are among the other threats to sustainability of fishing, despite the presence of enforced biological recovery periods and fish size limits (CdS6, ISP1).

A threat to farmers that has recently regained ground on the media is wild boars "invasion". These typical animals of Italian Apennines are being more and more often spotted on the outskirts of big cities and countryside villages, becoming also a danger for people but in particular for farming activity. Norms in wildlife protection but also the repopulation aimed at providing preys to hunters made wild boars population increase and their voracious and disruptive behaviour creates problems to agriculture in various areas of the country (Rep15, Rep16). Farmers ask for a stop to the (official and informal) repopulation and for a specific attention being paid to the agricultural zones, where the presence of wild boars (as well as other dangerous species) should be banned (Rep16). Moreover, the invasion of wild boars is creating serious concerns to Tuscan wine producers. With regard to the invasion of wild boars in Tuscany, according to a report in the New York Times, the region is swarming with an exploding population of wild boars and deer that savour the sugary grapes and the vines’ tender sprouts. "There are currently more than four times the number of boar and deer in the Tuscan region than any other region in Italy, and in Europe only parts of Austria have more of the species" (S2_GRWM, 2016; G_6_NYT, 2016).

2.8 Technological conditions

Technological conditions are mostly discussed in relation to the availability of a range of innovative high-tech solutions and tools which are not always exploited by farmers, and whose adoption could be highly beneficial for them. There is, hence, a potential to be exploited. These concerns are shared among the three spheres (and they touch the fishing sector, where technological backwardness of ships is discussed - ISP1) and have a range of potential implications.

In its already mentioned position paper on the role research and innovation should play for agriculture, Confagricoltura argues that there is a big potential for the development of a "science for farming" more and more tailored on farmers’ needs (Con7). The focal point of the position paper is that "agriculture’s role in innovation" should be encouraged and
strengthened, more than the more traditional "innovations' role in agriculture". In other words, farmers should be regarded as innovation makers - with research and extension centers playing a crucial role of brokerage and support - not only as innovation takers.

New technologies can be used to typify the produce and to establish new market channels thanks to the Internet and other info-tech devices (ARE2). The development and adoption of these innovations requires the final overcoming of the digital divide still affecting remote rural areas (IA43). Despite this limitation, the increasing diffusion of "agricultural apps", available for smart phones and tablets, witness their importance as tools to support farmers' decision-making. Some high-tech devices are also useful for rapid information exchange, remote control and monitoring of farming and livestock. These developments encourage a return to traditional farming practices after decades in which efficiency seemed to be linked to hard machineries and monocultures, as they enable even small-scale farmers to control their activity with low-impact technologies: "Thanks to new technologies life in the farms becomes easier and less hard than it used to be" (RH2). The diffusion of info-tech-based "integrated logistics networks" should support farms' marketing in sectors where logistics is more complex, like wine (IA44). These potentials are not only in relation to process innovation: even products innovation embedded in traditional productions made the latter more able to compete on the markets (Con7).

The institutional system is not always capable to promote innovations and extension services, as already argued in a previous section. A 2013 article of the specialised magazine "l'Informatore Agrario" highlights that there are at least three "learning gaps" hampering farmers' use of these services that are enumerated as follows:

- An access gap (difficult access to the services).
- A product gap (services not tailored on farmers' problems and needs, or inadequacy of the service provider)
- A conscious gap when farmers are not willing to profit of these services for personal reasons (low trust, aim of self-sufficiency, old age) (IA18).

Another specific feature of farmers' relation with technology is the choice between machinery's ownership and externalisation. A 2013 survey on agricultural machinery markets reveals a trend towards externalisation, as farmers consider the direct ownership of machinery too costly, especially in a context of economic crisis and price-costs squeeze. Furthermore, the farmers' ageing process even strengthens this trend, as the time required to make the investment profitable not rarely exceeds the remaining working life of the farmer (Ag2). The externalisation of production phases and services "contoterzismo" acquires more and more relevance. In some sectors, like wine production, the need to cope with international markets quality standards, while keeping an eye on costs reduction, leads many firms to high degrees of externalisation: In Tuscany, several producers carried out by external specialised firms the bottling phase, whereas the farm owner is only in charge of wine production, processing, marketing and management.

Among the technological conditions debated on the media, GMOs are probably the most debated and contested at least among non-specialised sources. In Italy, the majority of people seems to be adverse to the introduction of GMOs production in Italy, as well as most of the political parties. More fragmented are the positions among experts and stakeholders, even if the majority seems to be against the introduction. Without addressing this highly complex
issue in depth, it is here worth briefly mentioning how the farmers perceive GMOs. It is worth highlighting the positions expressed by the two main producers' representations: Coldiretti (mostly representative of small farmers) and Confagricoltura, more representative of the large ones. Coldiretti (Col12) underlines that GMO technology leads to power concentration in few large companies and that they tend to create unacceptable property rights on living beings and varieties. Besides, they threat biodiversity, which is a richness for the specificities of Italian agriculture, and they encourage antibiotics resistance, leading farmers to a sort of technological lock-in vis-a-vis sector's corporations. Confagricoltura (CON 12) emphasises the paradox of a country where GMO food is not produced but is imported, to be used also in typical Italian productions, and that limiting the research in open fields hampers Italian scientific community from being updated and able to grasp of new possible opportunities in this field.
3 Italian Case Study A: The analysis of regulatory and market conditions for wine producers in Tuscany

3.1 Case study introduction

The objective of this case study is to deepen the relevant regulatory and market conditions influencing wine producers’ choices in Tuscany, Italy. The analysis describes the fundamental characteristics of regional production and its relationship with the level of regulation and the level of quality achieved in the area.

The wine producers are exposed to several uncertainties and market risks such as the steady decline of the internal demand, the changes in consumer tastes and consumption patterns, the increasing competition from new producing countries and among traditional ones (Rocchi and Gabbai, 2013). In addition, the presence of over-regulation and the raise of environmental concerns determine other sources of uncertainty for winegrowers. Despite these difficulties, which were exacerbated by the economic crisis that affects the national economy since 2008, the wine production still represents one of the excellences of the Tuscan territory and one of the leading sectors of the agri-food Italian industry. The importance of the sector derives from the ability of its actors to combine innovation and traditions. From the one hand, there is a continuous evolution of the most advanced industrial technologies and the most innovative marketing strategies. From the other hand, in this industrial milieu, we found the enhancement of agricultural traditions and local culture, which are important points of reference for any type of innovative and sustainable development. Thus, the picture that we discovered outlines a complex representation of conditions, strategies and performance that provides a rich framework to feed the theoretical analysis of WP1.

The application of the CSP framework to the Tuscan wine sector reveals the importance of closer vertical linkages driven by product diversification towards premium wines, which have been developed through investments on highly specific assets drawn by the brand image of the popular Tuscan Terroir. In this economic space, the wine producer’s profile is often similar to the description provided by Hugh Johnson, in 1989, such as "farmer and artist, labourer and dreamer, hedonist and masochist, alchemist and accounting, and he is all of this since the time of the great deluge". Most of these producers have been able to transform their territory and their products in winning assets to remain competitive on foreign markets. When a wine and its defined conventional quality become a critical strategic space of the economy (Salais and Storper, 1992), the territory and its highly specific factor endowment such as identity (Certomà, 2011) define the system conditions. Consequently, the identity of the product refers to a domestic convention (Eymard-Duvernay, 1989; Sylvander 1995; Thevenot 1995) in which the definition of quality is guaranteed by the repetition of history in that specific region or country of origin and communicated by a brand name. According to Ponte (2009), the conventions that have developed in this system (i.e. domestic, industrial, market, civic, inspiration and opinion), which help to define and identify the produced quality and the basic conditions to reach it, as well as the relations and coordination within the sector, resulting from the uncertainty and variability on quality. In this case, the price alone cannot guarantee the definition and identification of quality (Eymard-Duvernay, 1989), just as it cannot guarantee the success of transactions and trade for producers. Consequently, in order to

---

3 Authors: Daniele Vergamini, Paolo Prosperi, Fabio Bartolini, Gianluca Brunori, Stefano Grando (UNIPI)
minimize this variability and the related transaction costs, many Tuscan producers have relied on the vertical coordination of all the production stages. Thus, conventions are related with the system conditions that affect the quality and transactions. The changes in transaction environment, involving product characteristics such as quality, quantity and price uncertainty, alter transaction costs, thereby influencing producers’ strategies. Furthermore, through the diversification of products and sales channels they managed to overcome market cyclical fluctuations, defusing risks and competition's pressures (Hobbs and Young, 2001).

3.1.1 Vineyard area and wine production in Italy

According to the latest agricultural census ISTAT 2010, in the recent decades, the area under vines in Italy has steadily declined. In the decade 2000-2010, the National Institute of Statistics recorded a decrease of about 12%. The vineyard area has moved from an average of 710,000 hectares in 2000 to about 632,000 hectares in 2010. If we look at the surface that Italy was investing with vines in 1982 (Figure 3.1), the country has lost about 48% of the vineyard area (i.e. -30% North and -50%, -55% Center, South and Islands). Furthermore, also the number of farms declined during this period. In 1982, there were 1.6 million of winemakers. Then from 1982 to the last census of 2010 this number decreased to about one quarter (383,000). Whereas the vineyard area has been halved since 1982, this has contributed to double the average farm size from 0.7 to 1.6 hectares per farm.

![Figure 3.1. Vineyard area in Italy - ha/1000 – ISTAT](source: our elaboration on ISTAT data)

However, region-by-region, the trend over the last decade has been very uneven. While some regions have even increased the vineyard area (i.e. Friuli Venezia Giulia and Trentino Alto Adige +10%), others such as Veneto remained stable or like Tuscany who have suffered minor losses (i.e. -3%). Therefore, the decrease of 12% is mainly attributable to the Central Italy (-
18%) and South Islands (-16%) where despite Tuscany, Sicily, Puglia and Abruzzo, all other regions are falling sharply, while the North has contributed to a very small part (-3%).

From the one hand, the reduction of the Italian vineyard can be related to the process of revision of the common market organisation for wine (Wine CMO). Thus, as we will analyse in the next sections, the investments in new vineyard have been bounded by the strict control over production potential and to the regime of planting rights. Indeed, a one of the producers interviewed in the province of Lucca, told us that in the past he was intentioned to expand his production, but given the legislation constraints he could not proceed in this direction. However, today since the system is changed he would like to rent the land to increase the production (W: Interviewee 2). The EU legislator has promoted a rebalancing of the EU wine supply through the promotion of a process of reduction (eradication) of vineyards. From the other hand, thanks to the process of farm modernization with a positive role of the common agricultural policy (CAP) the declining trend can be related to a better use or to an increase in productivity, denoting an improvement of Italian organizational and production models towards greater efficiency.

According to data published by ISTAT, in Italy in 2015 were produced around 48.2 million hectolitres, about 6% more than the average of the past decade (45 million hectolitres) and 15% more than the poor 2014. In order to analyse the yield per hectares, we should refer to the data of 2010 (those from the last census). In 2010, it was produced 46.7 million hectolitres, of which 44.7 million hectolitres of wine and 2 million hectolitres of must (mainly coming from Sicily, Puglia and Emilia Romagna). The production of 46.7 million hectolitres with 64.3 million tonnes of grape harvested indicates a yield per hectare of 98 quintals per hectare, which is in between the high value of the North Italy, where yields per hectare remain over 120 quintals, and the loss of importance of central Italy, where in some years are less than 80 quintals.

The national production of red and rosé wines was higher than that of white wines until 2010 (Figure 3.2).

Figure 3.2. Wine production in Italy (Million hectolitres) - ISTAT

(Source: our elaboration on ISTAT data)
In 2010, according to ISTAT figures it was produced about 22.529 million hectolitres of red and rosé wine, 22.174 million hectolitres of white and 2,041 million hectolitres of must. From 2010 to 2014, the production of red and rosé decreased by 16% compared with the slight decline of whites (-5%), thus the production of white overcome the reds. In 2014, they were produced in Italy about 18.867 million hectolitres of red and rosé, 20.874 million hectolitres of white and 2,346 million hectolitres of must. In the analysed decade both, the production of white wine and must have maintained a more constant performance compared to red and rosé.

According to data provided by the Italian institute for studies, research and information on the agricultural market (ISMEA) in 2013 the Italian PDO amounted to 405 (332 Doc and 73 DOCG) and 118 PGI. The region with the highest number of PDO and PGI wines was Piedmont (58), who was accompanied by Tuscany (57). Followed by Veneto with 52 denominations, Lombardy with 42, and with almost 40, Puglia and Lazio. Over 41% of the total denominations are concentrated in Northern Italy, followed by the Centre and the South with an almost similar weight (21-25%) and the Islands (12%). The same concentration can also be observed from the analysis of the production volumes. In 2013, the PDO denominations cover the 60-62% of the production potential and of the certified production including Veneto, Piedmont, Tuscany, Emilia Romagna, Abruzzo and Trentino Alto Adige. The PGI productions in Veneto cover about 80% of the same.

Moreover, the ISMEA analysis shows that in 2012 the production in areas under PDO and PGI wines amounted to more than 338,000 hectares, or nearly 76% of total Italian wine-growing areas. Comparing the 2013 with the 2012, the PDO and PGI wines show a decrease of more than 7% in surface areas and 4.5% in potential output. The downscaling of production mainly concerns PGI wines, while wines PDO wines reduction is lower.

Indeed in 2014, the Italian production of PDO wines was 16.3 million hectolitres (i.e. the 40% of Italian production), scoring an increase of 4% compared to 2010 (i.e. 15.782 hectolitres million) and 6% higher than the historical average (i.e. from the 2005 to 2014 about 15 million hectolitres). At opposite, the PGI wines have suffered a decline (-4%), going from 14.023 million in 2010 to 13.452 million hectolitres in 2014 (i.e. the 32% of the Italian production). Furthermore, the structural decline is now evident for table wine. With 9.9 million hectolitres in 2014 (i.e. the 30% of the Italian production), the production of table wine is decreased by 30% compared to 2010 (14.989 million hectolitres), falling below the average level for the same level (i.e. from 2005 to 2014 it is about 14.523 million hectolitres).

Analysing the regional data, in 2014, the region with the largest production of PDO wines was Veneto, with 4.2 million hectolitres, followed by Piedmont (2.1 million) and Tuscany (1.7 million). With regard to PGI wines, the largest producer was again Veneto with 3.5 million hectolitres, followed by Emilia Romagna and Sicily in 2.7 million with 2.2 million. However, this figure fails to grasp the basic difference between the regions of northern and central-southern Italy as appears to be strongly influenced by the performance of the single vintage.

According to the estimation of the value of the production of Italian wines provided by ISMEA in collaboration with the Ministry of Agricultural, Food and Forestry Policies (MIPAAF) and Central Inspectorate for Quality Protection and Fraud repression (ICQRF), we can analyse the value of certified products in 2013. This value is largely related to that of 2012 or earlier.
vintages particularly for aged wines. The method provided allows us to understand the value of the bulk wine production, considering the price of wine in tanks, at farm gate, excluding VAT. Thus, in 2013, the value at the origin of the total wine produced in Italy was 3.9 billion euro, of which 2.7 represented by the PDO wines (about 1.9 billion) and IGP (812 million). While the remaining 1.2 billion derive from table wine (740 million) and from an estimate of the potential PDO and PGI wine still non-certified (460 million).

Finally, with regard to the export, ISMEA estimates that about 20 million hectolitres were exported across national borders. Thus, about half of the production of wine in Italy is exported (in 2013 the production was 44.7 million hectolitres). This data confirms the dependence of the sector on foreign demand (mainly from USA, Germany and United Kingdom). Noteworthy is the value of the export in 2013 that is around 5 billion euro (i.e. about 15% of total agri-food exports in value). Moreover, with regard to the different type of wine, it is worth noting the export of PGI wines that is around 5.5 million hectolitres. This result, exceed the volume of PDO wines (i.e. 4.7 million hectolitres).

Despite PDO wines have a higher production potential comparing to PGI wines, the latter are much more popular among foreign markets. Finally, it worth mentioning the case of sparkling wines, which marked an increase in value by 18% and in volume by 13% compared to 2012, when generally the other types have scored less significant changes.

### 3.1.2 An introduction to Tuscany

Tuscany region is located in central Italy (Figure 3.3) and borders with Liguria to the northwest, with Emilia-Romagna to the north and east, Umbria to the east and Lazio to the southeast. On the west part, it borders with Tyrrhenian Sea and contains the Tuscan Archipelago. The population of the region is about 3.7 million inhabitants (2016) with the city of Florence as political and administrative centre of the region.

*Figure 3.3. Tuscany location map*

(Source: author elaboration on [http://www.regione.toscana.it/web/geoblog/-/open-geodata](http://www.regione.toscana.it/web/geoblog/-/open-geodata))
The regional surface is 2,298,704 hectares, of which in 2010 the total agricultural area is 1,295,120 hectares and the utilised agricultural area is 754,345 hectares, of which the total grape area is around 57,942 ha (8%). The region is dominated by hills (66.5%) with few plains (8.4%) and it is surrounded and crossed by mountain chains (25%), of which the highest are the Apennines.

The region is well known for its landscapes linked with art, history, food and traditions. Cities like Pisa, Lucca and Florence have been the home of many influential people in the history of our European culture and science. The region offers an important artistic legacy, many places have been designated as World Heritage Sites due to their influence on high culture and science. According to the Regional Institute for Economic Planning of Tuscany (IRPET), the regional economy is based on the manufacturing sector (textiles, clothing, leather and saddle leather processing), which is composed by small and medium enterprises and occupies the 5.3% of the regional work force. In addition, the mechanical engineering sector plays an important role and there are large industries, about 60. Furthermore, Tuscany is one of the most popular touristic destinations of Italy for which it follows an important role also for trade, hotel and public services (around 17% of the regional GDP).

Despite the positive picture that characterizes the regional system, Tuscany is a region where the population is aging. According to the regional average, people over 65 are about 850,000 and according to the Census forecasts could reach one million within 5 years. Those under 18 make up only 15% of the population. If we add to this phenomenon the cost relating to the quality of life, which is quite high in the region especially for young people, thus we can partially understand why the younger people tend to leave the region in search of new employment and education opportunities. However, partially this outflow is currently rebalanced due to migration inflows (to date are about 50,000 second-generation children).

On the other side, there have been regional policies to support education, research, employment, youth entrepreneurship and social housing, but there is still much to be achieved in this direction.

The beneficial influence of the Tyrrhenian Sea on the coast contributes to a mild climate, while on the interior is more rainy and harsher with considerable fluctuations in temperature between winter and summer. Over the centuries, these conditions have favoured the Tuscan agriculture. Although nowadays the sector plays a marginal role on the regional economy (contributes just with the 2% to the regional product, about 3 billion euro), the benefits that the Tuscany receives are much broader. Tuscan agriculture is linked to tourism, environmental protection and landscape. The agriculture represents an important factor of territorial identity that has managed to hold together tradition and innovation. According to ISTAT (2010), the farms are about 72,686 with an average farm size of 10 hectares, which is higher than the national average of 8 hectares. Compared to past censuses, ISTAT has detected an average increase in farmland despite the general decrease of the regional agricultural area. This is explained by the exit of many small farms (i.e. UAA less than 1 hectare, about 24% that declined by 64%), in favour of more structured farms, often formed by the merging of existing ones.

The vertical integration and acquisitions are important consolidated strategies for Tuscan wine producers and of particular interest to this case study. The objective of a greater quality for Tuscan wines has been achieved, in addition to the improvement of the processes and
diversification of the products, through the coordination within the entire supply chain, the preservation of strategic assets and the contact with consumers. Thanks to the vertical coordination of all the production stages, they managed to reduce the variability of quality and thus the related transaction costs (Hobbs and Young, 2001). Then, through the diversification of products and sales channels, they have managed to reduce some risks related to market uncertainties. In addition, thanks to the suitable terroir, the professional competences and the contextual knowledge based on a long-term experience (territorial identity), they managed to improve over the years by strengthening human capital and the productive system. With this regard is relevant the role of the consortia for PDO and PGI productions that guarantees production standard and quality while ensuring even promotion and recognition mechanisms. Within this context an important role is also derived from regulations and standards, which contributed over time to drive Tuscan producers to increase product differentiation (Rocchi and Gabbai, 2013), since competition mainly occurs on international markets with a wide range of productions oriented towards quality and with several well-established brands (Rocchi and Gabbai, 2013).

3.2 Policy and regulatory conditions

As a food product, wine is subject to special attention and monitoring by the European legislation and especially from the Italian one. The EU regulations, parallel with national and regional laws, define many aspects of the wine industry (BMTI, 2009), leading to a stiffening and excessive bureaucratic burdens for producers. In this section, we will try to frame the more stringent aspects arising from the European, national and regional legislative framework.

3.2.1 The CAP through the various reforms of the wine CMO

Since the seventies, the European Commission has promoted a process of standardisation among the Member States’ legislation with the aim of facilitating trade and protecting the common market. At the same time, the European legislator tried to protect consumers from the potential fraud on the origin and quality of wines (Gaeta and Corsinovi, 2014).

The first important benchmarks for the European legislation, before the first reform of CMO in 2008, were the (EC) Regulation No.822/87 e No.823/87.

- The first concerned the Common Market Organisation (CMO) that is for a long time one of the most important regulatory instruments for the sector. This regulation introduced the rules for the production and control of the development of wine-growing potential, establishing a limit on planting new vines and a system of allocation of planting right. Then it set the rules for the oenological practices and treatments, the system of prices and market measures, the agreements for trade with third countries, the rules relating to the movement and to the release for consumption.
- The second has introduced the concept of quality wines produced in specific regions, merging the definition of quality wine with a system of rules that associates the quality to the origin.

From these first regulations, the EU legislator introduced several modifications during the time. A first revision occurs with the (EC) Regulation No.1493/99. This legislation, according to
the previous Regulation 822/87, introduced several definitions concerning both the raw materials for the production of wine (fresh grapes and grape must), either the types of marketable wines. The EU regulation also introduced a key distinction between table wines or wine with a specific geographical identity and quality wine produced in certain regions (quality wine psr) for which only the wines in possession of specific requirements, defined by national standards, can bring the related labelling. The regulation requires the compliance with a specific delimitation of the area of production, of specific winemaking methods, minimum alcoholic strength, as well as the yield per hectare and the compliance to specific organoleptic characteristics.

Considering the vast differences that characterize the wine-producing sites as well as the winemaking processes and the types of wine, the European legislator has left the application of stricter rules to the member states, trying to frame a system of practices that allow a good vinification, proper preservation or proper refinement of the product. Therefore, the (EC) Regulation No.1493/99 excludes the possibility of adding water during the oenological treatments, unless this is necessary to apply special techniques, specified by law. It also prohibits any blend between white table wine and red table wines, from which producers can create new table wines. The regulation then examines the limits and conditions of certain oenological practices, among the most important, such as enrichment and acidification, deacidification and sweetening. Moreover, with the Annex 5 it also indicates the rules concerning the sulphur dioxide content and maximum volatile acid content. In particular, the maximum content of these two components of the wine has been differentiated depending on whether it is red wine or white and rosé wine. Moreover, other values have been set for other types of wine (sparkling wines, liqueur wines, etc.), as well as for all types of must.

With regard to the measures taken to strengthen the internal market and stabilize the price, again the (EC) Regulation No.1493/1999 acted on wine-growing potential through the ban of new planting rights and the temporal limitation of replanting rights, extending it until the 31 July 2010, and introduced a system of aids for the permanent abandonment of areas under vines. However, the regulation also established some elements of flexibility. Since the intention of the European legislator was just to reduce as much as possible the surplus of production, there was the opportunity to create new planting rights in order to give the opportunity for member states to increase the PDO and PGI vineyards. On that front, the legislation also intervened on other points of the supply chain: distillations, forms of storage, enrichment. For example, the first wine CMO uses the distillation as a tool to withdraw the surplus at a guaranteed minimum price. This tool has always been used massively, especially among table wine producers. Then, another form of aid has been provided with the extent of the enrichment with a series of aid for the use of musts, either for the vinification that for different purposes. Moreover, the Regulation 1493/1999 established also aids for the restructuring and conversion, in order to offer the opportunity to the grower to renew and adapt their production potential to the requirements of the quality wine market. Finally, there was also the sanction related to the mandatory grubbing provided for all illicit vineyards, or those planted after the 31/07/1998 in the absence of planting rights, for which there was the obligation of the distillation of all the grapes obtained from such areas.

In the first phase of the wine CMO, there was the need for a policy that would allow a structural strengthening of the wine industry through a proactive action towards the development of the European supply, encouraging a new concept of quality for the European
wines. Then, to allow full enhancement of European wine-producing resources, it was promoted greater efficiency and transparency in the production. During this period, the intention of the European legislator was to stabilize the wine supply and to preserve the internal product in order to meet the consumers’ quality requirements (given the heterogeneity of the consumers’ tastes). Academic literature such as Malorgio and Grazia (2007) points out the importance of regulation to strengthen the “minimum quality standard” and to homogenize the production systems (in terms of specific production requirements and quality characteristics) within the same Appellations in order to give clear “quality signal” to the consumers”. Thus the academic debate justifies a supply’s control of quantity and quality in order to improve the “quality signal’s effectiveness, competitiveness on the domestic and international markets” (Malorgio and Grazia, 2007; Nelson, 1970; Darby and Karny, 1973). Is not surprising that the academic literature feed the debate around the proliferations of the appellation of origins and quality effectiveness. In the wine market, a very heterogeneous supply and the impossibility to observe the product quality before purchase, imply an important asymmetric information between the producers and the consumers and, therefore, strong promotional and research costs (Nelson, 1970; Darby e Karny, 1973). The risk of inefficiency in the quality signals – which do not fuli consumers’ expectations on quality and typicity – is that of the reduction of the average quality level supplied in the market implying a long-term demand drop (Akerlof, 1970). “The effectiveness of the system is menaced by quantity and quality uncertainty, free riding phenomena, vertical relationships complexity and hold-up risks” (Malorgio and Grazia, 2007).

Afterwards to meet these needs, the European Union has launched a new reform process to support the wine sector. The first step of the reform can be placed within the wider process of revision of the CAP (opened in 2003) that has led to a fundamental reform of the wine CMO in 2007. With Regulation Market Regulation 1234/07, the European legislator provided the unification and the simplification of the previous 21 CMOs, including that of wine, into a single CMO. Within the new regulation, the Community has pursued the aim of simplifying the regulatory environment of the CAP, introducing also for wine sector a horizontal legal framework for all direct payments, amalgamating an array of support systems into a single payment scheme. After that, the first reform process has been concluded by Regulation (EC) No.479/2008, which integrated the horizontal rules established by Regulation 1234/2007 and amended all the previous wine CMO structure. From the one hand, the reform took place under the pressure of changes in market conditions, of the changing in consumer tastes, with the emergence of a new world of competitors. From the other hand, the reform has been directed to address the difficulties in the management of the previous aids. The excessive rigidity that characterized the previous regulations did not guarantee dynamism to the wine industry, which on the contrary increasingly need to operate faster changes in order to meet the consumer needs, even considering the social, environmental and economic feasibility of wine production.

Therefore, the objectives of the new regulation were to increase the competitiveness of EU wine producers, regain market shares, restore the balance between supply and demand and simplify the regulations. The reform was focused on diminishing incentives for grubbing-up of vines (i.e. for 400,000 ha), on abolition (transient, in the space of a few years) of planting rights, of the aid for distillation, storage and the use of musts. Then it was included the displacement of part of the available resources on the second pillar of the CAP and in
particular of the aids for early retirement incentives for agro-environmental measures and aid for farm modernization.

The new regulation is organized in four areas of intervention:

1. The support measures, which include national support programs (envelope) and the transfer of resources from market measures (first pillar) to those of rural development (Pillar II);
2. The regulatory measures (wine-making practices, designation of geographical indications of origin, labeling, establishment and operation of producer organizations and industry);
3. The rules governing commercial relations with third countries;
4. The measures for the management of production potential (control of illegal planting, the transitional regime regulating the planting rights, in perspective of their abolition fixed to 2015, measures for the management of the grubbing-up premium).

With regard to the national support programs, the regulation distinguishes 11 measures, which can be classified into two groups:

1. The permanent measures, such as promotion on third country markets, the system for the restructuring and conversion of vineyards, the green harvesting, the mutual funds and insurance programs for the harvest. To these were then added the decoupled payments to producers of wine grapes, the measures for the modernization/innovation of the production chain and product distillation;
2. The transitional measures that recover three market measures already operating within the old CMO (i.e. the crisis distillation, the distillation of alcohol for food use and aid for the use of musts in the processes of enrichment).

The choice of measures within the national program of support has been left to the discretion of each member state. In fact, this has allowed member states to recover many of the previous market-support measures.

It is worth to noticing the green harvesting measure, through which is introduced within this sector a containment measure that works on the same basis of other measure applied in the past in other CMOs (e.g. set-aside).

With regard to regulatory measures, the main changes introduced by the reform relate to wine labelling rules and the classification system of products with designation of origin and geographical indication. Under the new regulation, it has simplified the qualitative distinction of wines into two categories: wines with geographical indications; wines without geographical indication. Within the first category, the rule refers to the PDO and PGI wines, as it happens already for other agricultural products in compliance with WTO rules. Then, according to this new classification it disappears the table wines with a geographical indication that in Italy are called IGT wines. With the new CMO, the DOP and IGP wines are included into a single specific category, albeit with some differences between them, with the result that the scope of quality wines extends to include the IGP, which are wines that like the old IGT, can also be obtained from grapes grown by 85% and not only from a certain area. Moreover, all the elements of regulation and identity, which in the past clearly point out the difference between IGT and QWPSR assigning them to two classes of highly distinct product, are now highly attenuated.
between PGI and PDO wines, because of belonging to a single Production Code. In addition, the labelling rules have also been simplified, allowing the labelling of information so far banned, such as grape variety and the vintage year for all wines. Moreover, it allows also the use of trademarks, with a limit/obligation to inform properly the consumer.

Of particular interest for Italian wine producers, the new rule confirmed the maintenance of the method of enrichment by the addition of sugar, without prior indication on the label. Thus, the new rule is limited to reduce by just 0.5%, the limits for the enrichment of all production areas compared to the previous situation. Then, the expiration of the system of planting rights, potentially, postponed after two years, being at the discretion of the member states to maintain it in force until 2018; the financial support for the system of permanent abandonment of grape production (grubbing-up the vines) was lowered. National quotas for exemption for environmental reasons have been raised to 3% of the total area. Then, the opportunity to suspend the application of the scheme by a single country has been constrained to the reaching of a threshold equal to 8% of the national area planted with vines, or 10% of that of a given region. Similarly, the Commission may suspend intervention in favour of a country, if the cumulative grubbing-up has reached the threshold of 15% of the national area, or 6% in a single year of application. In addition, it should be noted that the areas grubbed are entitled to receive decoupled aid, under the single payment scheme, but the amount does not exceed 350 euros per hectare (Pomarici, Sardone, 2008).

During this second phase, the EU continues the process of simplification started in 2007. With the Regulation (EC) No.491/2009 the legislator has ended the transition started with the Regulation 1234/07, thus the wine sector has been fully incorporated into the Single CMO Regulation in accord to the policy decisions taken by Regulation 479/2008. Furthermore, the subsequent Regulation (EC) No.1308/13 has provided the end to the transitional prohibition on planting vines at Union level. Then the Commission Reg. (EU) No.560/2015 that has provided the scheme of authorisations for vine plantings has established the rules for its application. Finally, with the Commission implementing Regulation (EU) No.561/2015, a new scheme of authorisations for vine plantings was introduced, which should not apply for those Member States where, although the planting rights apply, the vine planting area is below a certain threshold.

### 3.2.2 The National legislation

With regard to the national level, the most important reference was the law 164 10/2/1992 that disciplined the designations of origin. Transposing the European scheme, it outlines a "pyramid structure of quality" (Figure 3.4) that serves to define the different degrees of quality that a wine can have. The basis is formed by table wines, as defined at Community level. To the next level, we find the IGT wines, which are different from table wines since they have a geographical name that identifies the product as well as its territory of origin and vine specification. Located at a higher level, there are the wines with a protected designation of origin, which in turn are divided into DOC (denomination of controlled origin) and DOCG (denomination of controlled and guaranteed origin). Finally, at the top, there are the subzone and vineyard, which are special awards issued only to wines already belonging to the DOC-DOCG categories and that can boast even more restricted features (environmental characteristics and traditions).
The law defines the protected designation of origin as "the geographical name of a wine-growing region used to describe a renowned quality product, whose characteristics are due to the geographical environment and the human factors" (Art. 1). For IGT it means just "the geographical name used" (art. 1). Then, the national law establishes that all wines with denomination of origin must have specific characteristics laid down in a production code, similar to that provided by Community legislation. Moreover, it recognizes also the specification of “classic”, referring to wines (not sparkling) of more ancient origin areas (i.e. Chianti Classico), the mention of “reserve” for wines (not sparkling) characterized by a particularly long aging and the mention of “novella”.

The national law mainly refers to the “production codes” for each designation of origin class with regard to the grape variety, the viticultural techniques, the climate, soil conditions (terroir), the acidity control and sweetening process and the sulphur dioxide content.

After this first important step, the legislator sought to harmonize the national legislation following the European process of reform. In 2010, after the reform of the wine CMO of 2008, the Italian Government provided with the DL 61 8/4/2010 an amendment to the designations of origin and geographical indications for wines. This law has merged the previous DOC and
DOCG denominations into the PDO and assimilated the PGI designation to the IGT, including a change in the name of the table wine in "common wine".

After this step, two decrees of the Ministry of Agriculture followed. The first, the DM 12272 12/15/2015 established the licensing procedures for planting new vines in implementation of Reg. (EU) No.1308/2013, establishing mainly that:

a. The authorisations are issued by the Regions;
b. The Minister must establish a national threshold;
c. The grubbing rights are valid for 3 years;

The second, the DM 12/23/2015 laid the foundation for the transient labelling and amendments to the production code for PDO and PGI wines.

As we will deepen in the section that follows dedicated to the organic regulations, the wine produced from organic farming has a specific legislation. The DM 12 July 2012 has recently reformed it, including provisions for the implementation of the Regulation No.203/2012. The legislation sets out the substances and products that can be used in organic production (i.e. Annex VIII of Reg. EC No.889/2008). In addition, it also provides restriction and prohibitions on certain oenological practices, as well as rules on labelling. The Art.5 states that organic products of the wine sector must be distinguished with the term "organic". Thus, the legislation on organic wine is harmonized within the main legislative references for the sector. However, the farmers who decide to produce organic wine are not exempt from a bureaucratic burden, which in some cases may even discourage companies from joining the system of certification provided, despite their production and their practices operating in this direction.

3.2.3 The Regional legislation

The reference point for the Regional legislation is the Regional Law n.68 30 November 2012 that disciplines the management and control of wine-growing potential. In addition, the resolution of the Regional Council No.382 of 28 April 2003 (Annex A) provides a list of the suitable grape varieties for cultivation. The regional law mainly refers to “vineyard register” and to the "tasting Commission" that must control the production under the PDO scheme.

With regard to the controls, as we will see in the following section, during the years the legislator has allocated by law this important task to another organisation. Law or ministerial decree through the Inspectorate for Quality Protection and Fraud repression (ICQRF) decides the authorizations of the competent bodies.

It is worth noting that with the Ministerial Decree No.293 of 20 March 2015, the Ministry of Agriculture has been adopted the provisions for the keeping of records in dematerialized form in the wine sector. Thus, all wine producers in Italy are therefore obliged to the compliance with the electronic registrar and to the transmission of all the operations carried out on farm to the ICQRF. The recordings, according to European directives, with the necessary specifications, must take place within one day from the transaction with regard to the inbound operations and within three days of the transaction for the outbound operations. For companies that produce less than 1000 hectolitres the recording is expected within 30 days.
This standard has raised major concerns, for its effective implementation and considerable controversy. All the producers that were interviewed revealed the excessive burden of bureaucracy and they expect an increase of operations for compiling and maintaining registers. Some producer is concerned to employ more human resources in such transactions compared to the past and to the rest of the production-related operations (W: Interviewees 1, 3, 4, 5, 6). Thus, all the interviewees expect an increase in transaction costs against them upon the entry into force of new electronic registers.

3.2.4 Rural development measures

The rural development plan of Tuscany Region 2014-2020 offers various support measures for the Tuscan wine producers. The RDP support includes packages of measures that include the accession to the quality schemes (measure 3), packages aimed at boosting investments in tangible fixed assets (measure 4) and aid for start-up of young farmers (measure 6). This type of measure found a remarkable response from regional producers, some of the interviewees have participated in the past to such measures in order to renovate the cellar and renew some machineries (W: Interviewees 1, 2, 3, 4, 5, 7, 9, 10, 11). Then the RDP offers measure directed to improve the quality of Tuscan production preserving the environment and landscapes through the agri-environment payments (measure 10), or through the support of organic farming (measure 11). Finally, there is a package of measure to support farmers cooperation (measure 16), in which are provided several measures linked to investments. Among the interviewed producers, several reported their commitment in earlier programs for some of these measures. There are producers who applied in the previous RDP 2007-2013 for integrated or organic production payments, while there are others that decided to subscribe a cooperation agreement and apply for a public call for cooperation projects (ex measure 124 of the Tuscany RDP 2007-2013 that offers support to the development of supply chain plans and coordination). Within this scheme, they developed a protocol aimed at testing the "Tannin portal" on experimental Sangiovese grapes and adapting it to the climatic and environmental conditions of Tuscany. From the one hand, this innovation allows producers to improve the control over the the time of ripening of the grapes before the harvest. From the other hand, it helps producers to plan the practices that must be carried out before the harvest. Thus, it helps producers to reduce the variability of the quality of production they want to achieve (W: Interviewees 13, 14, 15).

3.2.5 The architecture of the control systems and the role of ICQRF

During the wine CMO reform process, the EU legislator has traced the general rules for the homogenization of the wine industry among the member states, leaving to Member States the task of designate the competent authority or authorities responsible for controls.

In Italy, the ICQRF Department of the Ministry of Agriculture Food and Forestry is the national authority responsible for the supervising of regulated agricultural food production (PDO and PGI).

The main ICQRF activities are:
a. The controls on the quality, authenticity and identity of food products and technical agricultural inputs in order to prevent and prosecute fraud and offenses.
b. Recognition of the inspection and certification structures (private control bodies and Local Authorities).
c. Supervisory functions on the control structures that operate in the field of quality productions regulated
d. Imposition of administrative fines.

In turn, the ICQRF may designate by decree of the Ministry other authorities that operate at regional or local level, giving them the task of carrying out controls. The Law No.164 of 10/02/1992 contained two provisions that assign the control functions to the following competent bodies:

a. The article 17 assigns to the National Committee in collaboration with the competent organs of the Ministry (ICQRF) the role of monitoring compliance of the wine laws and production code
b. The Art.19 establishes that through a subsequent ministerial decree, the protection consortia can be entrusted of the task of controls in respect of all members of the production chain, also not enrolled in consortia in order to jointly ensure compliance with disciplinary and traceability at all stages of the production process.

The ministry has provided over the years several decrees in order to establish specific provisions on the control of the production of quality wines produced in specified regions (QWpsr). The latest, the DM March 29, 2007 with the article 3 establishes the list of those individuals assigned to control activities, including the protection consortia.

As revealed in the media analysis for the wine industry, this ministerial office plays an important role in the protection of certified products and prevention of fraud. The media coverage about frauds mainly focuses on the most famous wines such as Brunello and Rosso di Montalcino. "The Inquiry on fake Brunello, seized over 160,000 liters of wine [...] of poor quality wine sold as Brunello and Rosso di Montalcino. The fraud discovered by the finance guard of Siena led to the seizure of more than 160,000 liters of wine and 2,350 state marks" (GNs3, 2014). Another issue that is widely discussed as a source of concern and uncertainty for local producers is the counterfeiting of Tuscan products by other countries. While the preventive action and monitoring on the territory, thanks to the coordinated action of institutions, police and honest producers, work, abroad the actions are often more complex and require more coordination (NYT, 2012).

3.2.6 The role of Chambers of Commerce in the control and certification system

The Presidential Decree 930/1963 engages the Chambers of Commerce and Industry (CCIAA) in the certification of wine products quality. This public organisation manages the tasting commission and the certification procedures related to complaints of annual production and the register of vineyards. For each PDO or PGI wine, the farmer must register the land in the special register of the vineyards, whose competence was recently moved by the Chambers Commerce to the regions. In order to obtain the designations of origin or geographical
indication the conductor of the vineyard, during the period of harvest, he must submit to the municipality the complaint of the grapes that were grown. Then, the municipality sends the complaint to the competent Chamber of Commerce. The Chamber, once has confirmed the accuracy of the data contained in the complaint, releases to the conductor of the vineyard a receipt. In order to be allowed to use the respective denominations of origin, the wines, before marketing, should be subjected to a chemical-physical analysis and an organoleptic test. The physical-chemical analysis is carried out by the Chamber of Commerce, which verifies that the physical and chemical requirements of the wine match those of the product codes. The Tasting Commission carried out the organoleptic test. Another important part of the controls is done through the review of documents attesting the production process and the marketing phase. The CCIAA checks the yields resulting from the Register of the vineyards and the production specifications, thus implementing a production traceability system. Finally, the Ministerial Decree of 28 December 2006 introduced other checks on the field that have been assigned to consortia of protection and other public/private bodies such as the Chambers of Commerce or private certification bodies.

3.2.7 The role of local consortia

According to the DM No.256 of 06/04/1997 the consortia, which are composed of various actors of the supply chain, act for the protection and enhancement of the PDO and PGI wines. Their role is carried out under the technical profile and image, with the task of monitoring compliance of the production codes and defend the denomination from plagiarism, unfair competition and other illegal actions. The consortia can perform all the tasks assigned by the EU and national legislation. They are accredited by the Ministry of Agriculture Food and Forestry Policies, therefore, have the duty and right to perform the control of the production of PDO and PGI wines according to DM March 29, 2007. In addition, they can have a role in the promotion of wines, thus including the implementation of marketing activities and marketing support.

3.2.8 Organic wine legislation

The Commission Implementing Regulation (EU) No.203/2012 and the Commission implementing regulation (EU) No.392/2013 amending Regulation (EC) No.889/2008 regarding the control system for organic production represent the reference standard with regard to production rules on organic wine. Previously the practice of organic production was excluded by the application of the (EC) Regulation No.2092/91 for the non-applicability of the list of additives included in the regulation. Before that regulation, it was allowed to show on the label only the wording "wine obtained from organic grapes", thus stating that the qualification phase of organic wine would stop with the production of grapes. However, this lack of EU rules has given the start to the wine producers to the development of several organic production approaches in the different European countries in a way that is consistent with the principles of organic farming. These private initiatives have taken the form of more stringent standards than the legal requirements for the conventional wine, with limits on the use of additives and technical processes at all stages of winemaking, from the harvest until the wine bottling and storage. These specifications have been developed by groups of producers (e.g. in Germany,
France and Austria), from organic farming associations connected to the certifying bodies (in Austria, Germany, Greece, Italy and Switzerland), by the certification bodies (in Spain) and national representative platform for the organic wines (Spain and Switzerland). Thus, these national and private standards were the basis for the organic regulation (EC) No.834/2007 and Regulation on organic wine that followed, the above mentioned (EU) No.203/2013.

Thanks to EU Regulation 203/2012 also for the wine has been possible to apply the Community rules on organic production, from the vineyard to the bottle, guaranteeing transparency to the consumers and the protection of the wine growers who apply the organic concepts to both the vineyard and the winery. The regulation has also allowed imports of organic wines from third countries with production standards and inspection and certification systems equivalent to those existing in the EU. Furthermore, from the 2012 harvest, the organic wine producers have been allowed to use the term “organic wine” on their labels. The labels must also show the EU-organic-logo and the code number of their certifier, and must respect other wine labelling rules.

One key aspect of the European legislation is to establish a subset of winemaking practices and substances for organic wines defined in the Wine Common Market Organisation Regulation 606/2009. For example, sorbic acid and desulfurication will not be allowed and the level of sulphites in organic wine must be at least 30-50 mg per litre lower than their conventional equivalent (depending on the residual sugar content). Moreover, the regulation identifies oenological techniques and substances to be authorized for organic wine. These include the maximum sulphite content set at 100 mg per litre for red wine (150 mg/l for conventional), 150mg/l for white/rose (200 mg/l for conventional) and with a 30mg/l differential where the residual sugar content is more than 2g per litre. Other than this subset of specifications, the general winemaking rules defined in the Wine CMO regulation also apply. As well as these winemaking practices, “organic wine” must of course also be produced using organic grapes – as defined under Regulation 834/2007.

At the national level, the reference standard is formed by the following rules:

- The circular MiPAAF 12725 of 06/08/2009 concerning the labeling of organic products;
- The note MiPAAF No.12968 of 06/06/2012 on the use of ion exchange resins in organic farming;
- The DM No.15992 of 12/07/2012, which provides the national rules for the implementation of the EU implementing Regulation No.203/2012;
- The DM 15962 of 12/20/2013, which provides of a list of non-compliance concerning the biological qualification of the products and the corresponding measures that the control bodies must apply.

From these regulations, we can highlight the following list of rules that producers must respect when they choose to participate in the certification system for the organic wine:

- Choose the Control Body (CB) for organic farming among those credited to the MIPAAF;
- Send to the competent authority the notification of starting an organic method before transformation;
- Maintain updated the annual program of preparations;
- Receiving inspections (varying in number according to the class of risk in which the winery is inserted from the CB);
- Draw up and observe a plan of precautionary measures from of environmental contamination, particularly important in the case of mixed farms (i.e. grapes that work both organic and conventional);
- Keep records concerning oenological practices.

After which the organic wine producers must comply with European regulations for technical requirements that establish the products and substances that can be used, the oenological practices that have been allowed and the relative restrictions. However, the regulation provides also cases of derogation.

### 3.3 Market conditions

#### 3.3.1 The Tuscan wine production

Tuscan culture of wine boasts the oldest traditions, where for centuries both simple farmers and noble families have dedicated themselves to growing grapes (BMTI, 2008). Tuscany, with Piedmont and Veneto, is the region where the wines have historically been most valuable in Italy. If we look at the value of the production at basic prices, according to ISTAT data, in 2010 the industry produced about 270 million Euros, slightly down compared to 2000, which was about 287 million Euros.

The Tuscan wine producers live and benefit from one of the best images of any tourist destination. The well-known landscapes of Tuscany linked with arts, history and architecture furnish one of the most suitable locations in the world to express quality wines.

The 57 designations of origin (DO) represent this union between history, territory and quality, making Tuscany one of the most important regions of Europe for its wines (Figure 3.5).
Figure 3.5. PDO wines in Tuscany

(Sources: Our elaboration on Regional data)
In dark-light blue are represented the 40 PDO and in dark-light green the 11 PDO, while the PGI are 6 (Figure 3.6). The most popular areas for wine production are the area of Chianti and Chianti Classico (south of Florence), Montalcino and Montepulciano (south and east of Siena), Bolgheri that is located in the hills nears the sea between Livorno and Grosseto has acquired popularity because of greater PGI wines, such as Sassicaia. It is worth to note here that more and more producers prefer to adopt a PGI label for their wines. This choice of productions is partly related to more freedoms associated with the disciplinary for PGI wines compared to the one for PDO, for which producers' choices have been mostly constrained. Despite the over-regulation, which nowadays characterizes the sector, Tuscan wine producers have managed over time to implement several differentiation strategies. On the one hand, they focus on the maintenance and valorisation of the classic grape varieties, such as Sangiovese, which made Brunello di Montalcino and Classic Chianti among the most popular wines in the world. On the other hand, they have mixed regional grape with foreign varieties, such as the case of cabernet sauvignon in Bolgheri (as we mentioned above). Thus, producers have focused their research on product characteristics towards wines more open to international taste. Innovation has not only affected by the choice of grape varieties, but it has involved also the meticulous massal selection of the grapevine, the cultivation techniques, the production methods and the ageing phase. In this context, most of the Tuscan producers tried to carve out their own uniqueness, developing a product linked to the territory that at the same time follows the change in taste and consumption patterns.

**Figure 3.6. PGI wines in Tuscany**

(Sources: Our elaboration on Regional data)
The majority of PDO wines are concentrated between the Province of Siena (26%) and Grosseto (14%), then Livorno (12,5%), Firenze and Pisa (11%) (Figure 3.7).

**Figure 3.7. Distribution (%) of PDO wines among Tuscan Provinces**

The most popular grapes are black, such as Sangiovese, Cabernet Sauvignon, Merlot and local Canaiolo, Colorino and Ciliegiolo. Among the white grapes we can find, the Vernaccia di San Gimignano, the white Malvasia, Chardonnay and Trebbiano Toscano. However, there are also international grapes (Cabernet Sauvignon, Merlot, Pinot Nero and Syrah) that thanks to the popularity achieved by the Super Tuscan (indicates a higher quality product, even more than the PDO) have been increasingly introduced in the region. The spread of these grapes in Tuscany has been important and today many of these are provided in the production code of many PDO wines, including the traditional Chianti (BMTI, 2009).

From the 6th Agricultural Census (ISTAT, 2010) the number of active farms (grape growers and wine producers) is about 25 thousand and the relative wine grape area is 56 thousand of hectares with an average grape area per farms of about 2.3 hectares (Italy is 1.6 hectares). Despite the rising importance of the sector for the regional economy, during the decade 2000-2010 the number of farms and the grape area decreased, respectively of the 54% and of the 3.2%, while the average grape area per farms is increased of about the 108% (in Italy increases about 82%). These data are in line with the general trend introduced for the national agricultural system. Moreover, at the regional level is the province of Florence has the largest area planted with vine with 18,400 hectares, follows by the province of Siena with 17,200 hectares, then Grosseto with 8,120 hectares and Arezzo 6,200 hectares. The rest of the Provinces have a total vineyard area of 6668 hectares.

The production of wine in 2010 in Tuscany was about 2.8 million hectolitres (must excluded) representing the 6.2% of the national wine production (44.7 million hectolitres excluded...
must). In the 2014, this level slightly reduced of about the 9% (2.5 million hectolitres), while the region is still among the most productive region of Italy. In 2010, approximately 84% of production was concentrated in four provinces (i.e. Siena 30%, Florence 31%, Grosseto 12% and Arezzo with 9%).

Of this production, about 62% was PDO wines (1.7 million hectolitres), 25% were PGI (0.7 million hectolitres) and the remaining was common wine for 12% (0.35 million hectolitres). With regard to the typology, in 2010 the Red wine and the Rosé were the most produced (2.4 million hectolitres) around 90%, while the White just 0.4 million hectolitres. It is worth to mention here, that in 2011 there was a decrease of Red and Rosé wine (-20%) and an increase in White wine production in the Region about the 33% that is in line with the national trend highlighted above.

3.3.2 Characteristics of the supply chain

According to the data provided by the Chamber of Commerce (Infocamere, 2008) the wine sector in Tuscany reflects the characteristics of the Italian agriculture. From the 8,398 wine producers surveyed, the small sole traders dominated the sector (82%), which is characterised by the lower presence of partnerships, the 10%, and corporation the 5%. The other types of farms, including cooperatives and associations, achieve the 0.5%. The 96% of these farms identified the wine producers’ core, while the 3.4% are farms specialised in the bottling phase.

Only a small portion of these farms focuses production only in the cultivation of grapes stage (Figure 3.8). Generally, these grape growers sell grape to consortia and other cooperative that carry out the processing and distribution phases.
Thus, the Tuscan sector compared to other regions of Italy (i.e. Emilia-Romagna and Veneto) is mainly characterized by small and medium-large vertically integrated producers, which carry out all phases including the sale and distribution. Instead, the cooperative model has spread more in the other regions, where a myriad of producers confers grapes to fewer cooperatives or bottlers, who then transform and distribute the products. Although less than in the other regions, the media analysis has revealed that there are also large cooperatives, concentrated mainly in the Chianti area, since the main bottled wine in Tuscany is Chianti with 4.5 million bottles, almost entirely directed to large retailers. One of these, which count 46 employees and it associates 38 wineries throughout Italy, concentrates the production in the Chianti area between Florence and Siena and in the Grosseto area. The regional press reported that they receive wine from 2,500 producers with about 2,500 hectares of vineyards (TOS24d, 2016).

For the majority of the producers we interviewed the different product’s features have a direct influence on transaction characteristics and production costs that determine the difference between organizational and decision-making models (W: Interviewees 3, 5, 6, 7, 8, 10, 11, 12). The transaction characteristics affect vertical integration strategies through their effects on transaction costs. Then the transaction characteristics have an influence on the agency relationship among firms that in turn affects the design of strategies. However, the degree to
which transaction characteristics influence the design of governance structures depends on the farmer’s specific assets, whether new assets or skills are necessary and are produced in-house and whether are delivered by third party (Hobbs and Young, 2001). While Williamson (1979) recognize uncertainty, frequency and asset specificity as drivers for transaction characteristics, we assume that also the product characteristics can affect transactions, which are consequences of the producers’ internal and external condition (regulatory, technological, factors and demand drivers). Following Hobbs and Young (2001), the uncertainty, the asset specificity, the frequency and complexity define the transaction characteristics. In addition, they recognize four types of uncertainty in transactions, such as product quality, reliability of supply, price and finding a buyer. For example, there is uncertainty over product quality when is costly for the buyer to monitor directly the actions of the seller and thus it is difficult to determine the product’s true quality (Brazel, 1982). Maintaining constant the asset specificity, when the uncertainty increases due to an increase of information and monitoring costs, within the framework we expect closer forms of vertical coordination instead of open market transactions. However, if the farm invests in less specific assets due to the presence of uncertainty, in the long-run period we expect forms of coordination that range from partnership or contract rather than full vertical integration (Mahoney, 1992). Assets specificity is crucial to determine the vulnerability of the farm to opportunistic behaviour. It arises when a firm lock themselves by an investment in a production process specific to one buyer or seller. Due to this relationship and to the consequent increase in monitoring and enforcement costs associated with spot markets (Williamson, 1979; Hobbs, 1996) the farm governance shift to contracting or vertical integration.

The characteristics of the Tuscan territory, the factors related to the history, traditions, local culture and the type of properties and capital structure of the farms have pushed producers toward strategies and investments related to quality. Producers have pursued higher quality productions with larger operative margins. And as a consequence, they chosen a vertically integrated business model. Within this model, they maintain the total control over all stages of production, including also those not directly linked to the production process as the promotion of tourism and territory. Then the differentiation occurs according with the local factors and the image of Tuscany that that they want to communicate with consumers.

The analysis of product characteristic in relationship with transactions highlights five key features that can affect vertical relationship: product perishability, product differentiation, the variability and perception of quality, and the presence of new important characteristics for consumers (Hobbs and Young, 2001). For example, if we consider product perishability, it creates uncertainty for the buyer with regard to quantity and quality. Since perishability imply that the product must be moved quickly in order to avoid deterioration, it determines also an increase in the frequency of transactions, involving also complexity (the quality of the product must remain intact). As consequences, both costs of negotiation and of information increase. Furthermore, also product differentiation has become a common approach among Tuscan wine producers. The increased uncertainty over quality that consumers (buyers) face, push producers (sellers) to enhance product characteristics realizing asset-specific investment in order to differentiate their products. Thus, sellers differentiate their products to the specification of different buyers. The transaction becomes more complex since it requires access to new skills and knowledge that in turn can be provided by closer vertical relationship. Moreover, when quality is variable and consumers prior to purchase cannot detect this variability, like in the case of a bottle of wine, consumers face additional uncertainty over
quality. In this case, according with Eymard-Duvernay (1989) the convention theory suggests that an independent third party (i.e. industrial convention) must define a set of norms or quality standards (Hobbs and Young, 2001) that reduce information costs (i.e. see further the role of the Consortia for the PDO and PGI wines). In addition, agency theory suggests the recourse of contractual arrangements between the parties in order to impose to the relationship a sort of control mechanism.

According to the stakeholders we interviewed, in those cases in which regulation did not allow operating changes on product characteristics, or to develop new products, producers have undertaken direct acquisitions of other companies. For example, several companies that operate in the Classic Chianti area choose to operate strategic acquisitions of property and vineyards in southern Tuscany (Maremma Toscana). One producer reported that he has first acquired a property in Maremma, and then he operated two more acquisitions outside the region, in Sicily. The strategy made by his group, lies in the choice of developing products with different characteristics, benefiting from other climatic conditions and different soil characteristics. In Maremma as well as in Sicily, the group was able to develop different types of white wine to find new market outlets. Thus, the choice of direct acquisition ensures to the group to maintain direct control over the organization of the subsidiaries and guarantee the quality of its productions (W: Interviewees 8, 9, 12).

Instead, in the other regions, where the territory allowed greater yields per hectares and the characteristics of the product were qualitatively lower, the productions have been geared directed to standard products with lower operating margins. In these regions, the focus was the quantity, and the choices of these firms have been described by contracts on quality through cooperative model and large retailers for the sale of products.

### 3.3.3 Analysis of the demand

According to estimates of the International Organization of Vine and Wine (OIV), the consumption of wine is floating for several years between 240 and 245 million hectolitres because in several countries the consumption does not grow anymore (Table 3.1).

<table>
<thead>
<tr>
<th>World wine consumption (million hectolitres)</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>255.2</td>
<td>251.3</td>
<td>243.3</td>
<td>242.7</td>
<td>244.3</td>
<td>241.2</td>
<td>242</td>
<td>240</td>
</tr>
<tr>
<td>US</td>
<td>27.9</td>
<td>27.7</td>
<td>27.3</td>
<td>27.6</td>
<td>28.4</td>
<td>29</td>
<td>30.2</td>
<td>30.7</td>
</tr>
<tr>
<td>France</td>
<td>32.2</td>
<td>30.8</td>
<td>30.2</td>
<td>29.3</td>
<td>29.3</td>
<td>30.3</td>
<td>28.7</td>
<td>27.9</td>
</tr>
<tr>
<td>Italy</td>
<td>26.7</td>
<td>26.2</td>
<td>24.1</td>
<td>23.1</td>
<td>23.1</td>
<td>22.6</td>
<td>21.8</td>
<td>20.4</td>
</tr>
<tr>
<td>Germany</td>
<td>20.8</td>
<td>20.7</td>
<td>20.2</td>
<td>19.7</td>
<td>18.7</td>
<td>20</td>
<td>20.4</td>
<td>20.2</td>
</tr>
<tr>
<td>China</td>
<td>13.9</td>
<td>14</td>
<td>14.5</td>
<td>16.3</td>
<td>16.3</td>
<td>17.5</td>
<td>17</td>
<td>15.8</td>
</tr>
<tr>
<td>UK</td>
<td>13.7</td>
<td>13.5</td>
<td>12.7</td>
<td>12.9</td>
<td>12.9</td>
<td>12.8</td>
<td>12.7</td>
<td>12.6</td>
</tr>
<tr>
<td>Spain</td>
<td>13.1</td>
<td>12.2</td>
<td>11.3</td>
<td>9.9</td>
<td>9.9</td>
<td>9.3</td>
<td>9.8</td>
<td>10</td>
</tr>
<tr>
<td>Argentina</td>
<td>11.2</td>
<td>10.7</td>
<td>10.3</td>
<td>9.8</td>
<td>9.8</td>
<td>10.1</td>
<td>10.3</td>
<td>9.9</td>
</tr>
<tr>
<td>Russia</td>
<td>12.7</td>
<td>11.8</td>
<td>10.4</td>
<td>11.3</td>
<td>11.3</td>
<td>10.8</td>
<td>10.4</td>
<td>9.6</td>
</tr>
<tr>
<td>Australia</td>
<td>4.9</td>
<td>4.9</td>
<td>5.1</td>
<td>5.3</td>
<td>5.3</td>
<td>5.4</td>
<td>5.3</td>
<td>5.4</td>
</tr>
</tbody>
</table>

(Source: Our elaboration with OIV data)
The consumption is headed by the United States (i.e. the most important market in the world), which is the only one with an interesting growth (0.5-1 million hectolitres more each year for several years, +1.6% in 2014 and +2.4% per years over 2010-2014). In France (first producer along with Italy) consumption, seem to start to decline for some years. It is also worth to notice the decline in consumption in 2014 by China (over 1 million hectolitres), which we are used to call emerging market. Then, the same negative trend is highlighted for Italy where OIV certifies a decrease in wine consumption of about 6% in 2014 (20.4 million hectolitres). However, the Italian market remains the n.3 in the world in 2014, but with the decline of 6% reached almost the level of Germany.

From a commercial perspective and from the consumption point of view we are witnessing profound changes linked to the evolution of lifestyles and to the general economic downturn. According to the OIV data (2007-2012), the analysis of per capita consumption indicates that we are moving towards an average level of 20-25 litres of wine per capita, recording year by year a progressive decline.

In 2012, France is the key market in terms of per capita consumption with 47.7 litres per person, 30% more than in Italy. Portugal is the second country in the world for per capita consumption with 42.5 litres and Italy is the third country (37.1 litres per person). While in China consumption appears more stable, remaining at 1.1 litres per capita during the surveyed period, the US per capita consumption is on average of almost 10 litres per capita. The cross reading of world consumption and those per capita shows us that despite the internal demand in many countries is declining, however the way for the decline is still very long. According to the OIV data the general trend highlights US and China as the best market, with an increase respectively of 0.1% and 3.8% of per capita consumption during 2009-20014 (Figure 3.9).

**Figure 3.9. Estimation of per capita wine consumption**

Furthermore, according to BTMI 2008 study based on the data of the Institute of Services for the Agricultural Food Market (ISMEA), in 2006 the purchases of wine in Italy amounted to
slightly more than 793 million liters with a value of more than 1.7 billion of euros. Of these about 212 million liters with a value of 772 million euros were PDO wines and about 580 million liters with a value of 895 billion euros were common wines. From 2004 to 2006 it is estimated a decrease of 0.5% in quantity and a 7.2% increase in the value of wine sold in Italy. The most significant increase is registered by PDO wines (i.e. 7.9% in the quantity and 15% in the value), while the common wines fell by 3.3% in quantity and increased only 1.7% in value.

Today, the wine production can reach consumer through different ways and several stages. Different types of organisations allow the access of the product to consumer and from some years, they are undergoing a deep structural transformation. Since the seventies, we assist to the increase of concentration in the distribution sector in favour of large distributors, which can offer to consumer a wider choice and ease of access. While "traditional" channels, namely retail stores, are a reality that is slowly losing its importance, and only in some areas in poor urban concentration still plays a strategical role. The wine shops, although their percentage of sales is decreasing, they still play a decisive role in terms of image, selling qualified products and helping to spread the appreciation for wine.

- The modern trade (supermarkets and retail chains) is the channel that has the highest bargaining power able to impose particularly stringent requirements in terms of quantity and quality.
- The Ho.Re.Ca. and specialized retail represent a rather important channel for the distribution of wines, with a more limited bargaining power compared to modern trade. In particular, the suppliers are required ad hoc range of products and the provision of additional services to the sale.
- Commercial intermediaries play a key role in production environments characterized by high fragmentation. Wholesalers and cash & carry are also able to follow the individual capillary outlets and sometimes replacing the company itself in marketing to support the wine exploitation activities (ISMEA, 2006).

According to ISMEA data the 75% of household purchases in PDO wines takes place in supermarkets and hypermarkets, while the wine bars and traditional stores account for the 8%, discounters 10%, wholesalers 4% and other sales channels 3%. The common wines have similar percentages among the different channels.

If we consider the distribution channels, according to a survey conducted by the Mediobanca studies in 2008, the first distribution channel is the large-scale retail (43.7%) and the second channel is Ho.Re.Ca. (19.9%), then the direct sale has an incidence of 9.4%, the wine shops and wine bars of 8.3%. However, the data related on Great wines (with a price for consumer higher than 25 euros), show an opposite distribution with a greater role of Ho.Re.Ca. about the 44.6%, then an increasing value for direct sale 11.9%, wine shops and wine bars 28.6% while the large-scale retail decreases to 6.8%.

3.3.4 European and national standards for quality

As we have widely introduced in the section about policy and regulatory conditions the EU and National legislation provide marketing tools to help highlight the qualities, the origin and tradition related to registered products, assuring transparency to consumers. These schemes
and their logos help wine producers to place better their products on the market, providing them legal protection from misuse or falsification of a product name. There are also a number of optional quality terms, and separate rules, as we have mentioned above on organic farming. According to the pyramid of quality wines (Figure 4), the geographical indication reflects a product name that is closely linked to a specific production area. This concept encompasses protected designations of origin (PDOs) and protected geographical indications (PGIs).

As we have already explained, the PDO label identifies wines that are produced in a specific geographical area, using the knowledge and ingredients from that region. These are products whose characteristics are linked to their geographical origin. They must respect a precise set of specifications (the disciplinary) and may bear the PDO logo. The PGI category identifies products whose quality is linked to the place or region where it is produced, processed or prepared, although the ingredients used need not necessarily come from that geographical area. As for PDO products, also the PGI wines must comply with a set of specifications and may bear the PGI logo. Furthermore, all quality schemes are backed by EU marketing standards (Council Regulation (EC) No.1234/2007), laying down product specifications, such as minimum characteristics and labelling requirements to be respected on the EU single market. Another important standard is applied with respect to the allergens under the Commission Regulation (EU) No.579/2012. The legislation provides that for the labeling of wine products are given the mandatory indication of the allergens that affect the mention of sulphites with pictograms. Moreover, the EU Commission has clarified that the label must be marked by "no added sulfites". Finally, the organic and biodynamic wines are linked to European and national standards of products from organic agriculture with the relative labelling instruction/specification and logo (i.e. see the regulation of organic wine in the previous chapter).

### 3.3.5 Role of the export

The global wine market is characterised by a competition between two blocks of producing countries, the new emerging countries (Australia, Chile, USA and New Zealand), and the traditional countries (France, Italy and Spain). According to the study Nomisma (2008), the traditional countries, despite the well-established winemaking tradition and the higher share of exports on the total (62%), are facing every year a growing competition from new countries that manage to gain market share, with increasing shares of production and domestic consumption.

According to ISTAT data, the 2015 closed with a record for the Italian wine of 5.39 billion Euros of export value against 5.1 the previous year. Thanks also to a strong effect of the price and exchange rate and given the devaluation of the euro against the major world currencies Italy remains firmly in second place of the wine trade, both as regards the value (next to France) that with regard to the volume (second to Spain), which dropped by 1.6% with respect to the 2010.

The analysis of the category of bottled wines, which accounts for 3.8 billion Euros of exports in 2014, shows a growth with respect to the previous year of PGI wines (+ 5%) compared to the PDO (+ 1%). The export of quality wines in 2014 is distributed as follows: Red PDO wine with 36%, then the white PGI the 17%, red PGI 17%, common wines that occupies the 17%, finally
the white PDO the 12%. According to data published by Nomisma for 2015, the main import markets for our country are the US, UK and Germany. Russia continues falling, after -6% in the values recorded in 2014, in 2015 further down to -30%. In contrast, 2015 saw the recovery of the Chinese market, an increase of 50% for a value of 1.8 billion Euros, making it the fourth world import market.

Moving on to analyse the breakdown of exports at the regional level, according to ISTAT data in 2015 the Tuscany region holds 17% of national exports, only preceded by Piedmont (18%) and Veneto (34%), where the boom tied by sparkling wines gave his greatest contribution.

According to ISTAT data, in 2015 the Tuscan export is about 902 million of Euros with a growth of 19% from 2009 that is above the average national growth of 5%, and the Red PDO category gave his greatest contribution to this trend (about 504 million of Euros). Also at regional level, the main outlets for the Tuscan productions are the US, UK, Germany and China. *Almost all the producers that were interviewed operate on foreign markets. They confirm that their main outlets are the United States, followed by the United Kingdom and Germany. Among other major countries as highlighted by the interviewees, we can find Canada, Japan, some northern European countries such as Norway. Furthermore, almost everyone sees with great curiosity the future markets of Eastern Europe.*

### 3.3.6 Financial sustainability and market risk

The Italian wine sector and especially the Tuscan one, which among the regional sectors presents a lower debt ratio on equity and during the recent years has seen an important increase of overseas sales, are in a good state of health from a financial point of view. Despite the decline in domestic demand, the revenue and sales volume has been growing over the past decade. According to the data provided by the Medio banca report 2014 (Table 3.2) the results of a sample of Italian wineries (87 producers with a turnover exceeding 25 million Euros, excluding the cooperatives and the few (7) foreign-controlled companies), which represents the 32% of the Italian wine industry, confirms these positive trends.

| Table 3.2. Cumulative performance of the major Italian wine producers |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| **Euros Million, %**    | 2007            | 2008            | 2009            | 2010            | 2011            | 2012            | 2013            | 2014            |
| **Annual Turnover**     | 2,44            | 2,53            | 2,45            | 2,64            | 2,89            | 3,14            | 3,41            | 3,34            |
| **gross operating margin** | 329             | 266             | 287             | 330             | 344             | 339             | 387             | 432             |
| **Margin %**            | 13.4            | 10.5            | 11.7            | 12.5            | 11.9            | 10.8            | 11.6            | 12.9            |
| **Net assets**          | 1,50            | 1,79            | 1,94            | 2,03            | 2,13            | 2,20            | 2,26            | 2,38            |
| **Debts**               | 1,19            | 1,24            | 1,16            | 1,18            | 1,23            | 1,38            | 1,34            | 1,35            |
| **Investments**         | 158             | 175             | 112             | 144             | 123             | 231             | 115             | 128             |
| **Number of employees** | 6,14            | 6,31            | 6,35            | 6,37            | 6,64            | 6,61            | 6,69            | 6,83            |
| **Return on capital**   | 9.4%            | 5.9%            | 6.1%            | 7.3%            | 7.3%            | 6.6%            | 7.9%            | 9.1%            |
The total sales were almost stable around 3.34 billion Euros in 2014, of which 1.83 abroad (+1.4% compared to the 2013) and 1.5 in Italy (-1.4% compared to the 2013). The gross operating margin (EBITDA) grew 11% to 432 million euro, passing from the 11.6% to the 12.9% of the turnover. The steady depreciation of 2014, allowed an increase in operating profit of 17% compared to 2013 that altogether with the decline in financial expenses, a slight improvement in the tax rate and the absence of extraordinary charges, bringing the net profit to 117 million Euros. In addition, the net assets level has grown while the debts are almost stable over the period observed. The absolute value of the debts is 1.36 billion Euros, which corresponds to a ratio of 3.1 times compared to the EBITDA and 0.6 times the equity. The combination between the increase of investment (+ 11% compared to the 2013), which reach the level of 128 million Euros, and the strong growth in operating profit (+ 17%), allowed the return on capital to exceed the barrier of 9%. That constitutes a good result if compared to the 7.9% in 2013, a value close to those before the crisis, which ranged between 9% and 10%.

However, one of the structurally negative factors of the industry is represented by the consistent growth of the invested capital and fixed assets, which tends to reduce the profitability of sales.

The high and persistent growth in fixed asset investment proves to be one of the real critical factors of this sector, which reduces the profitability levels well below its potential in accordance with the related production value and efficiency in the management of production costs. The high and systematic growth of investment in fixed assets generates an excess in production capacity and an intensity of investments that lead to a reduction in profit margins well beyond that ones produced by the lower growth of revenues and by the increased international competition from producers with lower costs and prices. Although this factor is negative at an overall level, it has a greater impact on small and medium enterprises than large producers that are less affected by the growth of its allocation of fixed assets. The analysis of financial statements of the interviewed producers, using the AIDA database of the University of Pisa, confirms these results. Moreover, the interviewed producers revealed that in recent years they have received regular visits by banks seeking to provide financial resources to support their investments. The banks are aware that the sector generates profits and the risks are low. Despite some producers that sustained major investments over the last decades, or recently they have developed new types of production, for the majority of respondents the turnover margins are growing and the level of debt is contained. To this should be added the rapid increase in the value of the vineyard and of the related estates that depends by the success and the rating of the wine in the major international markets. However, these factors do not prevent small producers from lack of liquidity. Some interviewed producers report liquidity problems due to excessive delays of payment from buyers. The lack of liquidity like the excessive level of debt constitutes a negative economic lever to the detriment of small producers (Interviewees 1, 2, 4, 5, 10).
3.4 Key CSP identified in the literature, media and interviews

This section provides a list of key issues that arises from the analysis of the regulatory and market conditions. The key points are introduced by a SWOT analysis that highlights the positive or negative effects that the different issues can have on the wine sector.

One main point that emerges from the analysis is the relevance of the quality system that has been defined and structured around several conventions among Tuscan wines. These conventions, as a response to changes in the analyzed conditions (regulatory, market), have influenced the producers’ choices (product differentiation, product diversification, diversification of sales channels), as well as the governance structures (i.e. Consortia for PDO, producers’ networks, such as AVITO) and the mechanisms of coordination between companies (vertical integration, brand and company acquisition). Another key aspect concerns the dynamic relationships between regulatory conditions (e.g. planting rights and the subsequent abolition of replanting rights, thus the control of the supply) and market conditions (extreme fragmentation of the supply, acquisitions, and new opportunities for diversification).

3.4.1 SWOT analysis – the wine sector in Tuscany

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Terroir of great historical, cultural and landscape value in which winemaking is part of the history and cultural traditions of the region</td>
<td>• The price of wine is lower than other leading countries such as France</td>
</tr>
<tr>
<td>• World renowned brand of the Tuscan region, presence of high quality PDO/PGI products and consortia</td>
<td>• Presence of over regulation</td>
</tr>
<tr>
<td>• Well established wine tradition and expertise/knowledge (historical families)</td>
<td>• High transaction costs and high costs of the investment on fixed assets</td>
</tr>
<tr>
<td>• Tuscany is one of the leading Region in terms of export</td>
<td>• High barriers to entry, which are related to the investment on specific assets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Greater flexibility with abolition of the system of planting rights</td>
<td>• Oversupply of low quality wine</td>
</tr>
<tr>
<td>• Futures markets for organic and biodynamic products</td>
<td>• Exposure to global market competition by the new world of production</td>
</tr>
<tr>
<td>• Access to China and East European Markets</td>
<td>• Liquidity costs and business risks related to the lack of financial liquidity</td>
</tr>
<tr>
<td>• Greater efficiency in the management of bureaucratic procedures</td>
<td>• Climate change (risk of frequent extreme events, invasion of new pests)</td>
</tr>
<tr>
<td>• Research and development of technological innovation (development</td>
<td>• Water pollution (fertilizer and pesticide runoff)</td>
</tr>
<tr>
<td></td>
<td>• Excessive fragmentation of the supply</td>
</tr>
</tbody>
</table>
3.4.2 Policy and regulatory conditions

- As it emerged from the analysis of policy and regulatory conditions, despite the efforts made at European level to simplify and homogenize the current legislation among the European countries, at national level the legislation is still excessively binding. The interviewed Producers perceive an excessive weight of legislation on the vineyard and cellar practices, influencing also production and transaction costs. The recent ministry choice of dematerialisation has moved many questions in the industry. Producers fear the increase of transaction costs and tasks with the new online registers. At the same time, this binding regulation has protected the local producers from foreign competition and it has provided relevant legal instruments to combat fraud and promote quality on international markets. Thus, a reduction of the tasks and the promotion of efficiency in the management of the regulations should lead to improvements for the sector.

- Furthermore, there are other cases where the production disciplinary (regardless of the accession to the consortia) do not allow producing certain types of products, thus the strategies have been directed towards the acquisitions of different vineyards and estates in other part of Tuscany and also in other regions of Italy. In this case, the Tuscan producers have chosen to purchase other companies, like Sicilian ones, in order to develop new varieties and types of white wines (i.e. a growing segment on the market) that otherwise it would not be possible to produce in Tuscany.

- Finally, it is worth to notice another conflict between the regional producers and the regional legislation. The media analysis reports the case of the Territorial Plan (PIT) against which the major Tuscan wine consortia were all united and has obtained the change in the law with respect to its initial release. This case shows that often the regional laws are too restrictive with respect to the needs of producers, and that some producers operate within the network in order to boost and increase their lobbying capacity and the influence of the sector.

3.4.3 Market conditions

- Despite the sector appears in a good state of health, there are negative implications for small and medium-sized producers that are unable to find reliable and durable distribution channels. The main concern that emerges in any conversation with those interviewed producers is the problem related to the sale of the produced wine. The excessive fragmentation and the steady decline in domestic demand increase the pressure on small producers. Producers often complain the excessive competition at the regional level. Those who have initiated so far, a strong partnership with local distribution channels (i.e. Ho.Re.Ca.) and importers for export now are the most advantaged. While the others have to face the uncertainty of the results related to the search of new distribution channels and associated with the large marketing costs that
they have to face. Despite the wine produced in Tuscany has a good reputation, regional producers face difficulties to find out spaces for sale, even more in the local distribution channels since the industry is constantly in a situation of oversupply characterised by a wide competition.

- Another factor that is linked to the difficulty of finding outlets for the sale is the difficulty to receive payments by local buyers in a reasonable timeframe. This threatens the economic viability of many small producers that are forced to remain financially exposed for long periods, involving financial and business risks. Furthermore, despite the banks seem to be interested from a financial point of view to the returns associated with investments in wine, several interviewed producers reported that banks during recent year tried several times to offer loans at favorable interest rate. The small producers complain about this lack of liquidity as a constraint to their activities and for which they cannot dedicate enough internal resources to carry out debt collection.

- Another point that is worth to mention is represented by the diversification and differentiation strategies made by producers at different levels. However, this diversification process has not happened easily and without cost since the Tuscan producers collided often against regulations, and because of which they have failed to follow quickly the changes in consumer taste patterns. A first choice for diversification falls, for obvious reasons of cost-effectiveness and reflection associated with Tuscan PGI brand on the international outlets, on whether or not to make a PDO comparing with PGI wine. Despite the high quality associated with PDO wines, often the small producers seem to prefer the PGI label, since they can exploit the "TUSCANY" name on the bottle and it is a more flexible and less constrained instrument comparing to a PDO label.

- In other cases, producers have often chosen also to differentiate (i.e. modifying the packaging). For example, one producer that has been interviewed reports that for the wine production of 2015, he developed a line of bottles and labels that recover the 50s flask of Chianti in order to recall the image of the sweet life of that era to the American consumers, (their main outlet).

- Despite the high fragmentation highlighted by the desk analysis, the media analysis reports a recent case of concentration made by the major Tuscan wine consortia. In order to increase the individual bargaining power and improve the presence on international markets it was recently born a super consortium of premium producers "AVITO". AVITO brings together sixteen consortia with protected denominations of origin that bring together five thousand producers, with more than twenty thousand employees and 70% of Tuscan wine production (1.8 million hectoliters out of a total 2.6 million), with a turnover of €1.2 billion (70% from exports) (ANSA2, 2016; IE24, 2016). The goal is discussed by several generalist and specialised magazines as “Tuscan winemakers form a single industry group for better promotion”, “Working together to count more: in distant markets, but also with institutions” (IE24, 2016) and for obtain a greater control on prices. Indeed, Fabrizio Bindocci, president of the association declares in a recent interview for a local specialised media “the next move is to raise the selling prices of our wines and this is one of the topics that we will face in the forthcoming meetings of AVITO” (TOS24c, 2016). And in the coming weeks, with the expected entry of the remaining consortia of wines (including IGT Toscana and Carmignano), the group should represent more than 90% of Tuscan wine production
(the PDO and PGI productive areas last year were 46,000 on total 48,500 regional hectares) (IE24, 2016)

3.4.4 Be independent to develop uniqueness

- For some producers, it was not like a choice to join or not to a quality system, but a choice of being independent. The producers that have decided to diversify their production to reflect their uniqueness, they choose to break away (often only for few products) from the range of influence and control of the consortia for PDO, becoming independent wine producers. Like for one independent producer that we have interviewed. This producer left the Chianti Classico Wine Consortium in order to be free to recover local value and traditions (autochthonous varieties) focusing on an independent concept of quality that embrace also the organic farming.

3.4.5 Be bio as a lifestyle that contributes also to find new spaces on future markets

- Some interviewed producers have reported that they approached to organic farming as a lifestyle choice. These interviewed producers have made a long conversion process from the very beginning of their activity, which led them to increase the environmental sustainability of the environment in which they live.
- What may appear as a lifestyle choice, often ideological, in the cases we analyzed also revealed economic goals. These producers reported that their efforts are largely rewarded by the international markets where they operate, noticing a growing demand for these products, for which they are able to draw on average higher prices for products sold. Some of these producers have also approached biodynamic agriculture and they are often placed in producer networks that bring them greater visibility, especially abroad, where they can reap higher prices and increase the sales.

3.4.6 Role of the export and future governance of the sector

- Moreover, the interviews revealed several concerns about the relationship of regional production with the export (i.e. in terms of risky dependence on exports). While Tuscan producers currently benefit from the flows that the export generates, it may occur a negative side effect. The China for example is a country to which many producers are focusing, but given the quantities that this country could absorb in the next few years, the fear is that it will become the only outlet in the future market with all the related risk (see Russia). In this case, the dependence and the associated market risks would be maximum.
- Another problem associated with export, which is emerged by analysing the governance structure of many Tuscan producers, concerns the acquisitions of brands and estates operated by foreign actors. Often many historical families, in order to cope with financial difficulties or need of resources for investment they chosen to sell their brand and management to foreign companies. When these acquisitions occur, all the decisions about production move outside. Nevertheless, since wine sector is one of the
most important sectors for the Region this trend could have repercussions on the mechanisms of governance and on the territorial choices.

- While is strategic focus on new markets (China, Canada), it is also important to maintain the presence in important markets such as US, UK and Germany. At the same time, it is important to find a balance between export dependency/external acquisitions and local traditions. The industry is too fragmented; small farmers are often too weak against wholesalers and bottlers or large-scale distributors (i.e. corporations). The sector, which is very profitable (one hectare of land in Bolgheri and Montalcino can cost more than 300 thousand euro) naturally attracts many investors, the risk of speculation is strong. In order to balance these negative effects, we recognize an important role of support programs from (RDP) and other Regional support system from the Region in order to help the integration of young producers and the investments on innovation.

We can conclude by summarizing below the main strategies that we found through literature review, media analysis and stakeholders’ interviews. Despite the progressive fall in the domestic demand, the Tuscan producers have been able to transform their territory and their products in winning assets to remain competitive on foreign markets. Thanks to the vertical coordination of all the production stages, they reduced the variability of quality, strengthening year by year the offer. Then, through the diversification of products and sales channels, they have managed to reduce some risks and market uncertainties. Finally, thanks to the consortia system for quality, Tuscan wine producers have been able to count on a territorial system that guarantees the quality while ensuring even promotion and recognition mechanisms.

3.5 Wine Tuscany - focus groups and workshop

The following section reports the findings of two focus group, 4 supplementary interviews (see appendix 2 for details) and one workshop supplemented with 14 expert interviews, which form part of the activities of task 2.3, in order to improve and validate the results of task 2.2.

One focus group was conducted with Tuscan small and medium-sized Tuscan organic wine producers in December 2016. The second focus group was partially carried out with large Tuscan wine producers and Cooperatives in March 2017. Unfortunately, despite a rigorous organization as for the first focus group, we registered several no shows from stakeholders who had confirmed their participation shortly before the meeting. We therefore conducted the focus group with a small number of participants and decided to integrate the participatory activity with additional interviews to those participants who did not show up for the meeting, between May and July 2017. During the organization of the second focus group, it was possible to strengthen fruitful institutional relationships with the Tuscan Region, more precisely with the administrative unit that deals with the Tuscan wine sector. On the one hand this institutional link allowed our research team to overcome problems of involving wine actors during the vintage period in a participatory workshop; on the other hand, it has represented an opportunity to collaborate with the Tuscan Region and to participate into a wider workshop on the sustainability with relevant stakeholders. In this latter meeting we have presented and discussed the main findings from our research activities. The workshop activity as been carried
out the 4th of November 2017, at the University of Siena, during the meeting “Sangiovese purosangue”, following reflection on the FGs data, with the main objective to corroborate and improve the findings from the research activities carried out and consequently to gather further information regarding potential trends and scenarios that help to describe the future sustainability of the Tuscan wine sector.

Moreover, the collaboration with the regional body allows our research unit to carry out also further research activities (i.e. Buy-Wine related activities that has been a part of the research activities of WP3). This stream of collaboration constitutes a concrete result of the participatory activities of the SUFISA project in terms of the project's ability to involve the institutional stakeholders and set up collaborative research activities on the sector. These activities will be further reported also in WP5.

Details of the numbers of wine producers involved in each activity (i.e. focus group + supplementary interviews) and a brief synopsis of their socio-economic data are given in appendix 3. The main objective of carrying out focus groups and interviews was to consolidate the results of the previous analysis of regulatory and market conditions (see sections 3.2–3.3 above) through additional information and data on producers’ diverse activities. In this vein, the report aims to provide a wider analysis of the relevant economic, environmental, political, as well as social and market conditions affecting the Tuscan wine sector, including the analysis of the strategies implemented by producers to cope with those conditions. The information analysed wants to elicit a shared understanding of the Tuscan wine industry rather than collecting a set of individual and fragmented visions.

**Pisa Focus Group, output from the discussion with organic wine producers of the key threats, opportunities and related strategies for increase the sustainability of the sector**

Each of the focus groups lasted approximately 3 hours, while the additional face-to-face interviews lasted about 1 – 1.5 hours. During each activity notes were taken on the spot and further translated into English by our team.

The semi-structured interviews were conducted on the basis of the same structure applied for the focus group, in particular by focusing on data of producers' diverse experiences and digging deeper into producers’ decision-making process. For this reason, we asked producers to recall the most relevant conditions (i.e. obstacles or facilitating factors) that influence or have influenced their activities. Then, we asked producers to talk about their activities trying
to figure out their experience with any potential threats and opportunities that have influenced or are likely to influence the wine sector in Tuscany.

Moreover, particular emphasis was placed on quality characteristics developed by producers and how they act in order to achieve quality-oriented goals. By this way, we tried to detect the presence of specific institutional arrangements even in the form of specific quality agreements. The question focused on how the interviewees have developed such coordination mechanism over time, leaving the interviewees the time to express these concepts. Likewise, we sought to investigate the main transactions carried out by producers, the way producers conduct such transactions, as well as market related threats and opportunities in which such transactions take place. Subsequently the discussion was directed to the strategies by asking producers to express their opinion about the most important strategies for the wine sector in Tuscany. The focus moved to elicit out the producers’ strategies in response to emerging trends. In this phase, we directed also questions about the approaches to the sustainability of the firm (i.e. survival resilience and adaptability of the company).

The purpose of these inquiries was to assist producers in recalling their memories and experience about internal and external conditions to their farm environment, strategies, emerging trends and about the overall performances of the company. For these reason, we used direct questions to ask producers, ‘Why is this condition so important to you?’ and the interviewees could reply freely without limitations. The process continued iteratively until they could not reply with any additional meaningful answer or simply switched the discussion to another point. This kind of laddering inquiry technique gave us the opportunity to validate some of the linkages between conditions, strategies, and institutional arrangements emerged directly from the discussion. Around 80 pages of data were collected and anonymity was guaranteed to all participants. As consequence, the direct quotations used in the following pages refer simply to the focus groups or interviews, rather than to any individual wine producers. The focus group schedule was divided in two main sections (i.e. Threats and Opportunities of the Tuscan wine production and Response strategies), which in turn were divided in subsections; further details are given in appendix 3 and 4.

Focus groups allow participants to mapping a specific set of relevant issues (Kreuger and Casey, 2000). The focus group technique was combined and improved with a causal chain analysis (Orvik et al., 2013) in order to carry out then a dynamic and participatory workshop. This knowledge synthesis integrated method allows developing a structured and enhanced discussion of an issue, with the aim of establishing sequential relationships between different factors by flow diagrams depicting causal linkages (Pulling et al., 2016). Building on the CSP theoretical approach, participants were asked to map the characteristics of their enterprises and business activities and to identify and rate – according to importance - the most relevant contextual conditions in which they have carried out their activity and the related strategies implemented. Then, participants were also asked to reflect about future conditions in terms of threats and opportunities – likely to influence their business activity through a causal factor dynamic - and to map potential strategies that will enable them to cope with those future trends.

The workshop was conducted in November 2017, building on to the collaboration with the Regional government body, the University of Siena and other wine experts, in order to validate the main insights from focus groups and interviews. The workshop objective was to present
key findings from SUFISA tasks 2.2, to a group of relevant stakeholders from the Tuscan wine industry and to get their relevant opinions on it.

The findings from focus groups and interviews were reported in two main key sections (see below) and were then presented to the workshop participants for feedback and comments. Due to the large number of participant at the workshop, it was not possible for the presentation to be informal in nature and it was also difficult to receive comments at any points from participants. For these reasons, the workshop was structured in several presentations on the main sustainability issues for the sector and comments were allowed at the end of each presentation. Then in order to allow the discussion during our presentation we opted to introduce the relevant results from SUFISA task 2.2 and leave question for the audience in order to stimulate discussion in the room. Moreover, to increase the opportunity to answer by participant we distributed at the end of the discussion around 100 questionnaires on the main issues introduced and discussed in our presentation. We retrieved around 14 completed questionnaires that allowed us to create a complete picture from the workshop. In the workshop, as well as for focus groups and interviews, we adopted flexible free talk method, avoiding technicalities and using wording more familiar to the experts in order to facilitate the ‘flow’ of the discussion and to allow participants to make comments. This led to participatory and interactive activities that were judged of relevant interest for both researcher and participants. Given the strong link between the activities and the results achieved, we have decided to include the workshop results as part of the reporting of the focus groups under section 4.6.

The second aim of the workshop was to corroborate a range of scenarios regarding the future sustainability of the Tuscan wine sector in face of all the analysed changing conditions and the highlighted strategies. This part of the workshop aimed to gather preliminary information on factors that will be elicited through the next WP4 activities in terms of developing solutions and scenarios more generally, with the aim of improving the sustainability of primary producers. As such, it is reported as a distinctive section from the other workshop and focus group data: section 4.7.

The production of wine in Tuscany - Workshop

The workshop lasted approximately 4 hours and notes and questionnaires were taken for later elaboration, which resulted in a 50 page of information. The agenda for the workshop is available in appendix 5. There was a total of 100 people at the workshop; two of them were part of the research team. 10 people have been invited by our team and by the Region. Details of those who attended are given in appendix 6. As with the focus groups, anonymity was
guaranteed to the participants, meaning that any direct quotations used in this report are given a number (e.g. WSP 1, where WSP means ‘workshop participant’), rather than identifying any individual participants’ names or affiliations.

The focus groups and the interviews involved two distinct groups of regional producers. In the first focus group, we worked with small and medium-sized organic producers. In the second focus group and in the subsequent interviews we involved large producers and cooperatives. Together these two groups of actors represent the heterogeneity of regional production. With the aim of returning a complete picture of the industry, through its peculiarities and differences, the flow of information was organized in two single sections and the results of both focus groups are reported in the text. This helped to quickly focus on emerging issues or strategies from one perspective to the other, or by considering differences and potential contrasts.

With regards to the application of the focus group technique it is important to note that the design of the sample did not aim to be representative in any “statistical” sense, given the exploratory nature of this particular phase of the case study in Tuscany. The focus group discussion - enhanced with a causal chain analysis - allowed mapping sequential relationships and depicting causal linkages between different farm conditions and the strategies implemented by wine producers.

This reading key also helps us avoid duplicating the same information, while allowing us to point out useful differences or peculiarities of one production over the other. The focus group and additional interviews data were organised and analysed in two main sections (i.e. conditions and strategies) that were in turn organised in 12 subsections. These latter sections form the structure of the wine report, as well as the presentation that was given at the workshop. In the next pages, the data were structured as follows:

• Threats and Opportunities of the Tuscan wine production
  • Demand conditions
  • Price level
  • Technological innovation
  • Market accessibility
  • Market bottlenecks
  • The need of stable relationship and the presence of “privileged” channels
  • The Export and intermediaries contacts
  • Environmental issues
  • Regulation and policy
  • Production factors
  • Socio demographic changes
  • Availability of financial resources and credit

• Response strategies
  • Strategies for demand conditions
  • Strategies for technological innovation
  • Strategies for price volatility
  • Strategies for reducing the bureaucracy
3.5.1 Threats and Opportunities of the Tuscan wine production

The organic wine producers, the medium-large cooperatives as well as the other wine experts identified policy and regulatory conditions as the most crucial contextual aspects influencing their activity. Then, producers considered technological innovation the second relevant influencing factor. Other key contextual aspects were judged relevant and consist of environmental factors, demand dynamics, market access, quality and efficiency of institutions, and - slightly less important - price level volatility and credit availability. General production factors - excluding those specific such as clonal selection and viticultural practices that can increase the conservation of the soil, bio-diversity and the chances to obtain quality wines - and socio-demographic changes were considered not really important according to the participants. Then participants identified a number of threats and opportunities likely to occur, in the future, within their business activity. These future conditions were classified as demand conditions, price level variability, technological innovation, market accessibility, environmental factors, regulations and policy, production factors accessibility, socio-demographic changes, and availability of financial resources and credit.

3.5.1.1 Demand conditions

The Tuscan wine sector, as well as in other regions of Italy and in other producing countries, is undergoing a period of strong changes because of a sharp contraction in wine demand partly due to the economic crisis but strongly correlated with changes in consumption patterns and consumer preferences. This evolution is better represented by the following quote:

"Consumer want to drink less but better and they are oriented towards healthy products." (COOP2).

The debate emerged during the workshop - and the opinions expressed by more than 50% of respondents to the questionnaire - confirmed the extreme importance of changes in consumer patterns experienced by the wine industry.

Both focus groups and interviews have highlighted how manufacturers are prepared to deal with this strong change by looking more closely at three factors:

- Economically viable niche markets linked to quality,
- The demand in emerging markets (i.e. China in the first line),
- The demand linked to more conscious consumption, such as the growing demand for organic production.

The market and demand for organic wine is growing and many of the producers who participated in the activities are involved in the organic production; some of them have opted to produce 100% organic and biodynamic quality wines.
However, one of the most remarkable aspects discussed during the FG with organic producers was the strong growth of organic wine demand. More than 60% of the answers to the workshop questionnaire attributed a critical assessment to this condition. With regards to demand conditions - in response to an increase of the organic wine demand - participants expressed the importance of promoting organic producers and organic products as well as protecting landscapes and territories through specific organic agri-food districts. Participants stressed the need of involving institutions to support cooperation between producers to improve communication activities and credit access capacity. Discussions at the first focus groups revealed that the increasing consumption of the “bio” products is not followed by the development of a critic capacity of the consumer. The following quote provides a good synthesis of this aspect:

“It seems that the consumer is not able to distinguish from what is really bio and what is not, or from what can be a greater bio product and what is just a standard one.” (ORGANIC2).

The organic producers perceived that this demand inflation for organic product could be translated into a loss of consumer trust. Despite the increasing demand, the consumers still need information and orientation among the range of organic productions. Thus, producers agree that there is a strong need for protecting and better communicating the bio-products.

This thought was also confirmed during the workshop by the relevance given in the questionnaire answers about changes in the labeling of organic wines. More than 90% of respondents attributed the recent changes in organic labeling to a significant condition.

Also, they feel that more aware consumers can have a positive role for the demand. In fact, during the focus group there was a general consensus on the need for more and better communication activities for “bio” products that can be related to the territory (a mature territory that can understand and develop this type of communication). The most important aspect for producers lies on the sales and communication about the production method in the specific territory of origin and not in the sales of the brand alone. With regards to changes in lifestyle and behavior, organic producers identified the relevance of a network of producers to reach specific market channels such as local purchasing groups.

During the workshop participants highlighted the need to develop organic products together with integrated and specific regional knowledge in order to represent the true values of the territory.
“The organic wine can be a regional priority, but we must not marry biological production by faith, but it must be integrated with specific knowledge”. (WSP3).

Since the organic production is double-digit growth (i.e. 10% annually) and Italy is currently one of the leading countries, there is still a long way to go in the wine sector.

“More attention needs to be paid to vineyards, especially on soils and the values of the territory need to be represented.” (WSP2)

For these reasons, a new pattern has emerged in the course of the workshop, namely the "rational viticulture". A viticulture that is careful to the territory and its social and environmental values, that cares about the health of consumers (i.e. reducing sulphites and chemical inputs), capable of developing innovation and wine experts’ coordination through networks or new producers’ associations in order to be competitive on markets. While organic farming and the research on grape varieties can contribute to increase the environmental and social sustainability of viticulture in Tuscany, a large part of the discussion of rational viticulture also concerned precision farming to make vineyard practices more efficient, new irrigation techniques to cope with periods of extreme drought, hydraulic and agricultural techniques of land management to prevent erosion and soil management techniques such as cover crop to protect biodiversity. As emerged in the FGs, all these aspects of environmental sustainability to be applied in the near future need a continuous aggregative effort, in the face of what has been repeatedly confirmed as an extremely fragmented condition of the sector.

3.5.1.2 Price level

The discussion related to prices found considerable consensus among focus groups and interviews. More than 66% of the answers to the workshop questionnaire attributed a key assessment to the instability of prices.

The main issue regards the low prices for regional productions compared to other countries and the consequent need to increase the price level.

Keeping in mind that all producers feel that the prices of their wines are too low, they reported several reasons likely in accordance to the different size and type of productions. According to large companies, in Tuscany and generally in Italy there are few commercial firms capable of dealing with markets (such as French négociants) and, above all, there is not a uniform action that can help markets to recognize more value for Tuscan productions such as a national promotion strategy.

“Considering that the export is a natural outlet for our production, the Tuscan companies – similarly to other companies in Italy - cannot keep on thinking that they could compete alone on the major international markets. It is therefore necessary to have a national systemic action, something that represents our production on international outlets as Italy and not like the small, even virtuous municipality of a small Region like Tuscany.” (COOP1)

If on the one hand the large producers agree that the sector needs a coherent commercial action at regional or national level in order to raise prices and investments for increasing the value of their productions, on the other hand small producers believe that the competitive pressures exerted by the major producers is responsible for strong market fluctuations and the
relative price depression. Those major producers succeed in surviving even at very low prices, relying on larger quantities and more standard production.

"The downward price competition only benefits large producers. We cannot afford competition on price and quantity since we are more oriented through quality." (ORGANIC4).

Indeed, during the second focus group it has emerged a speculative action that only few large producers can realize.

“In order to minimize the risks associated with a low sale price due to the price level volatility from one vintage to another, we made a large investment in infrastructures for stocking the wine produced. Thus, we are now able to wait and sell the wine when the market provides a more profitable price. Generally, it happens that the product in a bad vintage is scarce, thus we can be the only ones to have the required quantities for which in this case we can get a better price.” (COOP1).

For these reason during the first focus group it was hypothesized a new condition category between market access and price level that we can call “competition”. Organic producers consider key to strengthen communication strategies in order to increase producer reputation and, then, the reputation of their products. They envisage the opportunity of direct sales and product promotion publicizing the firm/producer image. Moreover, during the workshop it has emerged the need to focus on collaborative efforts that can lead to the creation and formation of new sales networks and local intermediaries, with more qualified staff to face the new market scenarios.

### 3.5.1.3 Technological innovation

In all the focus groups and interviews the participants recognize in technology and in the general technological development of the sector a potential opportunity and a threat at the same time. In particular, they distinguish between the technological developments linked to the production phase from the ICT’s innovations. The first one is mainly tied to the vineyard practices and new machinery in the cellar. But in order to implement this kind of innovation, producers require large investments that only a few of them can support. In this vein innovation can contribute to increase the efficiency and sustainability of productions. At the same time, when innovation is driven by only mechanisation, it can lead to a loss of original practices and traditions and, ultimately, to lower product quality and authenticity. Many participants have reported that they successfully innovate by keeping at the same time the focus on those practices that give the original characteristics to their products.

One point that is worth to stress emerged during the workshop and regarded the need of a new research stream on grape varieties and clonal selection.

“We have to go back to the Chianti Classico 2000 project and proceed to a new research phase. The varieties that we were able to select at that time (i.e. from the 25 new varieties of Sangiovese, Canaiolo, Colorino, nowadays 7 are the key tuscan varieties of Sangiovese) have ensured the success of Sangiovese in the world. Today, in the face of the need to shift viticulture to more sustainable practices, therefore to
reduce vineyards treatments, we have to go back and follow a new research path that will bring us new results that are able to cope with the challenges that the environment and consumers pose to the sector.” (WSP8)

Thus, the workshop highlighted the importance of the past research project on clonal selection such as “Chianti Classico 2000” that was developed thanks to a huge joint effort between producers, institutions and universities. On this common effort, many actors have called for a return to collaboration in the search for new resistant varieties, capable of performing better against climate change and more suited to change in environmental conditions and consumer patterns.

Other manufacturers also consider the evolution of technology on web and social network by linking technology to commercial strategies. Concerning the technological progress, organic producers deem technological innovation as an opportunity to seize new ways of territorial promotion. They highlighted the importance of a producers’ network allowing to share ideas and knowledge for technology use. From this side, there are producers who feel that this type of technological development can represent a gap factor or a factor of exclusion for producers who lack such technological skills.

"A scarce presence on social networks can be a factor of social and commercial exclusion.” (ORGANIC5).

Meanwhile, the network can also represent a greater opportunity of growth for some producers: in fact, social networks can lead to a greater visibility all over the world. This opinion has been confirmed also during the workshop, where participant agreed that there is also the need to develop a greater capacity to use modern ICT technologies (i.e. e-commerce platform, web and social skills). The totality of the responses to the questionnaires emphasizes this aspect as very important. Critically, one of the producers shared his experience about the actual positive role that the social network played in terms of visibility while - in an initial step - he did not perceive any direct impact.

### 3.5.1.4 Market accessibility

The discussions around the access to markets lead to different position among participants. The discussion focused around three main areas: the bottleneck created by large distributors, retailers and bottlers; stable relationships through local or large consolidated channels; the need to find external outlets for export and contacts with intermediaries. These main areas are further explained in the sections below.

### 3.5.1.5 Market bottlenecks

In addition to the uncertainty of demand and the pressure on sale prices, wine producers often refer to structural weaknesses of the supply chain due to excessive fragmentation; in fact, the extreme atomization of the supply chain - that typically characterizes the Italian wine industry - does not facilitate the development of clusters nor other forms of coordination (Humphrey and Schmitz, 2002). According to participants of the first focus group this situation is due to the lack of a common strategy for investments on the marketing and trade side that leads to a
weaker bargaining power of producers with respect to large wholesalers and distributors. In this context, only a few large producers or cooperatives manage to deal with pressures on sales due to the strong international competition and concentration, while the rest of the sector shows clear signs of suffering. The increase of concentration on the distribution side (Santiago and Sykuta, 2016) in favour of large players, which can offer to the consumer a wider choice and ease of access, creates bottlenecks for medium size and smaller producers seeking to access the retail market. Moreover, the modern trade (i.e. large distributors or retailers) is the channel that has the highest bargaining power able to impose particularly stringent requirements in terms of price, quantity and quality.

3.5.1.6 The need of stable relationship and the presence of “privileged” channels

In the discussion about the access to outlet markets, a very important issue concerns the presence of stable relationships with distributors, often mediated by the presence of intermediaries. These are specific relationships, not necessarily formalised by a contract but formed through the repetition of actions over time where trust, punctuality in collecting payments, and purchasing stability are key elements of the relationship.

“We can rely on distribution networks that we have established over the years with few large buyers who have a great buying capacity and with whom we keep stable relationships over time.” (LWP1).

“We work with our sales agents since more than 20 years and we are confident of their value and the results they can guarantee. In the past I used to move to many wine fairs, today I cannot handle all these events: often I find those events not so useful, so I prefer to rely on my consolidated channels and intermediaries.” (LWP3).

Most participants have cited, on several occasions, the importance for them of a greater contractual stability as well as the regularity of secure and timely payments. Often, they declared to rely on brokerage or intermediaries who secure the contact with large retailers, both for the domestic and foreign markets. In fact, under a B2B (business-to-business) perspective, the wine companies try to sell their products (e.g. grape wine, bulk wine, bottled wine) to wholesalers, retailers and other merchants. In order to achieve the desired results, they need to engage their time, effort and money to build a strong and longer “value-laden relationship” with these actors (Beaujnot et al., 2004). In other cases, these relationships have been consolidated with more local channels (i.e. hotels, restaurants or other HO.RE.CA. channels).

“We focus on few consolidated relationships with large distributors who assure to us the sale of at least 80% of our products. We also have a small organic production but we sell it through other local channels, mostly restaurants and here through our tasting room in our direct sales outlet.” (COOP2).

In other cases, tourism can also be a privileged outlet, as the following quotation demonstrates:
“For us, the tourist presence, especially in the summer season, is a very important condition. Thanks to tourism we are able to sell most of our productions through several local channels.” (ORGANIC4).

However, among those who have a long-term relationship with HO.RE.CA some have complained about the considerable delay in payments (i.e. sometimes more than 160 days after the delivery) and the related risk of lack of liquidity. Consequently, they reported their need to find more timely sales channels. In that cases they reported to use also catering services that they carry out within their estates through the development of internal tasting room, wine shops, wine club, etc. During the first focus group this strategic decision emerged through small- and medium-sized wineries that need to increase their ability to better reach consumers. In this case, the presence of Direct to Consumer (DTC) channels or other HO.RE.CA and local food networks (Brunori et al., 2012) becomes an alternative to escape from the power of large distributor and the competition of higher volume and large-scale wineries.

3.5.1.7 The Export and intermediaries contacts

For all participants, the export opportunity has become one of the most important conditions for the sustainability of the industry. During the first focus group, the small- and medium-sized estates that focus on high-quality wines reported to choose various export strategies towards emerging markets, which are crucial in order to achieve more competitive prices, but at the same time they also need to rely on several local marketing channels in order to diversify their risk. Indeed, the access to foreign markets can be costly since it involves transaction costs associated with the search and development of new marketing channels.

This condition has also been further identified through a numerical analysis of the sales channel diversification choices. We analysed the Microdata of Tuscany census 2010, merged with a Regional database of public payment adopting the reciprocal function of Herfindahl-Hirschman Index (HHI) (Lobley et al, 2001; Ilberly et al., 2010) to analyse the extent of diversification of sales channels among alternative marketing strategies: i) direct sale on-farm; ii) direct sale off-farm; iv) forward contracting; v) sale to commercial enterprises; vi) sale through cooperatives. Below we reported the figure of the spatial distribution of the diversification index, which highlights the presence of a strong degree of heterogeneity across different wine quality productions. This figure catches the attitude of PDO and organic wine producers to diversify their marketing channels. The spatial distribution of diversification index, respectively for PDO/PGI wine producers, shows greater diversification of sales channels, while for producers who do not choose the PDO/PGI label it shows a greater specialization with an average value of the diversification index around 0.97.
This strong differentiation of regional productions can also be seen in the questionnaire answers during the workshop. The 60% of the respondents confirmed this strong push for the differentiation of processes and products as a condition of the Tuscan system, and little more than half of the respondents recognize a link between this drive to diversification and the resulting extreme fragmentation of the sector.

Moreover, among all participants a certain awareness of the dependence of the regional production from export has emerged during the activities. Today, under the pressure of concentration in the distribution market, many distribution companies have become owners of the vineyard and of several historical brands. Through vertical integrations, they have acquired numerous productions. In this sense, the excessive dependence from the export becomes a risk factor that limits the autonomy of the territories and binds them to fluctuations in international markets. In addition, it becomes increasingly expensive for small and medium-sized producers to find a space on these markets. Nevertheless, a key point that could play in favour of regional producers lies in the ability to establish stable relationships with distribution networks through increased contact with third-party agents such as wholesale intermediaries or export brokers. These intermediaries can play a key role, connecting wineries to other distribution channels in domestic and external outlets. These types of actors (i.e. wholesale merchants, industrial distributors, importer or exporter, agents and brokers) maintain relations with distributors and wine merchants. Since they follow the individual capillary outlets, they can be considered as manufacturers’ representatives (Rindfleisch and Heide, 1997), which can substitute producers in the marketing phase (ISMEA, 2008). Such relevant actors are independent third parties that help agents from the initiation until the enforcement of transactions. According to Williamson and Ouchi (1981) and Williamson (1985), they take part in the institutional framework in which contracts are initiated, negotiated, monitored, as well as adopted, enforced and terminated. These “middlemen” can help producers to find and develop exchanges in new distribution channels overcoming the bottlenecks created by the concentration of large distributors. Moreover, the contact with these intermediaries creates also the opportunity to reduce the transaction costs associated with the research and development of new marketing channels and, therefore, it can represent a successful strategy for small and medium enterprises to boost their competitiveness.
Thus, aware of the strategic importance of these intermediaries, especially for small producers, seven years ago, the Tuscany Region decided to create an annual international reference event for brokers worldwide interested in Tuscan wines, called “Buy Wine”. The Buy Wine represents the largest commercial initiative for Tuscan wines. It takes place every year in Florence (Italy) from 2011. In the course of its seven editions, it has acquired popularity and is now recognized by the industry as a reference event for importers worldwide interested in Tuscan wines.

This tool aims to create a matching point between regional wine producers and export brokers that are interested in buying Tuscan wine and import it into foreign countries.

The Buy wine matchmaking scheme

Thus, for Tuscan producers became a great opportunity to meet these buyers at a significantly lower cost than traditional ways of contact with these intermediaries (i.e. visits in foreign countries, other trade fairs). Thus, we define Buy Wine as a mechanism that promotes the meeting between the real actors of the wine industry, particularly between wine producers and those foreign brokers who occupy the upper part of the wine supply chain. During the first focus group, some producers have positively commented their experience with the Buy Wine:

“By participating in the Buy Wine for five years I could create a portfolio of brokers who provide me a growing percentage of sales annually, around 15% of my sales” (ORGANIC6).

During the second focus group the Regional administration explained that the scope of this meeting is to encourage the development of the relationships between regional producers and the international importers.

The Buy wine event 2017 in Florence

More recently, this event has been further enhanced, thanks to the contribution of an innovative web agency, named Uplink, that developed a CSM-2 intelligent matchmaking algorithm that helps sellers and buyers to manage the pre-trading stage (i.e. organizing the
search, matching and meeting phases). This algorithm works in the pre-contractual phase between parties and like real matchmakers (Baritaux et al., 2006) do not participate directly in the ownership flow, but simply match buyers and sellers, helping them to transact. So, Buy Wine, as an annual B2B event, and its architecture have been designed as tools to improve the accessibility of different regional products to major foreign markets. Thanks to the use of ICT technology, it has been possible to increase the number of meetings through a greater efficiency in meeting management and in fact a substantial reduction in search and transaction costs that the operators normally have to support to participate in this type of B2B event. From this point of view during the workshop emerged several prominent positions in the use of ICT as a tool to facilitate the marketing and trading operations.

### 3.5.1.8 Environmental factors

From the environmental point of view, climate change is certainly one of the major concerns of regional producers and wine experts. The relevance of climate change has been confirmed also by the 84% of the respondent to the workshop questionnaire. However, during the two-focus group and the interviews they reported that they perceive the climate change as something for which they cannot do anything. Climate change translates to them in higher costs and unpredictability related to risk factors on the production front (i.e. shorter harvest times, invasions of pests).

For most of the organic producers in the first focus group, the environment influences production choice but can also influence consumer choices:

"I decided to move to the country about 35 years ago, with the idea of having a completely different life. When I started at this time, the land was extremely polluted by the Roundup so I first started with the integrated production methods and then I went to the organic and nowadays to biodynamic. I believe that health is related to the environment we live in, so I try to take care of it and I think that with our production choices we can drive consumer towards more healthy and sustainable food consumption." (ORGANIC3).

As far as large wine producers and cooperatives are concerned, the environmental issue is important also for them, as greater awareness of environmental issues expressed by consumers translates into greater attention and demand for healthy and sustainable products. During the second focus group and the interviews, the participants confirmed that they pay particular attention to growing markets such as organic ones. Moreover, the sustainability issues for these companies become an economic opportunity related to the technology's efficiency and the associated ability to make investments, or a market opportunity related to the standards that the market requires. The wine Cooperatives, that have variable production standards depending on the quality of the production to realize, control the grapes that the members confer and recognize premiums for high grape quality (i.e. higher prices). However, these quality parameters, apart from organic production, are related to the origin of the grapes and the practices established in the disciplinary of PDO and PGI production and not necessarily to a greater environmental attention.

A final point regards the management tools for environmental risks. The majority of participants have said that they use classical risk management tools such as insurance.
3.5.1.9 Regulation and policy

In relation to regulation and policy the presence of burdensome bureaucracy was the most critical issue discussed. More than 74% of respondents during the workshop confirmed the excessive bureaucratic burden and expressed greater need for simplification and efficiency. While 72% acknowledged the public administration’s effort to create digital registers, but then expressed different perplexities about the goodness of the dematerialization process. Despite the EU legislative effort to increase the efficiency of wine regulation through the recent reform of the CMO wine, the producers feel that wine sector is still over-regulated. For producers, the bureaucracy means “increasing costs” and “greater dispersion” of the company resources. The following quotation contribute to illustrate this producer’s point of view:

"Businesses require greater flexibility, instead the policy often provides solutions that increase constraints and rigidity of the system and consequently rise pressure on producers." (COOP4).

To a large extent, producers complain the waste of their productive time and workforce to follow each bureaucratic request. There were frequent discussions about how the legislator does not fully understand the issues being faced by wine producers, and especially for the large cooperatives:

“For the legislator, it seems that our work is on the papers. There are weeks in which we have at least one control per day. During these controls, we lose several hours and time, while the time to devote to the vineyard and production is never enough. In addition, we have several certifications (i.e. ISO, EMAS, ICEA for organic productions) that we need just for suppliers and the market since from the administrative side these certifications do not add any advantages.” (ORGANIC1).

On the control side, more than 80% of respondents to the questionnaire highlighted the difficulties associated with the management of controls. One key aspect emerged is that policies should reduce the dispersal of corporate resources and help the industry instead of exacerbating existing disparities. According to some, the sector would need more harmonization in controls. At the moment, they believe that policy has a negative impact on producers’ performances. With regard to the cooperatives, the subsequent CAP and CMO wine reforms have had a negative impact on their business. The discussion with these producers converges on the loss of conferring members who have registered during the several reviews of CAP and CMO reform. According to producers, this element has greatly reduced their production as well as their turnover. They also complained about the incentive mechanisms that have been put in place over the years on transformation processes.

“Over the years we have lost several associated suppliers. First when the incentives related to the vine were eliminated and attributed with greater weight to other crops, for example sunflowers in our area, many grapegrowers have abandoned the cooperatives. Then this trend is also increased thanks to the grubbing-up premium for the vines.” (COOP2).

Only half of respondents to the workshop questionnaire stated that they consider these changes to be important. This aspect raises an unclear position on the part of producers and industry experts about the legislator and confirms that between the two parties essentially some objectives do not converge.
An interesting point on which the participants in both the first focus group and workshop demonstrated a certain degree of convergence is the potential to create associations or producers' networks that will provide different services, including training and assistance on the bureaucratic front. Organic producers identified the increasing of bureaucracy as one of the major threats likely to influence their activity in the future. They envisage the priority of a collaborative approach such as a collective organic certification in order to reduce individual efforts and costs.

“A possible way to overcome this threat can be represented by producer associations and networks with the opportunity to share space, tools and costs.” (ORGANIC2).

Another common reflection that has arisen concerns the common difficulty for all producers to be able to participate or access to regional support funds for the business development, marketing, innovation as well as measures for rural development.

During the first focus group, in the discussion on threats and opportunities for the sector, participants decided that some elements of discussion could be placed between policy and regulation and socio-demographic conditions: the need of producers' associations for example; or the need of new marketing and communication tools for organic products.

3.5.1.10 Production factors

One of the most critical aspects for producers, during focus groups and interviews, was the lack of liquidity and difficulties in accessing credit. Producers complain that they have to cope with the delay associated with payments. Small and large distribution channels appear to be in difficulties on this front, paying producers not before than 60 days. This often results in lack of liquidity for producers who have to limit their production choices. In addition, there are difficulties for obtaining credit from banks and insurance that does not allow flexibility and rapid development through investments in order to face the changing market conditions. This situation mainly affects small and medium-sized producers compared to large producers and cooperatives. Although on a different scale, all producers are affected by this situation. Consequently they reported their need to find more timely sales channels. The choice of a few or a single sale channel in these cases is driven by the contacts that these wineries have with few large buyers who have a great buying capacity and with whom they have stable relationships over time. Most respondents have cited, on several occasions, the importance for them of a greater contractual stability and secure payment times. Often, they declared to rely on brokerage or intermediaries that secure the contact with large retailers, both for the domestic and foreign market.

3.5.1.11 Socio demographic changes

Among the socio-demographic changes, the most important aspect that emerged concerns the gradual depopulation of the territories, in particular with regards to the younger demographic components that has an impact on production, limiting access to this factor for some companies. One of the interviewees has highlighted the difficulty to find young workers for the operation related to the vineyards. Young people living in that area have moved all over to other regions, attracted by better prospective of life and growth opportunities. Compared to
the past generations, this situation puts companies in face of a generational change where the future is uncertain and the only tool, at present, to meet the production needs is to make use of older or foreign workforce. This aspect is related to the issue of succession. Several family businesses involved in our participatory activities have repeatedly reported that they are not yet certain that their heirs will continue their work in the future. Although many of them are optimistic about their current situation, there are objective difficulties, which unfortunately they cannot cope with. The industry has many entry barriers that limit the chances of access for younger generations. It is very difficult today to start a new wine business activity ex-novo. Market saturation (i.e. too many producers), the high start-up costs and the long recovery of the initial investments constitute the key entry barriers for young entrepreneurs.

3.5.1.12 Availability of financial resources and credit

Compared to the problems of access to credit and lack of liquidity, some positions emerged during the focus groups and the interviews that see opportunities from these conditions. During the first focus group the ability to access European funds has emerged as an opportunity to overcome the lack of credit. However, since is not easy to participate individually, their idea is to improve their network capabilities in order to cooperate for accessing to these funds. In this vein, they feel that another opportunity is represented by the efficiency of institution, which are generally not efficient and for which producers feel the need of an office that can help potential beneficiaries to know funds and new application terms.

3.5.2 Response strategies

Below we reported those strategies on which there has been greater discussion and convergence among participants, and those noteworthy aspects that can in some way give direction to future trends for the industry. To cope with those most important conditions, almost all producers declared to have implemented strategies aimed at creating and embedding value added as well as strategies intended to build partnerships and networks with other actors.

3.5.2.1 In response to demand conditions

With regard to the threats and opportunities emerging from the demand side, the producers of the first focus group and the expert during the workshop highlighted response strategies related to the promotion and communication of the territory and its organic products. Almost all respondents to the questionnaire confirmed the importance of collective strategies aimed at the promotion and communication of the products of the territory. It has recently been observed an increase of organic wine demand especially by Italian consumers (Federbio, 2014). This growing internal demand encouraged many producers to follow the rising trend of the Italian “green” wine market, producing wines through various “bio-sounding labels” (Gilinsky et al., 2015). In general, to cope with a growing global demand, it is considered key for SMEs to focus more on branding, distribution channels, production quality, and marketing
goals (Alonso et al., 2014). The need for joint action at regional level and the promotion of marketing skills has also emerged in the second focus group and during the interviews:

"I am not concerned about the demand side, I think we must be able to move on the supply side. With the offer, we can stimulate consumers towards new needs or orient them towards consumption habits close to what the territory can offer." (LWP2).

"The French producers are smarter than us because they are skilled merchants. We have to improve our marketing ability and our offer but at the same time we cannot continue to think that everyone can represent alone the highest quality of a territory. We should revise our "too democratic" way to attribute the PDO quality. For example, in France just some authorities are able to decide what are the quality wines, while in Italy too many producers receive the same recognition, even to those who do not have the best characteristics. For example, if we consider that an area with an optimal sun exposition and soil characteristics can certainly produce quality wines, those with other conditions, even if not so distant from the first, should not have the same mention of quality. This factor tends to inflate our offer and does not increase the real quality. In my opinion, this inflation can affect the wine prices when we try to sell it on the markets." (COOP1).

The institutional and socio-cultural characteristics of the territories (Gabriel et al., 2009), have a significant impact on firms' quality choices. From this point of view, almost all producers have repeatedly expressed that any promotion strategy should be more strongly supported at regional level. Institutions should help producers to overcome the individualities present on the territories and organize a common offering front.

Alternatively, some producers have highlighted how other possible strategies could be implemented to create new business networks and associations capable of creating a common action front. All workshop participants and questionnaire respondents considered the horizontal coordination strategies as well as strategies to consolidate supply chain and networking as key for the future sustainability of the sector.

One example regards the recent attempt of increasing concentration - and consequently bargaining power – carried out by several producers and PDOs’ consortia towards a greater coordination effort and reassembling of new producer networks. Two concrete and opposite examples of this trend are the hyper consortium AVITO and the network of organic producers "Biodynamic Lucca". While AVITO unites sixteen PDOs’ consortia with five thousand producers, more than twenty thousand employees and the 70% of Tuscan wine production (1.8 million hectolitres out of a total 2.6 million, with a turnover of euro 1.2 billion of which the 70% is generated by the exports), Biodynamic Lucca is a smaller association of organic producers who want to rediscover and communicate the true value of the organic products of the territory of Lucca. The common strategy, even if on different scales, consists of consolidation and networking to gain more bargaining power within the supply chain and with market and institutions. Alternatively, according to some respondents, it emerged also the trend of a greater concentration with vertical integration operated by large distributors who can easily access to financial resource in order to maintain control over the supply chain. According with some interviewees in the future there will be also the role played by the modern trade that will absorb within the supermarkets most of the highest quality productions, creating specialized shelves in which specialised operators will drive the consumer choices.
Organic producers stressed during the focus group and the workshop the lack of information and the risk of distortion in the consumer perception for organic wines. It is in fact acknowledged that, within a progressively increasing and globally competitive wine making industry, consumers are provided with an extremely large range of wines (Bianchi, 2015) that makes difficult the purchasing of wine (Corduas et al., 2013). Furthermore, the “cohabitation” of European and national rules within the EU wine protection system is likely to create confusion rather than informing consumers (Agostino and Trivieri, 2014). Hence, the lack of consumer knowledge is now considered one of the most crucial weaknesses of the wine sector for conventional production, but also for organic wines and “sustainable winemaking” (Zucca et al., 2009; Castellini et al., 2014; Pomarici and Vecchio, 2014). Thus, participants to the “organic focus group” stressed the need for collective communication initiatives aimed at promoting and valorizing organic wines: according to Sirieix and Remaud (2010) “a collective approach aimed at communicating the organic wine distinctiveness”, oriented also to “better explaining the specific organic wine characteristics”, is a key strategic factor to cope against people’s low awareness for this type of product. In relation to this lack of information, participants discussed about the need of a territorial information policy with an institutional and financial endorsement by local public actors. With this respect, Agostino and Trivieri (2014) highlight the importance – for traditional wine producers - of policy driven information initiatives to acknowledge and exploit the unique collective resource represented by a limited territorial context; a financial support on product knowledge – according to the authors - would also help protecting producers from information asymmetry issues on quality wines between wine consumers and producers. Educating consumers about sustainability is also deemed as a crucial factor that can be supported through sustainable certification and labeling schemes, in order to help consumers, distinguish sustainable wine products and support product credibility (Sogari et al., 2016).

All these interpretations and also the results of the workshop questionnaires suggest that there is a trend over consolidation and concentration despite the observed high fragmentation of the supply chain. The aim of this new dynamics is to strengthen the regional supply chain and consequently the positions occupied by the different producers in relation to the markets.

A final noteworthy strategy, which is very peculiar from the business front, is derived from one producer interviewed who presents particular commercial skills. The following quote sums up this strategy:

"According to my vision, our market is made up of millennials, and then I'm looking for companies that do electronic commerce and are able to reach the new generations. So, I am looking to innovative technology companies with start up features. Once I observe remarkable growth potential but limited resources to get it on the financial front, I use to give them help through granting credit lines. I do not invest my money directly but I grant them with time-out payments and place trustworthy men within these companies in order to control them. My goal is to increase sales and acquire a large number of these companies in emerging countries around the world I can do it.” (COOP6).
3.5.2.2  In response to technological progress

Producers agree that they should increase the energy efficiency of their companies, addressing the saving energy standards with the use of renewable energies. It would also need to modernize cellars and in this direction, agree on the need to increase contact with the institutions the related access to regional funds. About 78% of respondents stated that it is very important to increase resources and support policies by institutions to develop such innovations, then the 90% of them agree that these resources should also be invested in collective promotion and marketing actions. In the face of technological innovation and communication through new social media, the need to be able to create greater control of these tools has emerged with actions aimed at increasing direct contact with consumers. A key point on the contact with consumers lies in education and investment that should be made to increase education and the cultural level of consumers. During the workshop, positions have emerged that encourage greater sensory education and recognition of the organoleptic qualities of the products: “Wine as a product needs some degree of awareness and taste to be appreciated and valued.” (WSP9)

Furthermore, technological innovation emerged as a key opportunity for promoting territorial products. However, Menghini et al. (2014) observed that Italian wine producers are slowly beginning to adopt new technologies for commercial purposes, while current technologies are extremely efficient for developing the vertical integration of the production process (direct selling and e-commerce), reducing the power of intermediaries, creating and embedding value added, and balancing power along the value chain.

3.5.2.3  In response to price volatility

With regard to price volatility, the actors of both focus group and workshop agreed on the need to create a common offering front with common promotion mechanisms that could enhance the reputation of companies and territories. This type of strategy shares the principles and mechanisms of strategies in response to demand. With regards to the potential strategies reported to respond to the price level volatility, participants identified strategies that can help meeting more specifically the demand through enhancing the reputation and the territorial value of products as well as finding alternative market channels such as direct sales. Reputation is key for producers to get known but also - for foreigner consumers - it is a crucial purchasing factor of choice (Agostino and Trivieri, 2014). In the international markets, it is also strategically key that wine producers establish efficient relations with distribution networks and important actors (Mariani et al., 2012). Developing direct sales and framing short supply chains for quality products are considered innovative strategies as well as important opportunities for improving the competitiveness of the sector to meet new demands and consumption trends (Contò et al., 2015; Fiore, 2016). Moreover, several scholars highlight, for wine producers, the need of combining traditional and innovative strategies to gain competitive advantage through promoting the company’s tradition values and, meanwhile, benefiting from new innovative opportunities (Bresciani, 2012; Dubini et al., 2013; Vrontis et al., 2016). In addition, Flint et al. (2011) observed that - among the principal Italian wine producers - a main strategic approach adopted to be resilient, vis-à-vis an increasing competition, is to focus on the importance of the “being Italian”. All these aspects seem to converge towards what has been identified as a choice of differentiation. Most of the answers
to the questionnaire indicate a clear predominance of the sales channel differentiation choices.

3.5.2.4  In response to the increasing of bureaucracy

In order to reduce individual efforts towards the bureaucratic machinery, participants agreed again on the need to promote collective approaches. The majority of the answers to the questionnaire indicate the need for collective strategies to reduce the bureaucratic burden in the sector. Through collective action and the share of individual resources, they could create those skills and services that can reduce individual administrative costs and efforts while creating training services to improve individual ability to deal with bureaucracy. In particular organic producers participating in the focus group identified bureaucracy as a common time-consuming burden affecting their business activity. In another study on Italian wine producers, Alonso and Bressan (2014) reported that producers fear the potential increasing of institutional barriers to export, and that such exacerbation may easily lead to a loss of trust in the institutions. On the other hand, participants deem the public institutions’ engagement as a crucial opportunity for protecting and promoting local and organic products, coordinating and endorsing producers’ networks and providing support for credit access. Moreover, it has been already observed that Italian wine producers consider institutions as key actors for wineries’ resilience through providing know-how and knowledge on export development and related strategies; institutions can encourage consumer education, fostering training and skills for wine operators, improving the role of chambers of commerce as well as supporting wine producers’ networks in the promotion of their products at international fairs (Alonso et al., 2014; Alonso and Bressan, 2014).

3.5.3  Summary of the questionnaires: adherence to the conditions and strategies analyzed according to the participants in the workshop

Except for the initial part that identified the name and the organisation of the participant, the questionnaire that we have given during the workshop can be divided into two parts according with the key condition and strategies discussed above (i.e. section A and B). In part A, we asked to make a judgment of relevance to the conditions presented and discussed, emerging from our activities such as FGs and interviews, namely: bureaucratic burden, CMO reform and explant aid, CMO reform and elimination of planting rights, CMO reform and legislation on labeling changes for wine products, policy support (CAP and RDP), controls on production and quality, electronic registry for the wine sector, fragmentation of the sector and consequent weak bargaining power in the markets, differentiation processes and products, change in consumption patterns, climate change, invasion of new pests and wildlife, increased demand for organic wine, price instability, ICT technology evolution. Thus, we asked to the 14 participants to express a qualitative judgment that ranged from "not relevant" to "very important" on the whole set of conditions we have just mentioned.
As we can see from the following graph, the majority of producers confirmed the relevance of the proposed set of conditions (69.81%). Only for a very few producers (4%) these conditions are not relevant and around the 16% has expressed a neutral opinion.

In part B, we asked to make a judgment of relevance to the set of strategies presented and discussed above, emerging from our activities such as FGs and interviews, namely: strategies for improve quality, vertical integration by large distributors, horizontal collaboration, consolidation and networking, collective action for communication and promotion of territory and organic products, collective action for facilitating and reducing the bureaucratic burden, institutionals support/policy for create collective promotion and marketing actions, institutionals support/policy for innovation, institutionals support/policy for facilitate the access to credit, differentiation of sales channels.

The 90% of the 14 interviewees have confirmed the relevance of proposed set of strategies for Tuscan wine sector. Just the 3% stated that the set is not relevant for their activities and the 7% expresses neutrality.

3.5.4 The future

Some of the key issues raised in the focus groups and interviews and confirmed through the workshop that would help ensure the future viability of the wine sector, include:

- Promoting the shift towards a more “rational viticulture”
- Regional focus on research and development of innovation
- Creating collective approach on the supply side.
- Developing common marketing tools.
- Reducing the excessive bureaucracy.
- Increasing the dialogue with institutions (need for more support to credit)
- "Promoting the real value of the territory, better promoting the product characteristics and not only the methods".
- "Strengthen the regional supply chain ".
- Consolidation patterns and networking to gain more bargaining power.
- Any discussions about the future of wine making in Tuscany inevitably involve looking at what declination of sustainability the wine sector will focus in. As such, the future viability of the wine sector was discussed at length in both the FGs and the workshop, where for the latter activity it assumed a special focus on the environmental, economic and social dimension of sustainability. If on the one hand the workshop has contributed to consolidating the results that emerged from the previous activities, in terms of conditions the industry faces and strategies in response to these conditions, on the other hand the workshop has enriched the discussion by introducing some elements of novelty. Three of the workshop participants, in particular, were adamant that, in order to face climate changes and preserve the territory where production takes place, producers must invest in research together with the Universities of the region and regional institutions. According to those participants, investments should address innovation on clonal selection and viticultural practices that can increase the conservation of the soil, bio-diversity and the chances to obtain even more quality wines: “We need to make a team, or to create more stable relationships within the
sector and with external actors such as Universities and Regional bodies. We need to invest more into research to increase what we call the durable material, such resistant species of grape that can help producers to reduce pest treatments. In the past we did a great job with the project Chianti Classico 2000; we were able to create 25 grape varieties (within Sangiovese, Canaiolo, and Colorino) and today they continue to give us excellent results on the wines we produce and we are able to export. But we can not stop here, we must reinvest ourselves in research to deal with new environmental issues and we must always remember that one thing is good wine, another thing is quality wine”.

Likewise, in the FGs, the research of quality and the need to increase the quality wines was often mentioned as being pivotal to the future of the wine sector in Tuscany, as well as for the wine sector more generally.

On the quality front and on the environmental side, organic could be a regional priority for workshop participants: “however, we must not marry biological production by faith, but it must be integrated with specific knowledge”. Nowadays the organic production is double-digit growth (i.e. 10% annually) and Italy is currently one of the leading countries, but there is still a long way to go in the wine sector. More attention needs to be paid to vineyards, especially on soils and the values of the territory need to be represented. This vision also emerged in the first focus group where reference was made to a need for bio producers to represent their view of organic production with moral principles against the market view of organic as a mere marketing opportunity. “We do organic wine for the values it expresses, for us, the bio product as they know in many countries (i.e. Germany) is not premium price. For example, for German consumers the organic products must be cheaper, thus many of us that are converting to organic, as the German producers, we do not it just for the market” (ORGANIC2).

For these reasons, a new pattern has emerged in the course of the workshop, namely the "rational viticulture". A viticulture that is careful of the territory and its social and environmental values, as well as for consumer health (i.e. reducing sulphites and chemical inputs), capable of developing innovation and wine experts’ coordination through networks or new producers’ associations in order to be competitive on markets. While organic farming and the research on grape varieties can contribute to increase the environmental and social sustainability of viticulture in Tuscany, a large part of the discussion on rational viticulture also concerned precision farming to make vineyard practices more efficient, new irrigation techniques to cope with periods of extreme drought, hydraulic and agricultural techniques of land management to prevent erosion and soil management techniques such as cover crop to protect biodiversity.

As emerged in the FGs, all these aspects of environmental sustainability to be applied in the near future need a continuous aggregative effort, in the face of what has been repeatedly confirmed as an extremely fragmented condition of the sector. Thus, in the future the objective of a greater quality for Tuscan wines will need to be achieved, in addition to the improvement of the technological processes and diversification of the products, through the development of coordination arrangements within the entire supply chain triggered by several marketing choices. Enhancing the focus group technique through a participatory causal chain analysis was key to map the sequential relationships linking different farms’ contextual conditions and the strategies implemented by wine producers. From this analysis and producers’ elicitation, it emerges that communication, reputation and cooperation network
are deemed as extremely important for producers with regards to several purposes. These purposes can facilitate to stabilize and meet the fluctuating demand, to cope with price volatility, searching for funding, accessing to credit, as well as fostering consumer education on quality and organic food products: building cooperation networks and collective organization for organic local producers is considered key. We highlighted the consistency of these preliminary workshop results with evidences reported in other relevant studies on the wine sector at the national level. These outcomes suggest exploring potential questions concerning the efficiency of the actual association/coordination and governance schemes (e.g. trade organization, PDO and PDI, producers’ associations), as well as the current use of technology for communication and the role of public and local institutions within a growing complexity of the wine sector. In conclusion, according to Rocchi and Gabbai (2013), further research could investigate participants’ interaction. Such analysis could provide further insights on the state of the actual institutional agreements along the value chain and to evaluate the possibility of creating a collective strategy between organic producers in the production area, understanding their wishes, constraints, and identifying the potential basis for a shared strategic agreement. The opinions that emerged in the studied workshop relate mainly to the need of further engagement and investments in collective action for communication and information for several aims - such as territorial valorization and protection, credit access, skills’ improvement and consumer education. Several of the workshop participants stressed that there is a need for greater training and the creation of knowledgeable supply networks to gain more bargaining power and to meet the challenges that increasingly global markets require. Once again, through the workshop emerged the need of a common strategy, as well as common investment by both producers and regional institutions. However, an interesting aspect that was highlighted is the recognition of the value of the Universities that could - if united and coordinated in this effort - contribute to help, providing the specific knowledge that the industry needs.

When asked which strategies or policies could help to overcome the problems of the sector, several participants agree that the main focus should be on the marketing side. On this side, many participants have expressed the wish for greater territorial coordination between the public sector and companies. Moreover, in their opinion there is also the need to develop a greater capacity to use modern ICT technologies (i.e. e-commerce platform, web and social skills). After that, they highlighted the need for more action in territorial characterization of the products; this should be accompanied by further effort to improve the capacity to recognize and communicate product quality. All these efforts should be oriented to succeed in enhancing the present territorial diversity without giving up to local and distinctif features. Other aspects of consensus in the discussion and in the questionnaires involved the need for more communication and promotion activities, access to credit as well as the importance of environmental aspects and climate change as previously discussed: “There is a need for more organisational and coordination support, more effort to reduce collaboration risks and increase the ability to achieve common objectives”.

3.5.5 The development of Tuscan wine scenarios

As set out in the introduction to section 3.5, there were two mains aims for the workshop. The first involved the corroboration of the main insights from focus groups and interviews (which has been done in the sections above); and the second involved the development of a range of
scenarios regarding the future sustainability of the Tuscan wine sector in face of all the analysed changing conditions and the highlighted strategies. In this respect, the idea of increasing the overall quality and efficiency of the system is central, as well as increasing the quality of the supply chain relationships through investments in vertical and horizontal coordination through the following actions:

- Consolidating the industry (i.e. AVITO);
- Investing in the quality of research and training;
- Investing to increase production efficiency and reduce administrative burden (i.e. development of new standards, technology and the use of ICT).

At the moment, we have identified a starting point in fulfilling the needs of more quality and coordination (expressed by the maturity of the system of designations of origin and the spread of organic farming standards). From this development point - under the spur of territorial differentiation strategies – it is possible to identify the first consolidation tendencies as well as further research perspectives on quality. On this basis, it is possible to suggest two main scenarios for the wine sector in Tuscany.

Before doing so, it is important to highlight several constraints that emerged from the analysis. First, the need of more communication between the private and public sector, if not satisfied, can undermine the transition to the most suitable scenario. Second, it is important to consider the need to define the rule and the framework for a “rationale viticulture” as well as the agro-ecology management practices or the organic ones. Third, it is important - in policy terms - to have clear the purpose of the wine sector (is it about to maintain and increase the ability of the territory to achieve several positive externalities within the development of the industry, making a meaningful contribution to the environment and rural societies, or simply focus in terms of its contribution to individual profits?). Fourth, it will be important to keep in mind how to better deal with the reduction of bureaucratic burdens that nowadays seriously constrain the sector - if compared with other Italian agricultural sectors or to the situation in other wine producing countries. Fifth, the timescale involved for any of the possible scenarios to come may be as long as from 5 until 10 years. Bearing these constraints in mind, the two scenarios were developed as follows:

**Scenario 1: Retention of the Status Quo.**

<table>
<thead>
<tr>
<th>Following the main past drivers/conditions and strategies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Many small brand and companies – and few medium-large cooperatives - will come out of production due to financial difficulties.</td>
</tr>
<tr>
<td>2. Export will be increasingly affected by competitive pressure, starting to fluctuate year after year.</td>
</tr>
<tr>
<td>3. Progressive shifting production to organic products or products with lower chemical synthesis inputs.</td>
</tr>
<tr>
<td>4. Foreign companies will buy most local properties and productions.</td>
</tr>
<tr>
<td>5. Few producer associations or super brand will succeed in developing high quality products</td>
</tr>
</tbody>
</table>
and will continue to represent the territory.

6. At the local level there will be no opportunity for young people to access the sector.

**Predicted impact on the wine sector in Tuscany:**

1. Insufficient market share to allow many small farms to survive;
2. Often inappropriate and burdensome legislation;
3. Insufficient opportunities for young entrepreneurs;
4. Tourism and other features of the territory will guarantee for a long time the maintenance of a status quo;
5. Growing territorial disparities: some denominations will lose their original meaning and the territories will be progressively occupied by other activities;
6. Foreign capitals will provide the support for the industry. More foreign labor will be needed.
7. There will be a loss of traditional and local values, supplanted by globally recognizable market values or standards.

---

**Scenario 2:** The development of a “rational viticultural” system

**Following the future sustainability drivers/conditions and strategies:**

1. New producer associations are developing, focusing on changing agricultural and marketing practices;
2. Different producers / consortia develop high quality products in accordance with the principles of more rational agriculture and respecting the environment and consumer health;
3. The emphasis is shifted from promotion to sales through specific training (new brokerage companies are established in the territories to deal with international sales);
4. Foreign capital continues to enter the sector but are often accompanied by investments by young local entrepreneurs who, thanks to favorable public policies, succeed in developing innovative and successful projects;
5. Several producers’ associations or producers’ networks collaborate with the regional institution to increase the sustainability of the sector;
6. The market driven producer and other actors of the supply chain - including new market intermediaries - will absorb part of this new and young local entrepreneurs.

**Predicted impact on the wine sector in Tuscany:**

1. Increase of export and market share, allowing many small brands to survive;
2. Reduction of burdensome legislation;
3. Increasing opportunities for young entrepreneurs;
4. Tourism and other features of the territory positively affect the developing of the sector;

5. There will be a greater consolidation of the sector that overcome the fragmentation and increase its bargaining power against external competitors;

6. Local and foreign capitals will provide the support for the industry;

7. Traditional and local values will be maintained by the new producers' associations, creating new narratives and values that continue to increase the regional brands;
### Guiding question

<table>
<thead>
<tr>
<th>Guiding question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Can you please explain where and how (channels) you commercialize your products?</td>
<td>The majority of wine producers sell their wine through the export (USA, Germany, UK, Canada, China). They also rely on other marketing channels such as DTC, HO.RE.CA., tasting room at the farm gate, wine club, local food networks in the Region, wine fairs and trade events.</td>
</tr>
<tr>
<td>2. What are the main challenges you have with your customers and the demand for your commodities?</td>
<td>“The recognition of quality, attention to the territory and health is the criterion that our consumers have become more sensitive to.” These features and other factors, first of all marketing, affect the price formation mechanism. Marketing includes the ability to narrate the territory, create suggestions and story telling. The market recognizes the territory and rewards it with a price that identifies a certain quality. But this varies greatly depending on the type of product and vintage. Another important factor that can affect is the vintage, the conditions of harvest and in this sense also climate change has its weight.</td>
</tr>
<tr>
<td>3. What marketing strategies do you implement in order to secure better deals?</td>
<td>Marketing has to go through the promotion of territory and its intrinsic values. Then the ability to keep up with the times and suggest new modes is part of the story telling. Quality is at the centre of this system, it cannot be expected from the achievement of a high quality. Organic has great growth potential but must in some way remain coherent with its bottom line: it is the method that has to be promoted and not only the brand.</td>
</tr>
<tr>
<td>4. Is certification part of your strategy?</td>
<td>The market requests certifications, and everybody at least adopt the PGI label. But they are not in reality seen as important to wine producers. For example, Super Tuscans express the most quality wine produced in the region but without a specific labelling system. Indeed, they are considered table wine by the standard; Thus producers prefer to develop personal relationships, to use their images and to ensure that the quality of their wine is the very best to find in their territory of origin. Nevertheless, PDO, PGI, Organic certifications are the actual system to recognize the quality. They are important instrument for consumer and in turn certifications can increase demand, which means that certification at the end has a benefit for producers’ prices. However, the wine labelling system is also important for retailers and bottlers or other supply chain intermediaries, in that they are more likely to sell to supermarkets who demand products with a guaranteed quality.</td>
</tr>
<tr>
<td>5. Has there been any recent contextual change that has influenced your current business model?</td>
<td>Nothing significant at present. Changes linked to CAP reform and wine CMO have affected the performance of cooperatives. In particular, first the establishment of planting rights, then the changes of CAP incentives and the creation of grubbing-up premiums for the vines have led to a reduction in the number of conferring members and a reduction in the cooperatives’ turnover.</td>
</tr>
<tr>
<td>6. How do you finance your activities, and what would you require to change this?</td>
<td>All producers participating in the focus groups declared to finance the production through the income generated. But almost everyone has agreed, in several occasions, on the need for greater regional support to facilitate access to credit, to finance innovation, marketing and promotion in external markets.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>7. Do you work with other wine producers? How did this start? How is it going? Will you</td>
<td>Almost everyone agrees on the need for greater supply consolidation and creating joint actions, but at present only a few producers act on this front. Two concrete examples are the network of consortia AVITO - which was born in response to a regional law that will limit producer choices and is still committed to the promotion of the brands that belong to it - and Lucca Biodinamica, whose mission is to strengthen the image of production of organic wine from the province of Lucca.</td>
</tr>
<tr>
<td>continue in the future?</td>
<td></td>
</tr>
<tr>
<td>8. Do you collaborate with others in the value-chain? How did this evolve? Will you continue</td>
<td>As mentioned above, most producers do not collaborate with others. They generally have higher relationships with intermediaries and bottlers who occupy the top of the supply chain and with grape producers occupying the lower part.</td>
</tr>
<tr>
<td>with this in the future?</td>
<td></td>
</tr>
<tr>
<td>9. Do you feel that the current policy context helps you to improve your business</td>
<td>All interviewed producers, despite they acknowledge some positive aspects of rural development policies, are very discouraged by the political context and recent reforms.</td>
</tr>
<tr>
<td>performance?</td>
<td></td>
</tr>
<tr>
<td>10. What environmental constraints and social challenges do you need to address?</td>
<td>In terms of environmental constraints there is a growing concern about climate change which is increasingly impacting on the ability to produce quality wines. In terms of social challenges, there are concerns that the average age of wine producers is rising and that it is increasingly difficult for younger people to get into the sector. This also creates labour recruitment problems that often end up stimulating the use of weak social components such as older people and immigrants. For the exploitation of these latter. The problem of the “caporalato” is recurrent.</td>
</tr>
<tr>
<td>11. How do you deal with current policies and regulations? What are your main strategies?</td>
<td>At the moment, there are no precise strategies, but only obligations to which producers have to undergo. The only hope is to create a unique front on the offer side and join forces to exert pressure on change and services which can reduce the burden of bureaucracy on individuals.</td>
</tr>
<tr>
<td>12. What is the impact of your production activities on the sustainability of the sector;</td>
<td>Some of the productive choices that were made in the past (i.e. investment in quality and territory, farm modernization with a special focus on those key cellar practices) today provide a globally positive impact on the economic sustainability of the industry. However, there are several challenges that the producers have to face in the next years. The ability to continue investing in the territory and the ability to promote classic and new organic brands is perceived as a key issue. Considering the governance, it is crucial to strengthen the supply chain, through collaborative and coordinated action towards producers’ networks or producer associations. The producers consider this process of consolidation as a key issue to increase the contractual power against distributors that would ensure less pressure on sale prices and more financial stability. At the moment, the financial sustainability is based on the ability to export. Strengthening the supply would also benefit the export side and therefore the resources that return to the sector.</td>
</tr>
<tr>
<td>furthermore, how would you define this impact?</td>
<td></td>
</tr>
</tbody>
</table>
3.5.7 Understanding wine producers’ institutional diagrammatically

In the following section, we introduce a diagram that identifies the institutional arrangements associated with the wine sector in Tuscany.

Figure 3.12, which has been developed by adapting to the Tuscan Wine sector to a generic diagram produced as part of the SUFISA project’s first interim report for the EU Commission, highlights the main vertical coordination process that is undergoing, made by international large retailers and distribution companies against the presence of a minimal horizontal coordination between the other actors. The findings from focus groups suggest that in most cases producers consider themselves as highly independent and extremely competitive. Such competition often involves different municipalities, territorial systems, business types and quality brands, for these reasons they rarely collaborate. However soft forms of coordination do take places in the developing of new producer organisations, territorial networks and hyper consortia (i.e. Biodynamic Lucca and AVITO) in order to increase the market access and contrast the concentration made by large distributors. Within the sector, intermediaries through vertical and horizontal coordination forms also play an important role. These actors ensure a privileged contact between the actors of the system and their major distribution channels.

Figure 3.12. Wine producers’ institutional arrangements in Tuscany

In terms of vertical coordination, all producers maintain sale channels linked to the territory, using both local food networks and other direct channels (e.g. sales at farm gate, wine tasting rooms, wine clubs). In maintaining these more direct channels there is significant potential for wine producers to add value to their products. However, the main industry orientation is towards export outside the regional and national boundaries. In this direction, some producers are focusing on market niches, where they can get higher prices. While in the majority of large-scale productions (i.e. Chianti), the role of large distribution becomes crucial.
In the Regional supply chain, one can distinguish the fully integrated estate that maintains the control over everything including the agricultural (i.e. growing grapes), industrial (i.e. processing via fermentation, blending, aging and bottling) and service phases (i.e. marketing and distribution). Among this category, we can find the independent producers. They belong to the territorial system but they do not have horizontal or vertical relations with the other actors of the supply chain. They often cooperate with each other through forms of collaboration within their own association. Moreover, they often represent actors of the regional supply chain who have come out of consortia or other POs and want to develop an independent quality approach if compared to the standard values that the territory expresses. These actors focus more in the relationship with consumers and mostly rely on local food networks to sell their products. On the other side, we can distinguish the cooperatives that purchase grape or bulk wine and carries out the processing stage with the aim to sell the end product (wine) under their own label. The "virtual" wineries outsource everything and produce wine at bonded hosted or shared facilities (Newton et al., 2015). This first classification reflects the different investments in firm resources as main strategic decisions of a winery. Those decisions rely on the choice between developing entirely and internally the whole production process or outsourcing some of the agricultural and industrial stages. This coordination choice is also related to the winery’s grape sourcing decision, one of the most important firm's resources. In this vein, the quality and values that the territory can express represent the main drivers of the vertical coordination processes. To achieve a predetermined quality standard and reduce quality risks the fully integrated estate generally produces wine with its own grape production; however, depending on the vintage, it may also purchase grapes from grape growers within a long and stable supply relationship. As reported by producers participating in the focus group, in these cases minimal forms of horizontal coordination are established. Conversely, cooperatives and virtual wineries generally source their grapes from grape growers or they purchase bulk wine from other producers. However, their action differs from the strategies of integrated companies, albeit differentiation appears to be more related to financial leverage. According to Goodhue et al. (2013) the competitive advantage of a fully integrated firm is more related to the decision toward vertical integration or supply chain choices that can increase the control over transaction costs, branding and differentiation, which are narrowly linked to the different characteristics of the territories. Large distributors and retailers - often flanked by bottlers and wine merchants - purchase wine from other producers before selling it directly to the end user, or processing it and adding value and new brands. It is also clear that the relationships with those actors is in the form of vertical coordination through the use of contracts, credit lines to allow new investments, the guarantee of greater price stability in some cases are driven by direct brand acquisitions. Examples come from cooperatives that - to ensure secure cash flows and minimum prices guaranteed - maintain distribution contracts with bottlers and distributors who can buy large quantities thanks to their financial capacity; in turn, bottlers and distributors sell this wine through their distribution channels at higher prices.

Many producers need investments to innovate their main practices and maintain a high quality of their products in order to respond to changes in demand and to new competitive challenges (i.e. the recent growth of the organic demand). However, they are often constrained on the financial front because of delays in payments and difficulties in obtaining credit lines. This opens the way for a greater vertical integration carried out by the actors downstream of the
supply chain that, vice versa, have a greater financial stability and are interested to expand their portfolio of products and ensure higher sales margins.

In terms of future sustainability, from our results it emerges that the wine sector needs to consider three main aspects. Firstly, ecological aspects in terms of the need to adapt to climate change that will impact future productions, both on production costs and risk factors linked to harvest time. Secondly, the need of more healthy and sustainable food production, which is related to changes in consumption patterns and behaviour. This is of course closely related to the producers’ ability to lessen the use of chemical fertilizers and pesticides, developing integrated production or organic/biodynamic practices. In these terms, the challenge is also related to the producers’ ability to improve the marketing and communication characteristics of their products and of the territory of origin despite the methods they use.

Thirdly, economic: the excessive fragmentation of regional brands reduces producers’ bargaining power and the price that they can obtain on markets. Creating collective approaches on the supply side and developing common marketing tools can help producers to add value to their production and strengthen their position on international markets. On this front Regional/National institutions and policies can play a positive role in order to reduce internal divisions. To maintain the economic sustainability the sector continuously need to increase the share of exports or alternatively the average price of productions. In both cases, under the global competition pressures, the sector needs to increase the quality of productions and to develop new tools and capabilities at the commercial/marketing level. Again, on this front, the policies can provide valuable supporting tools.

3.6 Insights from the producer survey A

3.6.1 Introduction

The “Producer Survey” (task 2.6) has been the last methodological task that we carried out in order to elicit additional information on the qualitative/case specific outputs and issues from the previous tasks in WP2 for the wine case study in Tuscany.

Specific objectives of this task were to describe different typologies of IAs and their prevalence in the wine sector, to identify specific IAs attributes that characterize the wine sector, as well as to analyse how different parameters of a given type of arrangement can shape the terms of the relationship between wine producers and buyers and explore mechanisms linking (internal and external) conditions to marketing strategies. Particular focus has been dedicated to assess the sustainability of a given IA. Finally, the survey aimed at identify future drivers of the wine-specific IAs.

Through the survey we collected quantitative data at farm level that are representative of the Tuscan wine producers, with a focus on the most relevant case study issues (regulatory, market conditions related to arrangements within the supply chain, sustainability conditions and producers’ strategies) to allow the further identification, through comparative cross-regional analysis (undertaken by the WP2 leader and co-leader), of key regulatory and market conditions across case studies and commodity groups.
As pointed so far - given our common research goals and institutional partnership with the Tuscany Region within other WP2 tasks (i.e. focus groups) and in part of activities that we have carried out for WP3 (analysis of market power in the export of Tuscan Wine with the Buy Wine model) - we have decided to collaborate with the Tuscany Region in order to deliver the survey to a population of wine producers representative of the sector in Tuscany. Thus, we have opted to use the producer list collected by the Tuscany Region during the eight editions of their international B2B meeting event called Buy Wine that takes place every year in Florence since 2010 and is attended by ca. 100 regional producers on average.

In order to ensure data quality, statistical representativeness as well as the respect of the time constraint, we have initially tested the questionnaire through six pilot phone call interviews. Second, since special attention was given to the good understanding of the questions, we have adjusted the questionnaire - in agreement also with the Tuscany Region comments - to avoid the excessive use of technicalities and to make the telephone interviews as quick as possible but also exhaustive, clear, understandable and effective.

Then, considering that the Buy Wine takes place every year early February and that during this period the producers are generally more available, we have decided (in agreement with both the SUFISA WP2 leaders) to start the survey at the beginning of January to take advantage of a greater availability of the producers, as well as for the attention and interest brought to this event. Being aware that before the B2B meeting event each year the producers are engaged through several pre-meeting tasks with direct phone calls, we decided to use this first contact to deliver also the SUFISA survey that has been further integrated with additional questions on Buy Wine as a sale channel of particular interest for producers and for the Tuscany Region. For this task, we have integrated additional questions in order to identify those conditions that have an impact on the marketing strategies and sales prices for regional producers. This additional section, defined by the letter “X”, was shared with project partners on the SUFISA internal electronic platform.

A sample of 110 effective respondents was collected and representativeness has been assured by the selection of the most representatives farms from the large list gathered during the 8 editions of the Buy Wine.

Given our collaboration with the Tuscany Region, the survey implementation process was more complex than we have planned. In fact, the survey has reflected the need to integrate the SUFISA questions with key information relevant for the Region, which has increased its length becoming more difficult to manage through phone-calls. Moreover, it was difficult to obtaining information by phone-calls on sensitive data of producers. Each phone-call lasted an average of more than half an hour, with few cases for which there has been the need of a second call to retrieve information that could not be collected through the first call. The producers were asked to be patient, motivating that the task would necessary for a profitable participation to the 2018 edition of Buy Wine as requested by the Region and they would benefit from the survey results, with outputs that will be of considerable importance for their future sales strategies and the sustainability of the sector.

Survey section A “Farm characteristics” starts with general questions about the farm business. The interviewees have been the person in charge of running the farm (generally the farm...
owner or the chief winemaker). The information collected according to the type of production and the aging process for wine refer to the business’s year 2016. We also collected additional data that refer to the business’s year 2017 (see the results of the section labelled “X” below). Table 3.3 present the distribution of respondents across the Tuscany Provinces.

Table 3.3. The distribution of respondents across the Tuscany Provinces (N=110)

<table>
<thead>
<tr>
<th>Province</th>
<th>Farms with wine production (#) *</th>
<th>% of farms that produce wine</th>
<th>Surveyed (#)</th>
<th>% of farms Surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massa Carrara</td>
<td>19</td>
<td>0.5</td>
<td>1</td>
<td>0.90</td>
</tr>
<tr>
<td>Lucca</td>
<td>26</td>
<td>0.7</td>
<td>1</td>
<td>0.90</td>
</tr>
<tr>
<td>Pistoia</td>
<td>78</td>
<td>2.2</td>
<td>2</td>
<td>1.81</td>
</tr>
<tr>
<td>Firenze</td>
<td>1000</td>
<td>28.6</td>
<td>35</td>
<td>31.81</td>
</tr>
<tr>
<td>Livorno</td>
<td>75</td>
<td>2.1</td>
<td>3</td>
<td>2.72</td>
</tr>
<tr>
<td>Pisa</td>
<td>84</td>
<td>2.4</td>
<td>6</td>
<td>5.45</td>
</tr>
<tr>
<td>Arezzo</td>
<td>601</td>
<td>17.2</td>
<td>12</td>
<td>10.90</td>
</tr>
<tr>
<td>Siena</td>
<td>998</td>
<td>28.5</td>
<td>38</td>
<td>34.54</td>
</tr>
<tr>
<td>Grosseto</td>
<td>610</td>
<td>1.74</td>
<td>10</td>
<td>9.09</td>
</tr>
<tr>
<td>Prato</td>
<td>8</td>
<td>0.2</td>
<td>2</td>
<td>1.81</td>
</tr>
</tbody>
</table>

Source *2010 census

The producers’ survey data reported a total agricultural area of 8.358 ha of which 2.209 ha are planted with vines. The UAA for vines is presented in Figure 3.13 and represents the 3.7% of the regional UAA for vines according to the last census (59.993 ha in 2010). Of 110 respondents, about 4.5% has a vineyard area that is in the regional average of 2 ha. Most of the respondents (88%) have a vineyard size that is equal or less than 50 hectares, while 12% have a UAA for vines that exceed 50 hectares, confirming the high fragmentation of regional wine farms that was previously observed through the case study analysis.

Figure 3.13. Vineyard size of the wine producers covered in the survey sample (N=110)

In line with our analysis of the sector the majority of producers in our sample are family farms (the 43%), followed by individual farms (the 32%) and private companies (the 23%). Only 2% are farms that are publicly owned (i.e. cooperatives). This subdivision points out the importance of Tuscan families that historically have been handed down the culture of the vine
of the Region. Generation after generation this business model has demonstrated its solidity going beyond the expectations since market competition in other countries of the world tends rather to reward large corporations. Family businesses in Tuscany have proven to be a healthy and successful model. This vitality derives from the characteristic importance that the family properties acquire in the world of wine, where - in addition to the vineyards (the land factor) - other properties such as villas, cellars and other outbuildings linked to production become competitive factors. Families anchored to these factors of competitive advantage and of high financial value, have passed the test of time. As we have highlighted in the case study, this type of company is also solid from the point of view of debt and less exposed than corporations (very few in the regional sector) to market fluctuations.

The age of the farmers in our sample is in line with the average age of farmers in Tuscany. The age distribution of farm owners (Table 3.4) is dominated by two categories (<40 years and 41-50 years) with both representing the 33%. Then there is a relatively high number of respondents belonging to a third category (51-65 years), about 25.5% of the sample, while the group of farmers over 65 years covers 8.5%. As expected also from general trends, the regional wine sector is dominated by men (69%) while women cover 31% of our sample.

<table>
<thead>
<tr>
<th>Status</th>
<th>Less than 40</th>
<th>41-50</th>
<th>51-64</th>
<th>More than 65</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>33%</td>
<td>33%</td>
<td>25.5%</td>
<td>8.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Lower secondary</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>2</td>
</tr>
<tr>
<td>Higher secondary</td>
<td>10%</td>
<td>19%</td>
<td>9.5%</td>
<td>0%</td>
<td>38.5%</td>
</tr>
<tr>
<td>University</td>
<td>22%</td>
<td>14%</td>
<td>14%</td>
<td>8.5%</td>
<td>58.5%</td>
</tr>
</tbody>
</table>

Wine producers in Tuscany are, on average, highly educated, with 58.5% of respondents having completed an academic degree and 39% have achieved a higher school degree. Surprisingly the percentage of farmers with primary education is 0% and those holding a lower secondary degree is only 2%. These percentages reflect a sector where technical know-how and managerial skills, as well as knowledge of foreign languages, represent key competitive factors. Moreover, a number of investments in knowledge and intangible skills have been made in Tuscany to increase the quality of wines in the last decades. In line with this consideration, it is not surprising if more than half of the respondents reported a degree on farming studies, and this reflects the passion and the strong connection between entrepreneurship and territory.

Remarkably, 23% of respondents declared to produce 100% organic wine. These data confirm the trend that emerged during focus groups and preliminary interviews. Moreover, the wine sector in Italy is recording a positive growth of organic wine production as a sign that confirms a change in producers’ strategies in response to a change in consumption choices, wine regulation and environmental conditions.
3.6.2 The analysis of sales channels: the results of section B

This section of the survey describes the way producers sold the entire production of wine in the business’s year 2016. It is important to make explicit that the reference to the wine produced in 2016 concerns the wine obtained from the 2015 harvest only if the transformation process does not involve particular aging processes. Conversely, where production refers to aging processes that generally range from 2 to 4 years, the wine available in 2016 could originate from 2012, 2013 or 2014’s harvests (see section X for further information). For the sake of clarity, in this section we refer only to the wine available for sale in 2016 and we deepen in section X the link with the different vintages related to the aging process.

According to the 110 respondents, in 2016 they had 243.644 hectolitres of wine to be sold, with an average of 2298 hl/farm (the minimum production being 15 hl and maximum 45.000 hl). It is noteworthy that the vintage of 2016 had been particularly favourable for the regional producers with the regional production exceeding 3 million hl, which represented an increase of 7% compared to 2015.

In 2016 the average production sold per farm was around 60% of their production, with 57% of respondents having sold more than 60% and 43% of producers have sold less than 60%. This production was sold through different sale channels: on average 19% was sold through collective sale channels, 5.5% through PO (producers’ organisation), 2% through cooperatives, 1% union/association and 23% through other promotional events and fairs (e.g. Buy Wine, Vinitaly, Prowine, etc.). 5.5% of producers who engage with promotional events have sold more than 60% of their production through this sale channel. Generally, producers participated to this promotional event on behalf of the PDO Consortia with their brand. A consortium, as we have highlighted in the case study analysis, represents an association of producers, which, by statute, deals with the promotion of wine and not with sales. Therefore, producers use these events to gather new contacts or to conclude transactions with contacts that they have previously made. Remarkably, just one farm has stated to sell 80% of its production through cooperatives in 2016 and 100% in 2017.

At the opposite, respondents have stated that the 78% (on average) of their product is sold through individual sale channels. Most of those quantities are traded through local markets, different Ho.Re.Ca. channels, as well as through traders/wholesalers and exporters. Small percentages (on average under 10%) are sold through processor/industry, supermarkets and at the farm gate.

More than half of the producers interviewed said they were part of a PO, including PDO consortia, that mainly help them in networking and promotion activities, with rare design cases and just one case in which the PO purchases the wine from producers.

3.6.3 The characteristics of sale agreements: results of section C

In this section, we asked producers about the type of agreement they use for sale (formal or informal). We have also analyzed whether this type of agreement is influenced by the type of sale (individual or collective).
93% of the respondents reported that sales of 2016 were traded as individual business agreements, while only 7% of respondents reported that 2016’s sales were belonging to a collective organisation. In the case of individual sales, the characteristics of the transactions are represented by a contract or in an informal agreement, while in the case of sales to collective organizations transactions are part of the membership rules and conditions within the collective organization. According to the 58% of respondents, the most used agreements (Figure 3.14) in wine transaction are informal (written or oral) agreements at the time of sale, which cannot be legally enforced. Then 28% of producers refer to an informal agreement engaged between parties before the production stage. Only few producers rely on formal agreements, such as contracts defined before (4%) or at the time of sale (10%). The following results refer to the main informal (written or oral) agreement, which we define as main sale agreement.

With regard to the main sale agreement it is not surprising that no interviewee declared that belonging to a collective organization could constrain the sale to the specific rules of the organization. In fact, 7% of producers who belong to a collective organization are linked to a PDO consortia or other type of PO that are mainly engaged in promotion activities. Therefore, even if producers belong to a collective organization, they are not obliged to respect specific rules for their sales. Hence, although we can observe that conditions of promotion can affect also sale agreements, it is not possible to detect if there are other indirect conditions affecting sales and coming from the demand side.

**Figure 3.14. Type of agreement (formal or informal) for the main sale (N=110)**

Furthermore, for the 51% of respondents the duration of the main sale agreement lasts exclusively for the time of the contract itself, 7% stated that the duration is generally less than 3 months, for 1% the duration ranges between 3 and 6 months, for 23% it goes from 6 months up to 1 year, and then for 5% from 13 months to 2 years, for 7% from 25 months to 5 years and for 5% the main sale agreement lasts for more than 5 years.

Then we analyzed the characteristics of the main agreement, such as the request for exclusivity (the producer can sell only to that buyer), the existence of written or tacit clauses that penalize non-compliance with the agreement or parts of it and the existence of safeguard mechanisms for the producer in case the buyer does not respect the agreement. The
characteristics of the main sale agreement (Figure 3.15), consist in the existence of exclusivity, safeguards rules, price premiums as well as services like collection/transport of the products and the provision of strategic Assets for the producer.

Figure 3.15. Characteristics of the sale agreement (N=110)

According to respondents the average price is 8.5 euros/bottle, the minimum price is 2.7 euros/bottle and the maximum 25 euros/bottle. Then, on average 46% of the selling prices is composed of the cost of production, while for 42% of producers the cost of production represents more than 50% of the selling price.

As evident from the Table 3.5. below, according to respondents the main factors that are included in price setting are quantity, production costs, quality and market.

Table 3.5. Price determination factors (N=106)

<table>
<thead>
<tr>
<th>Price determined on</th>
<th>Yes [%]</th>
<th>No [%]</th>
<th>Missing, Not applicable, Do Not Know [%]</th>
<th>Tot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Costs</td>
<td>55</td>
<td>33</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Quantity</td>
<td>76.5</td>
<td>16</td>
<td>7.5</td>
<td>100</td>
</tr>
<tr>
<td>Quality</td>
<td>54</td>
<td>32</td>
<td>14</td>
<td>100</td>
</tr>
<tr>
<td>Market</td>
<td>42</td>
<td>50</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>Share of profit</td>
<td>14</td>
<td>53</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Fixed</td>
<td>35</td>
<td>43</td>
<td>22</td>
<td>100</td>
</tr>
</tbody>
</table>

According to the main sale agreement the producers stated that in 39.5% of cases they usually get paid entirely before the delivery of products, just in few cases they are paid at the time of delivery of products (5.5%), in many other cases after the delivery of products (20.5%) and for
2% they get paid in percentage in the middle of the season and they get the rest at the time of delivery of products, or even afterwards. Finally, the 7.5% stated that payment must be made after the invoice is issued within 60 days.

Table 3.6 below shows the main costs in which producers incur for their main sale agreement.

| Costs related to the main sale agreement (N=110) |
|-----------------|----------|-----------------|
| Membership fee to the organization | YES [8] | NO [63] | Missing, Not applicable, Do Not Know [28] |
| Collection, storage, transport, handling, etc | YES [23] | NO [49] | Missing, Not applicable, Do Not Know [28] |
| Promotional and marketing costs | YES [37] | NO [34] | Missing, Not applicable, Do Not Know [29] |
| Costs of quality testing | YES [18] | NO [60] | Missing, Not applicable, Do Not Know [22] |

With regard to specific requirements of the sale agreement in terms of standards, the majority of producers agreed on “Quality” and “Safety” standards, with just 2% of them being concerned with standards related to the use of “Natural resources” (Figure 3.16). From an environmental protection point of view, as well as for food safety and quality, the wine sector appears to be overregulated, as we have already observed through focus groups and case study analysis. Quality is certainly one of the most binding aspects for producers with a significant impact on sales agreements.

![Figure 3.16. Standards required by the main sale agreement (N=110)](image)

Noteworthy, more than 60% of respondents are satisfied with the main sale agreement (37% somewhat satisfied and 17% completely satisfied). At the opposite, just 3% is completely unsatisfied and 1% somewhat unsatisfied. More in detail to the question regarding their satisfaction with respect to different features of this sale agreement, Figure 3.17 shows that most of respondents agree with the fact that they do not have any alternative options, since
the main sale agreement provides higher prices and more stable prices than those that might come from alternative buyers. However, delays for payment have been highlighted in the responses. Against this background, most of respondents remain neutral when considering costs associated with the main sale agreement and about potential restrictive standards required. As expected (the price is generally fixed and based on production and quality and in few cases the price is open for negotiation), 30% of respondents disagree with the statement that ask them if they have the opportunity for negotiating prices in the main sale agreement.

**Figure 3.17. Degree of satisfaction with the main sale agreement (N=110)**

![Figure 3.17. Degree of satisfaction with the main sale agreement (N=110)](image)

### 3.6.4 Sustainability: results of section C1

To deepen the relationship between the main sale agreement and sustainability, respondents were asked to address three main group of questions: the impact of the sale agreement on the environment, the connection with society and the impact on economic performances.

According to Figure 3.18, the wine producers of our sample have evaluated a positive impact of their marketing choices in relation to the maintenance of biodiversity, water quality and organic matter.
Figure 3.18. Relationship between the main sale agreement and preservation of the Environment (N=110)

Noteworthy, considering that the majority of producers focus on an individual sale agreement - therefore mainly referring to a company strategy that focuses on distinctive features such as quality and rarely being open for collaboration - a number of respondents stated also that such main sale agreement does not help to maintain and develop agreements with other companies (Figures 3.19). On the other hand, almost half of the companies believe that this type of agreement can guarantee them a successor.

Figure 3.19. Relationship between the main sale agreement and connection with Society (N=110)
As we could expect many respondents confirm their marketing choice from an economic point of view (Figure 3.20), even if many producers (34%) do not have a clear strategy on how to face market changes, thus they remain neutral in their evaluation on how the main sale can help them to cope with change in market conditions.

![Figure 3.20. Relationship between the main sale agreement and the Economic performance (N=110)](image)

3.6.5 Strategies and drivers of farming: results of section D

When producers look at the future of the sector many of them express a strong concern about changes in consumer tastes and patterns, as well as about climate change (Figure 3.21). Another factor of concern for producers is the potential drop of the wine market prices. Many believe this latter factor as a driver for their future choices.

Remarkably we have observed several abstentions on the question about fluctuation of input prices. As many producers have repeatedly stressed during the focus groups, there are factors that the farm strategies can somehow cope with and other factors that they have simply to face with some sort of adaptation strategy. Against this background, many producers believe that the input prices will constantly increase, so they claim that on this front they can only adapt and, for this reason, they do prefer to choose an adaptive strategy.
When we asked respondents about their strategies in the coming 5 years, most of them (44%) answered they would cope through an expanding strategy, while 21% prefer a maintenance strategy. Specifically, within those who agree with expanding their scale plan in the next future (see Table 3.7 and Table 3.8 below), 54% would invest in production facilities, 16% would specialize with a focus on high quality products, and 45% would develop new sale channels. These results are in line with producers’ preferences expressed during the focus group activities.

### Table 3.7. Production related changes (N=106)

<table>
<thead>
<tr>
<th>Change in Production</th>
<th>Yes [%]</th>
<th>No [%]</th>
<th>Missing, Not applicable, Do Not Know [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>I plan to invest more in production facilities</td>
<td>55</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>I plan to externalize particular aspects of my operations</td>
<td>4</td>
<td>64</td>
<td>32</td>
</tr>
<tr>
<td>I plan to specialize my production</td>
<td>16</td>
<td>49</td>
<td>35</td>
</tr>
<tr>
<td>I plan to insure against crop losses</td>
<td>3</td>
<td>65</td>
<td>32</td>
</tr>
<tr>
<td>I do not have specific plans</td>
<td>2</td>
<td>65</td>
<td>33</td>
</tr>
</tbody>
</table>
Table 3.8. Market related changes (N=106)

<table>
<thead>
<tr>
<th></th>
<th>YES (%)</th>
<th>NO (%)</th>
<th>Missing, Not applicable, Do Not Know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I plan to diversify into new crops/products</td>
<td>27</td>
<td>49</td>
<td>24</td>
</tr>
<tr>
<td>I plan to insure against volatile prices and costs to avoid loss of income</td>
<td>0</td>
<td>76</td>
<td>24</td>
</tr>
<tr>
<td>I plan to develop new partnerships (for instance with other producers, retailers, processors)</td>
<td>15</td>
<td>62</td>
<td>23</td>
</tr>
<tr>
<td>I plan to develop new sale channels</td>
<td>41</td>
<td>32</td>
<td>27</td>
</tr>
<tr>
<td>I plan to add value my wines (e.g. conversion to organic)</td>
<td>10</td>
<td>65</td>
<td>25</td>
</tr>
<tr>
<td>I do not have specific plans</td>
<td>1</td>
<td>75</td>
<td>24</td>
</tr>
</tbody>
</table>

Finally, among those who declared a conservation strategy and those who declared an expansion strategy, 25% stated that they did not have any expectation about the potential successor, while in 41% of cases there was a reference to a family member. Few respondents (only 3%) have declared to think about selling their property in the future.

3.6.6 Additional question specific to the case study: results of section X

- Thanks to additional questions we could acknowledge that the majority of producers when talk about the production available for sell in 2016 actually refer to wine produced in 2014 (because of 2 years of aging in the cellar). Indeed, around the half of respondents declared to produce wines obtained with aging processes that are equal or longer than two years. 22% of producers refer to the wine that has been produced on the basis of the vintage of 2015 (with no aging).
- We could register that in 2016 an average of 156 tonnes/farm were harvested with a total production of 12061 tonnes of grape for the 110 companies surveyed. 36% of them also sell grapes.
- Noteworthy, 21% of respondents declared to produce also biodynamic wine. These data confirm the trend already associated with organic production and the fact that many producers who approached the integrated production first, and then the organic one, have therefore moved to biodynamic as emerged through the preliminary interviews.
- If we consider the type of wine produced, red wines are the most produced in quantity, confirming the regional trend observed through our media analysis. 80% of respondents produce red wine under PDO labels and almost 50% produce with PGI labels. White wines are produced by almost the 40% of respondents of which the majority produces under PGI labels. Around 20% of respondents declared to produce rosé wines, in the majority as PGIs. These data agree with the analysis on market conditions that seem to favour the development of wines with a PGI label due to the
reduced bureaucratic constraint associated with the production disciplinary and the regulations for the origin, especially in comparison with PDO labels.

- According to respondents, the whole quantity of wine available for sale in 2017 was 165,964 hl, with an average availability of 1797 hl/farm that represents an decrease of 21% compared to 2016. This is probably due to the harvest that was not as good as that of 2016. Of these quantities, the producers said that they sold about the 43% on average, which is significantly lower than the percentage sold in 2016 on average. It is worth to notice here that about 20% of this wine is sold in bulk confirming what we observed in the case study with regard to the wine supply chain and the type of wine that is usually sold by Tuscan producers. In Tuscany, producers are more oriented towards quality wines so that they sell less bulk wine than the other regions of Italy where production is less quality oriented.

- Respondents on average claim to sell part of their production for 18% through collective channels such as wine fairs (confirming the data harvested in section B), and for more than 10% through B2B events such as Buy Wine. Almost 10% is sold through individual channels such as international buyers and just over 5% through company-managed wine clubs.

- With regard to Buy Wine, around 57% of the respondents said they increased their average sales volume thanks to their participation in this event, of which the majority with an average annual increase in exports of nearly 20%, while 40% did not find any positive impact. Furthermore, before participating in the Buy Wine 2016, 22% of producers said they had an export volume of less than 10%, 22% registered that they had exported between 50% and 75% and 18% declared they had traded between 75% and 90% as export. Thanks to the participation in the B2B event, 44.5% said they had strengthened their volume of exports with a consolidation percentage of less than 10% in 24.5% of cases) and between the 10% and 25% in 12% of cases. 55% of respondents did not report any effect.

- Furthermore, 57% of producers said that thanks to this B2B event, they managed to enter new and promising markets (mainly Canada, Russia, Holland, Denmark, Singapore, China, Sweden, Brazil, Finland).

- Finally, 45% of respondents said they received through this B2B event purchase proposals at higher average prices, and 35% said that they developed more stable commercial relations.
4 Italian Satellite Case Studies 1,2: Fisheries and Aquaculture in Tuscany, Italy

4.1 Case study introduction and context

Task 2.2 of WP 1 has involved an analysis of the policy/regulatory and market conditions that impact upon, in these two satellite case studies, Fisheries and Marine Aquaculture in Tuscany (Italy). This analysis has entailed a desk-based analysis, which has been supplemented by 14 interviews with experts (8 for fisheries and 7 for marine aquaculture) in order to gain further insight into the nature and complexity of these conditions. The purpose of this case study is to investigate the nature of policy requirements, market imperfections and their implications for the resilience of fishing and marine fish farming in Tuscany.

4.1.1 Fisheries and Marine Aquaculture in Italy

Italian fisheries and aquaculture production represents 6% of EU total production for these sectors. In terms of value of sold production Italy occupies the second position in Europe after Spain. However, the fisheries and aquaculture sectors represent a rather slight input for the whole internal Italian economy, corresponding to less than 0.1% of the Italian GDP and 4.3% of Agricultural Value Added in 2013. At a national level the marine fishery is a multigear and multispecies fishery, with a largely diversified fleet spread along the coastline. The fleet comprehends about 12500 vessels (at the end of 2014). 69% of the fleet is composed of small fishing boats (less than 12 m long); longliners and other liners represent 37%; 23% is composed of trawlers, gill netters, purse seiners and hydraulic dredges. The Italian territorial marine waters are extended until 12 miles from the shore, with a total length of 7456 Km and an area of 7210 Km² (CREA, 2015; FAO, 2015).

In the last decade, the production and economic outcomes of Italian fisheries slowly decreased. In fact, between 2007 and 2013, while the quantity produced decreased to 35.5%, the production value (in terms of chained prices) lost 24% and the added value lost 28%. However, in 2013 the aquaculture sector strongly contributed to counterweight the decline of quantities caught by fishing, exceeding by far the catches level. These negative and low trends are the consequences of the gradual process of downsizing of fisheries due to the depletion of fish resources and the control over the fleet capacity. The sector has been also affected by an extremely variable profit due to the increase in the prices of intermediate consumption, especially for fuel from 2010, and the decline in domestic consumption of fish products since the economic crisis, at least from 2012, has started to affect the household food purchasing power. Moreover, in the Italian fisheries sector still prevails a management approach oriented to the short-term profit, typical of an artisanal and very fragmented production structure. Also, similarly to the agriculture sector, a high mortality rate of fisheries enterprises was registered with a loss of approximately 2%, i.e. 239 units in 2013 (Infocamere data: CREA, 2015).

4.1.1.1 Fishing

Total production of the fishery sector in Italy for 2013 was about 340,000 tonnes, with a value of 1,760 million € in 2011 (IREPA, 2012). The European Union (EU) fleet capacity control policy

---

4 Authors: Paolo Prosperi, Daniele Vergamini, Fabio Bartolini, Stefano Grando, Gianluca Brunori (UNIPI)
brought to a major decline in the Italian fleet capacity in recent years, with a consequent fall of catches by about 44% between 2006 and 2013. Concurrently, the fish trade balance deficit augmented due to a weaker internal production, decreased exports (USD 760 million in 2013) and a relevant expansion of imports (USD 5.8 billion in 2013) (FAO, 2015).

In 2013 nearly 30,000 people were employed on the 12500 Italian fishery vessels operating in the Mediterranean with the small-scale fisheries being the most relevant segment for employment rate (Mipaaf, 2013). It is one of the most important fleets at European level – also considering the extent of the capacity (gross-tonnage GT) and engine power (kilowatts kW) - together with those of Greece, Spain, France and England. In fact, Italy - in terms of number of vessels - contributes with 14.5% of the Community fleet (86,221 boats), 15.4% of the motor power (on average 80.61 KW), while represents lower levels in terms of tonnage (9.8%), with an average tonnage of 13,11 GT. The average age of vessels is 32 years, while in Europe the average is 30 years. As for the geographical distribution of the Italian fleet, in terms of numbers of vessels there is a predominance of activities both in the lower Tyrrenian Sea (GSA 10), with about 25% of vessels, and in the Upper Adriatic (GSA 17) with 13% of vessels. Considering both the gross tonnage (GT) and engine power (kW), it is possible to detect an increase in values in GSA 16 (the Strait of Sicily) mainly due to the presence of relatively large trawling fleet (CREA, 2015).

Table 4.1. Fishing systems regulated by license in Italy according to Article 11 (Ministerial Decree 26/07/95). Adapted from Ferretti (2011)

<table>
<thead>
<tr>
<th>Fishing systems</th>
<th>Target commodities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Surrounding net (mechanically closed purse seines or without closure)</td>
<td>Small pelagic species (including anchovies and sardines)</td>
</tr>
<tr>
<td>2 Seine (both from shore and boats)</td>
<td>Multiple species of high economic value (Red mullet, grey mullet, seabream, octopus, cuttlefish, etc.)</td>
</tr>
<tr>
<td>3 Bottom trawling (bottom otter trawls, beam trawls, and bottom pair trawls, “rapido”)</td>
<td>Multiple species of high economic value (including sole, other flatfish, great scallop and queen scallop, etc.)</td>
</tr>
<tr>
<td>4 Midwater trawling</td>
<td>Small pelagic species (including anchovies and sardines)</td>
</tr>
<tr>
<td>5 Towed mollusc gear</td>
<td>Burrowing bivalve molluscs</td>
</tr>
<tr>
<td>6 Hydraulic dredges</td>
<td>Burrowing bivalve molluscs</td>
</tr>
<tr>
<td>7 Boat rakes</td>
<td>Burrowing bivalve molluscs</td>
</tr>
<tr>
<td>8 Static gear (all static nets, gillnets, trammel nets, combined nets, all types of traps, both static and mobile, fyke nets and serragie, pots of all types)</td>
<td>Pelagic, bentonic and demersal species</td>
</tr>
<tr>
<td>9 Ferrettara (driftnets with finer mesh)</td>
<td>Pelagic species (oily fish, anchovies, sardines)</td>
</tr>
<tr>
<td>10 Longline (both drifting and static)</td>
<td>Tuna, swordfish, bonito, seabream, seabass, white-bream, hake, albacore, etc.</td>
</tr>
<tr>
<td>11 Line</td>
<td>Tuna, swordfish, bonito, seabream, seabass, white-bream, hake, etc.</td>
</tr>
<tr>
<td>12 Harpoon (harpoons, spears or mirrored poles)</td>
<td>Sworfish, Sea urchins.</td>
</tr>
</tbody>
</table>
According to the Italian Decree 1639/1968, the fleet is divided into coastal, Mediterranean and Overseas vessels (beyond the Mediterranean Straits). Generally, small-scale - or artisanal - fishing identifies fishing activity practised with small boats (less than 12 meter) and passive gears, involving mainly day trips with a reduced crew (one or two fishermen) (Ferretti, 2011). The gears most commonly used are surrounding nets, bottom trawl nets of different dimension, midwater trawlers, dredges, trammel nets as well as traps and longlines (used by the small-scale fisheries fleet segment) (FAO, 2015). Technical restrictions apply to each gear in terms of mesh size, net and line length, number of hooks or traps.

Practicing professional fishing necessitates a fishing license for each fishing system that can be used. There are 12 licenses (table 4.1). A vessel can have several different licenses and use a selection of more than one fishing system. The European Commission regulates the use and the licenses of gears. The gears most commonly used in Italy, which provide the greatest revenues, are surrounding nets, tuna seines, trawl nets, hydraulic dredge, trammel nets, anchored gillnets, longlines and drifting longlines (Ferretti, 2011).

As mentioned above, the Italian fleet capacity decreased in the last two decades due to EU adjustment measure oriented to regulate a physically and economically disproportionate fleet size along with a sharpening decline of fish stocks. This adjustment was meant also to renew technological quality and safety of working conditions on the vessels, as well as to improve fish products quality and fishing selectivity.

On average Italian vessels are 10 meters long with an engine power of 80 KW. About 67% of the fleet is represented by highly heterogeneous small-scale fisheries (i.e. 8479 vessels). 19% of the fleet (i.e. 2420 vessels) pertains to trawling systems which constitutes 50% of the total capacity (gross tonnage, GT) and engine power (KW) of the Italian fleet. Small-scale fisheries represent 20% of the total capacity and 25% of the total fishing power. Other 1683 vessels are distributed between polyvalent passive systems, dredges, line and longliners, as well as surrounding nets (CREA, 2015).

The catch composition of Italian marine fisheries is extremely heterogeneous, reflecting both the different gear in use in various fishing grounds and the high biodiversity of aquatic resources. The first five species (e.g. Anchovy, Sardine, Clam, Hake, Deep-water rose shrimps) account for 51% of the total, while the values of the remaining 130 species usually landed is rather marginal (MIPAAF-IREPA, 2012). The main species caught are the small pelagics such as anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*). With regards to demersal fish, the most landed are hake (*Merluccius merluccius*) and red mullet (*Mullus barbatus*). Cephalopods represent an important part of total Italian landings including cuttlefish (*Sepia officinalis*), octopus (*Octopus vulgaris*), and horned octopus (*Eledone cirrhosa*). The most abundant crustaceans landed are the deepwater rose shrimp (*Parapenaeus longirostris*) and the spottail mantis shrimp (*Squilla mantis*). The most landed large pelagic species are bluefin tuna (*Thunnus thynnus*), albacore (*Thunnus alalunga*) and swordfish (*Xiphias gladius*) (FAO, 2015).

The data of the Ministry of Agriculture, Food and Forestry (Mipaaaf) and the Institute of Economic Research of Fisheries and Aquaculture (IREPA) recorded, in the medium term, a negative dynamic of productive activity, both in terms of catches and revenues. The check-up for 2012 of the Institute of Services for the Agricultural Food Market (ISMEA) identified structural difficulties of the national fishing industry as well as the decline, in 2012, of the
fishery production (-5.7% compared to 2011). This negative trend affects both sea fishing (-6.8%) as well as farmed products (-4.4%). According to the Mipaaf Annual Report 2012 "Production facilities. Fishery performance", the reduction in production levels is linked to the fishing effort adjustment for both fishing activity and capacity but also to other factors such as changes in fishing areas caused by rising production costs and the different composition of the fish with a higher demand for other species from national and international markets. Furthermore, the internal demand for fresh fish products diminished in 2012 by 1.5% per year (ISMEA data, DINTEC, 2015).

4.1.1.2 Aquaculture

Aquaculture brings 48% of the total national fish production. Italy is among the main aquaculture producing countries of the EU, after Spain, France and Greece. The aquaculture sector in Italy includes both marine and freshwater farming. Freshwater aquaculture predominantly consists of farmed trout, while marine aquaculture involves both shellfish, such as mussels and clams, as well as finfish in marine cages. The current trend in the Italian aquaculture development is the rising production of marine species, both molluscs and finfish. In 2013, the total national aquaculture production was assessed at 162,600 tonnes, composed of 38,800 tonnes (24%) produced in freshwater, and 123,800 tonnes (76%) in marine and brackish waters. Mariculture consists of finfish (11%) and molluscs (89%). The farming of molluscs is based heavily on the Mediterranean mussel, the Japanese carpet shell and grooved carpet shell. Growth in aquaculture production is mainly due to the mastering of seed production techniques for European seabass and the gilthead seabream and to the application of new farming technologies (FAO, 2015).

The establishment of aquaculture facilities in coastal brackish areas engendered many disagreements, because of the environmental vulnerability of coastal wetlands, considered as the last residues of sensitive and peculiar ecosystems along the Italian coast.

As a land based activity, Italian marine fish culture has been affected by the competition on the market with the fast-growing cage-farming industry in Greece: reduced power costs and availability of sheltered marine areas for intensive cage culture could decrease costs down to a much lower level than those in the Italian land-based farms.

The diversification of the aquaculture Italian production is considerable, also thanks to a long and geographically diversified coast (Cataudella and Crosetti, 2011). Marine species (sea bass and sea bream, farmed in almost 10% of the aquaculture companies) and those of fresh water produce together more than half of the aquaculture Italian turnover, which is 699 million €. In recent years the production of mullet has regained importance as a result of a recovery in demand for the product, both for direct sale and for the processes of transformation (cured roe, smoked-fish, pickling). With regard to economic performance, the impact of subsidies on the total value of production is very low, and the most significant costs are related to livestock expenses (22%), followed by fishmeal costs (15%) and the costs of work. In 2012 there has also been a significant increase in energy costs (+12%). In contrast, livestock and fishmeal costs declined. The total costs in aquaculture business represent 71% of total revenues. The average value added in the 2008-2012 period was about 138 million €, presenting an increase of 32% compared to 2011. The number of companies has decreased from 2008 to 2011 by
15%, i.e. from 699 to 587. 55.3% of companies, which in 2012 were 587 in total, employ 5 or less workers, 23.8% have between 6 and 10 employees and only the remaining 20.9% have more than 10 employees (CREA, 2015).

4.1.2 An introduction to Tuscany

Tuscany has a western coastline - on the Ligurian Sea (in the north) and on the Tyrrhenian Sea (in the south) - including the Tuscan Archipelago in which the largest island is Elba. The coastline represents an important tourist destination and is varied with mainly extensive sandy beaches and some rugged promontories; three natural protected areas are included in the coastline. The most important port in Tuscany is Livorno, one of the largest Italian and Mediterranean seaports for traffic capacity that is capable of handling all kind of vessels.

The fisheries sector in Tuscany is characterised also by a considerable production from aquaculture. Focusing only on aquafarming of saltwater populations and mariculture, the Tuscany production represents 20% ca. of the national production with mainly 12 aquacultures and 4 mariculture coastal installations farming mostly sea bream and sea bass. Although catches of hake and sardine as well as the production of sea bream and sea bass are relevant for the Tuscany fisheries sector at a national level, the region is rather an importer of fish and fish products.

Fisheries and coastal aquaculture in Tuscany are both concerned by the critical conditions affecting the Mediterranean Sea. Together with habitat loss, pollution, eutrophication and incidental introduction of alien species, fishing represents one of the strongest stressors that have led to increased changes in the ecosystem structure, loss of fish stocks and marine biodiversity (Coll et al., 2011; Colloca et al., 2011; Farrugio et al., 1993; Papaconstantinou and Farrugio, 2000; Vasilakopoulos et al., 2014; Piroddi et al., 2015; Prosperi et al., 2016).

In Tuscany, the whole value chain for fisheries products consists of 1,029 registered enterprises (at January 2015), representing 3.9% of the Italian value chain for fisheries and seafood. In terms of number of companies the fish and seafood value chain is a relatively small sector compared to the whole national economy. Fish companies in Italy represent 0.43% of all business enterprises, while in Tuscany they constitute 0.25%. In Tuscany, the largest share of fishing companies is in Livorno, followed by Grosseto: 46% of fishing enterprises are in these the two coastal provinces. In Livorno, in particular, it is located nearly one third of the Tuscan fishing and aquaculture companies. In 2013, the total production value of the fisheries and aquaculture sector in Tuscany has reached 72.89 million euro while the added value (production value - intermediate consumption such as raw materials and services) was equal to 38.08 million euro (DINTEC, 2015).

4.1.2.1 Fishing

The fishing fleet in Tuscany is dispersed in a number of ports and harbours which are extremely heterogeneous in terms of structure and size (Figure 4.1). Thus, the Tuscan coast presents fisheries differently developed and structured, both for size and for specific production activities. The fragmentation of the fisheries business in Tuscany can be related to the presence of several small maritime centres. Furthermore, the fishing activity in Tuscany -
as throughout Italy and the Mediterranean - is conditioned by the large presence of multi-species stocks and by the possibility of using vessels of different sizes for fishing in the same areas with several fishing gears. Many ports and harbours function also for other purposes such as commercial, industrial, energy (fuel), passenger transport, tourism and pleasure. The Tuscan fleet is characterized by a high mobility especially within the Region.

Figure 4.1 Fishing ports in Tuscany (retrieved from: ARPAT, 2008)

Fishing activity in Tuscany is spread among 27 ports (European Parliament, 2008) with 600 vessels registered and 1053 active fishermen (FAO, 2015). In 2012 fishing activity from Tuscany represented 8% of total Italian landings (FAO, 2015) and is mainly led through small-scale fishing vessels (ca. 75%), trawl (ca. 20%), and few passive polyvalent (FAO, 2015). The average tonnage for vessels in Tuscany is 8.67 GT and the average engine power is equal to 67, 67 kW. Livorno and Viareggio are the most important fish markets of the region (ISMEA, 2013). In all the fishing compartments of Tuscany the most commonly used fishing systems are the static gears, followed by purse/surrounding nets and then the trawl system (PSL-GAC Toscana, 2015). The most active ports for the fishing activity are in Marina di Carrara, Viareggio, Livorno and Porto Santo Stefano. The port of Marina di Carrara is the world’s most important hub for the handling of marble. However, the importance of Marina di Carrara from the point of view of fishing is progressively decreasing (PSL-GAC Toscana, 2015). Today, the fishing vessels with the greatest gross tonnage are concentrated in the ports of Argentario, in the southern part of the coast.

In the last decade, the economic crisis led to a continuous decrease in the fishing fleet and in the number of fishermen, especially for trawling and purse seine (surrounding nets) fisheries. Also, the increasing role of marine tourism reduced the number of mooring facilities for fishing
vessels, with serious problems relating the lack of adequate space for such activities (Bartoli and Rossetti, 2011).

According to Mipaaf and IREPA data, in 2012 the production of marine fish in Tuscany was estimated at: 67,000 days of fishing, 8,000 tons of catches and almost 41 million euro in revenues. The incidence of the Tuscan fishing production on the Italian total reaches a market share of about 4.5%. In terms of number of vessels Tuscany has a smaller fleet than the national average. The Tuscan fleet is mainly engaged in small-scale fisheries with 75% of vessels (small boats capacity in terms of tonnage and engine power) and 55% of the fishermen of the total. Only 20% of the fleet practices trawl fishing, however trawling vessels represent 61% of the total gross tonnage and 47% of engine power volume. Trawling and the seiners (surrounding nets) are the most productive methods with, globally, 84% of catches and 68% of revenues in 2012. However, the greatest value species are caught by small-scale fishing systems and polyvalent passive: small-scale fishing alone obtained 14% of catches and 27% of turnover (table 4.2).

Table 4.3. Catches, revenue and prices according to fishing system in Tuscany and percentages at a regional level (2012 data from MIPAAF-IREPA)

<table>
<thead>
<tr>
<th>Fishing systems</th>
<th>Catches (Tons)</th>
<th>Revenue (million €)</th>
<th>Price (€/Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trawling</td>
<td>2,449</td>
<td>20.04</td>
<td>8.18</td>
</tr>
<tr>
<td>Surrounding nets</td>
<td>4,343</td>
<td>7.64</td>
<td>1.76</td>
</tr>
<tr>
<td>Small-scale fisheries</td>
<td>1,094</td>
<td>11.08</td>
<td>10.13</td>
</tr>
<tr>
<td>Polyvalent passive</td>
<td>203</td>
<td>2.06</td>
<td>10.15</td>
</tr>
<tr>
<td>Total</td>
<td>8,088</td>
<td>40.83</td>
<td>5.05</td>
</tr>
</tbody>
</table>

In 2012 the physical productivity of a Tuscan fishing vessel was lower than the national average with 13 tons and 67,300 € (table 4.3) against 15 tons and 71,500 euro per year (DINTEC, 2015).

Table 4.4. Fishing activity, physical and economic productivity according to fishing systems in Tuscany (MIPAAF-IREPA 2012 data; adapted from DINTEC, 2015)

<table>
<thead>
<tr>
<th>Fishing systems</th>
<th>Overall fishing days</th>
<th>Fishing days/vessel</th>
<th>Catches/vessel</th>
<th>Gross Saleable Production/vessel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Annual (Tons)</td>
<td>Daily (Kg)</td>
<td>Annual (1000 €)</td>
</tr>
<tr>
<td>Trawling</td>
<td>15,822</td>
<td>23.5%</td>
<td>135.2</td>
<td>20.9</td>
</tr>
<tr>
<td>Surrounding nets</td>
<td>2,633</td>
<td>3.9%</td>
<td>146.3</td>
<td>241.3</td>
</tr>
<tr>
<td>Small-scale fisheries</td>
<td>46,166</td>
<td>68.7%</td>
<td>101.9</td>
<td>2.4</td>
</tr>
</tbody>
</table>
In 2012 the whole catches of Tuscany fisheries were composed for 80% by fish, 12% by molluscs and 8% by shellfish. Fish accounted for 60% of sales, while 40% was due in equal parts from the sale of molluscs and shellfish (table 4.4). Fish production belongs mainly to the blue fish category. Over two-thirds of harvested species are composed of anchovies, sardines, hake and mullet. However, these four main species represent only 40% of the fresh fish turnover. Another 19% of revenue comes from the sale of red mullet, sole, swordfish, and other high value species, which represent only 9% of fish production in terms of quantities.

### Table 5.4. Catches and revenues composition rate according to target marine species in Tuscany (2012 data from MIPAAF-IREPA; our calculation adapted from DINTEC, 2015)

<table>
<thead>
<tr>
<th>Target species</th>
<th>Catches</th>
<th>Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>- Anchovy</td>
<td>45%</td>
<td>25%</td>
</tr>
<tr>
<td>- Sardine</td>
<td>18%</td>
<td>3%</td>
</tr>
<tr>
<td>- Hake</td>
<td>5%</td>
<td>12%</td>
</tr>
<tr>
<td>- Mullet</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>- Other fish species</td>
<td>9%</td>
<td>19%</td>
</tr>
<tr>
<td>Crustaceans</td>
<td>8%</td>
<td>20%</td>
</tr>
<tr>
<td>Molluscs</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>100% (8,088 tons)</td>
<td>100% (40.8 million €)</td>
</tr>
</tbody>
</table>

4.1.2.2 Marine aquaculture

Tuscany occupies an important position in terms of quality and quantity for the production of valuable marine species from aquaculture (over 20% of national production). The farms that use marine water or brackish water are all located in the provinces of Livorno and Grosseto (Figure XX). The total production of marine and brackish aquaculture farms in Tuscany, both intensive and extensive, reached 3,082 tons in 2009 and 3,226 tons in 2010. Considering an average price of sales of 7.77 €/kg and 7.72 €/kg, respectively in 2009 and in 2010, the production value amounted to almost 24 million € in 2009 and 25 million € in 2010. The data from the last decade show three main trends for aquaculture in Tuscany:

- The declining number of active aquaculture enterprises (especially for small companies with marginal productions);
- The consolidation of the biggest companies historically existing in the area with a growing production up to 3,000 tonnes per year;
- The expansion of mariculture activities, even if it is extremely regulated and limited (the first mariculture farms have been added in recent years: in the Gulf of Follonica,
near the island of Capraia, on the island of Gorgona and along the Monte Argentario coast.

Figure 4.2 Marine aquaculture sites in Tuscany (orange spots)

The production centre in Orbetello plays a leading role in the national production scene. The company brand, “Pesce di Orbetello”, and its consortium, which includes four companies, gained commercial access to the big retail system, which engages over 75% of its production (around 2,000 tonnes of sea bass, gilthead bream and meagre), and facilitated the exports of its products (Gilmozzi, 2011).

4.2 Policy and regulatory conditions

Italian fisheries policy builds on four base pillars: management of fishery resources, structural policy, common organization of markets and the international agreements. The fisheries policy is implemented through the General Directorate for Fisheries and Aquaculture of the Italian Ministry of Agriculture, Food and Forestry Policies (MIPAAF), and by the Directorate for Fisheries of the regional administrations, with the support of services provided by decentralized offices (Marine Coastal Guard).

4.2.1 Common Fisheries Policy

The European Union sustains and regulates the fisheries sector through the Common Fisheries Policy (CFP). Between 2007 and 2013 the European Maritime and Fisheries Fund (EMFF)
supported fisheries building on five priority areas: fleet adjustment (i.e. through vessel scrapping measures); aquaculture, processing, marketing and inland fishing (e.g. promoting more environmentally friendly processes); measures of common interest (e.g. improving traceability and labelling systems, etc.); sustainable development of fisheries areas (e.g. example diversifying the local economy); technical assistance to finance the management of the fund.

The European Council and the Parliament approved the new CFP from 2014, with the European Fund for Maritime Affairs and Fisheries Fund (EMFF) as the financing instrument providing support to the implementation of the reform for the 2014-2020 period. The focus issues are sustainable fisheries, research and improvement of scientific knowledge regarding the state of stocks, aquaculture, coastal artisanal fishing, employment and training. Furthermore, since the new scheme implies the obligatory landing of all catches, the EMFF will also support investments on board oriented to avoid overfishing and optimize the use of unwanted and under-utilised catches. Other opportunities and significant new features include supporting the Integrated Maritime Policy (IMP), the collection of data on stocks, the implementation of the multiannual national strategic plan for planning and management of aquaculture, the introduction of new insurance products, and financing partnerships between fishermen and researchers. Italy is the third most supported EU country for the fisheries sector with 9.8% of the EMFF resources in EU-27 and 9.3% in EU-28 (i.e. 537 million euro at current prices in 2015). The funding increased compared to the 2007-2013 with a 10% rate (at 2011 prices). At EU level most of the resources, i.e. 68%, are directed to sustainable development of fisheries, aquaculture and fishing areas, as well as to marketing and processing. For Italy, the resources allocated to sustainable development, marketing and processing measures account for 79% of the available ceiling (CREA, 2015).

Between 2008-2013, the Italian fishing fleet has shown a decreasing trend: in six years the number of boats declined by about 6%, i.e. from 13,774 units in 2008 to 12,582 in 2013. The decrease reflects a long-term trend, mainly due to the application of EC legislation to adapt the fleet capacity to fish stocks. In 2004, total marine capture fisheries totalised 288,284 tonnes, while in 2012 they only reached 195,000 tonnes. The value of production in 2012 generated USD 1.2 billion, while in 2004 the same figure was USD 1.8 billion (FAO, 2015). The largest reductions started as a result of the 2002 reform of the Common Fisheries Policy (Regulation (EC) no. 2371/2002), which introduced a limiting system for the fishing capacity (CREA, 2015). This reduction of the fishing fleet capacity is confirmed also by the negative trend of engine power (kW - kilowatt) and average gross tonnage (GT - gross tonnage). New vessels are now allowed to be used only after the withdrawal of a corresponding capacity (in kW and GT). Consequently, it is possible to observe a progressive rising of the age of vessels. The high average age of vessels implies the need for repeated and costly maintenance, and can be an obstacle to technological innovation. For the fishing days, a decreasing trend was also observed with only 1,493,756 fishing days counted in 2013, corresponding to an average of 118 days/vessel/year. Both components of fishing efforts – fishing capacity and activity – showed similar negative trends. The reduction in fleet capacity is only one of many other factors affecting the fall in total captures and productivity. These negative trends are also explained by bad weather conditions, the poor state of infrastructures, including ports, state of the stocks, changes in fishing zones due to increased production costs, as well as different composition of the catches (CREA, 2015). Moreover, fishing activity in Italy is also subject to the Mediterranean Regulation (Reg. (CE) 1967/2006) which also contributed to the
modification - and even to the abandonment - of several small-scale fisheries and had a direct impact on internal production through modifying fishing activity with larger mesh size, regulating distance from the coast as well as controlling minimum size of several catches. Other European Council’s control regulations and sanctions (Reg. (CE) 1224/2009)) cover all operations from capture to sales and induced changes in fishing operations, including the traditional ones (FAO, 2015). In the recent years, between 2013 and 2014, the fishing capacity was stable in both terms of GT and KW. The most recent decline of fishing capacity occurred between 2010 and 2012, when the scrapping of several fishing vessels decreased the fishing capacity for 12,000 GT through public funding. However, in the next years, through the EMFF policy measures, another strong capacity adjustment will take place in order to achieve a sustainable balance between fishing capacity and fishing opportunities: the fleet reduction will involve a decrease for 7000 GT between 2015-2016, equal to 4,4% of the 2014 national fleet capacity (Reg. (UE) 1380/2013; CREA-b, 2015).

The EMFF Italian Operational Programme for 2014-2020 includes implementing a number of measures relating to the following priorities: a) Promoting environmental, resource-efficient, innovative, competitive and knowledge-based sustainable practices for fisheries and aquaculture; b) Fostering the implementation of the Common Fisheries Policy; c) Increasing employment and territorial cohesion; d) Improving and processing; e) Support the implementation of the Integrated Maritime Policy (IMP).

### 4.2.1.1 Seasonal fishing ban

The fishing ban is a measure established by the Italian government that regulates fishing during the breeding periods of the main marine marketable species. The fishing ban focuses primarily on invasive systems of fishing (only bottom and midwater trawls) to ensure the protection of marine fauna. The start and duration of the fishing ban in Italian waters varies depending on the area and the coast. Every year the Ministry of Agriculture, Food and Forestry releases the ministerial decree with the dates of the temporary, and compulsory fishing ban.

A specific fishing ban is applied to *Aphia minuta* - Transparent Goby fishing – a highly profitable target species which is caught in Tuscany and Liguria (GSA-9). The regulated fishing of *Alpha minuta* can be allowed for a maximum 60 days (also separate) from the 1st of November to the 31st of March. The fishing of the Transparent Goby represents an important productive resource for the small-scale fishery sector in Tuscany by the socioeconomic point of view. In 2012 there were 48 vessels in Tuscany that held the fishing licence for *Aphia minuta* (ARPAT, 2012).

From interviews with fishermen and fisheries stakeholders operating in Tuscany it is generally recognised that the seasonal fishing ban for trawl fishing is no more an adequate measure for protecting the stocks. In fact, stocks are still declining and many species would need to be protected in other period of the year. Also, one stakeholder considers this ban as “market opening” which is offered every year to fish import. There is a common understanding for zoning and fragmenting over the year the fishing ban according to scientific data and information related to the biology of the fish species and reproduction. Small-scale fishers are not concerned by this seasonal fishing ban and are allowed to fish during the ban while for trawlers it is forbidden. However small-scale fishers did not show to perceive an advantage for
having access to all the fish resource without the trawlers competition, except for the fact that during the ban period eventual infringements from trawlers fishing in the small-scale fisheries area would not be possible.

With regards to the regulation for transparent goby fishing in Tuscany there is a general concern (observed from interviews and media analysis) that this fishing activity will progressively disappear as long as vessels will be dismantled since this fishing license is associated only to the boat. Another general concern of fishers and producer representatives is related to the delay for receiving the fishing authorisation from the Ministry since it would represent a postponement of their business.

### 4.2.1.2 Boat Scrapping (dismantling)

In 1999, before the operationalization of the EU Fisheries Instrument for Fisheries Guidance (FIFG) the Tuscany fishing fleet was composed of 792 boats, with a total tonnage of 9,048.59 GT (average 11.42 GT), and a total engine power of 60,031.06 kW (average of 75.80 kW) (Community Register data at 31 December 1999). Then, in the period 1999-2011 the number of ships of the regional fleet decreased by 22.5%; the reduction was much more pronounced in terms of the tonnage (-41.2%) and engine power (-30.8%) (PSL-GAC Toscana, 2015). Thus, the fishing fleet is now made up of rather old vessels with an average age of about 32 years: 48.9% of ships are over 30 years. The most recently built boats (under 5 years) constitute only 9.9% of the units, for a tonnage equal to 4.5%, and belong mainly to the artisanal fishing sector using static gears (PSL-GAC Toscana, 2015).

### 4.2.1.3 Fishing tourism

Fishing tourism is defined as the activity carried on by a single owner or a company or fishing cooperative, aimed to transport people other than crew for conducting tourist and recreational activities. According to the regional law (L.R. no. 35/2009) only vessels practising inshore fishing can exercise the fishing tourism. These activities allow fishermen to integrate and diversify their income as well as provide an opportunity for new employment, releasing the pressure on fish stocks.

The fishing tourism is included within the Community and national programming on fisheries. Also at regional level a study was realised about the potentialities of development of fishing tourism in Tuscany. Currently in the region there are about seventy vessels authorized to fishing tourism but only twenty vessels are actually carrying on such activities throughout the year or at least during the summer season (PSL-GAC Toscana, 2015).

From interviews to fishermen engaged in fishing-tourism it emerged that this activity can represent an important strategy of diversification of the fishery activity for small-scale fisheries, especially when small-scale fishers must bear the cost of the activity and struggle to sell their fish at profitable prices.
4.2.1.4 Funding initiatives: European Fisheries Fund – FLAGs

In 2014 the Fisheries Local Action Group “Coast of Tuscany” was established with the aim of “supporting fisheries and aquaculture by increasing competitiveness, profitability and employment, through: a) Promoting the area and its local fisheries products; b) Strengthening the links between fishing activities and tourism; c) Vocational training for fishermen; d) Adding value to production through the development of new forms of marketing”. This FLAG, the only one existing in Tuscany, involves all the five coastal provinces of the region and implies the participation of 64 public and private parties. It is coordinated by the Province of Grosseto, and its main activities consist of: producing a feasibility study of a quality brand and of a traceability system; promoting the development of the area through a voluntary collective brand and a regional traceability system for marine fisheries products; creating microstructures dedicated to the concentration and collective sale of fish products; encouraging the adaptation of vessels to support fishing tourism; valorising catches, short supply chains, and diversification of income; developing and improving aquaculture sites by identifying areas suited to aquaculture, particularly for mariculture; promoting and improve professional skills (EC-FARNET, 2014).

4.2.1.5 Recruitment

At a national level the failure of several enterprises was observed in fisheries especially for the individual companies (i.e 68% of the national fisheries enterprises) as well as for the firms located in the Northeastern part of the country. The progressive reduction in the number of vessels, the erosion of physical and economic productivity from catches exacerbated the economic situation of fishing enterprises that was also reflected in the number of employees, down from nearly 30,000 units in 2007 to about 26,700 in 2013. In the last decades, there was a loss of more than 6,000 work units (CREA, 2015). This profitability loss of fishing companies had a negative impact also on the crew costs: in 2007 a vessel spent, on average, more than 27,000 € to remunerate the workforce, while in 2013 the cost of the workforce was only over 18,000 €. Also, labor productivity in 2013 greatly diminished (-33%) compared to 2007.

The small-scale fishing is still the most represented segment (13,682 employees, i.e 51% of the total marine fisheries), followed by trawling (7,421 employees, i.e. 27.5%). Between 2007 and 2013 it was observed an overall reduction of 11.4% work units with a loss of about 3,500 jobs, especially for mid-trawlers (-21%) and trawlers (-17.5%); only for hydraulic dredgers (that are not used in Tuscany) there was a positive employment trend (+ 7%) (CREA, 2015).

For aquaculture, at a national level, the number of employed in 2012 was 5,164 units, up 18% compared to 2008. However, this trend showed also a slump in the number of permanent employees (-43.5%). Labour productivity in 2012 was 106,200 EUR, an increase of 115% compared to 2008. The shellfish industry is the leading sector of the Italian aquaculture facility, counting 3,774 employees, i.e. 74% of the total workforce (CREA, 2015).

According to the Population Census 2001, at a regional level, the total employment of fishing, fish farming and related services, accounted for 0.2%, concerning mostly Livorno and Grosseto provinces (PSL-GAC Toscana, 2015). More recent data on employment show that on average the size of the Tuscan companies of fishing industry is 4.8 employees (DINTEC, 2015).
Generally the fishers and stakeholders interviewed in Tuscany are concerned about the lack of human resources being trained or willing to practice the fishery activity since it is considered a hard work with working hours and patterns that do not fit “the modern life habits”.

4.2.1.6 Acknowledging the ‘social’ within policy and regulation
Fisheries have always contributed to support the economy of the coastal populations of Tuscany. Small-scale fisheries are the most important segment from the social and employment point of view. Between 2004 and 2010 it was observed that the socio-economic impact related to the reduction of fishing effort was extremely significant (FAO, 2015). In recent decades, the economic crisis produced in Tuscany a progressive decline in the fishing fleets and in the number of fishermen, particularly for trawling and surrounding nets systems. Furthermore, the rising development of marine tourism reduced the number of mooring facilities for fishing vessels, with serious problems relating the lack of adequate space for such activities (Bartoli and Rossetti, 2011).

4.2.2 Fisheries management and marine conservation
4.2.2.1 Ecosystem Approach to Fisheries Management
In the Mediterranean Basin and in the Black Sea the “General Fisheries Commission for the Mediterranean” (the GFCM is a regional fisheries management organization established according to Article XIV of the FAO Constitution) promotes the development, conservation, rational management and best utilization of all marine living resources, as well as the sustainable development of aquaculture in the area falling under its competence. Its specific purposes and responsibilities involve the formulation and recommendation of schemes for the conservation and management of living marine resources. The GFCM has to respect the precautionary approach, when formulating and recommending conservation and management measures, and to take into account the best scientific knowledge available as well as promoting development and an appropriate utilization of marine living resources. GFCM recommendations relate, inter alia, to driftnets, closed seasons, mesh size, management of demersal fisheries, plans of actions, red coral, incidental by-catch of seabirds or turtles, conservation of monk seal, records of vessels, port State control, lists of IUU vessels, logbooks, vessel monitoring systems. GFCM applies restrictions on protected deep-sea areas and sensitive habitats (Scovazzi, 2011).

The Scientific, Technical, Economic Committee for Fisheries (STECF), through the Sub Group on Mediterranean (SGMED) of the EU, and the Sub-Committee on Stock Assessment of the GFCM on Mediterranean stocks, assessed a status of overexploitation for most of the demersal species landed by the Italian fleet over period 2010-2012. Most of examined stocks in the Mediterranean were found to be overfished, except for Norway lobster in GSA 16 (Sicily), and deep-water rose shrimp in GSA 9 (North-Tyrrenian, i.e. Liguria and Tuscany) (Table 4.5), which are the only two stocks that could be considered as caught at a sustainable level. Also, pelagic species such as European anchovy and sardine can be considered in a status of overexploitation in most of the Italian GSAs considered. In the table below we selected the

---

5 IUU: Illegal, Unreported and Unregulated fishing activities.
examined species within the GSA 9 (the fishing area for the Tuscan fleet) according to the state of the stocks (FAO, 2015).


<table>
<thead>
<tr>
<th>Species</th>
<th>Common name</th>
<th>State of the stocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aristaeomorpha foliacea</td>
<td>Blue and red shrimp</td>
<td>Overfished</td>
</tr>
<tr>
<td>Aristeus antennatus</td>
<td>Blue and red shrimp</td>
<td>Overfished</td>
</tr>
<tr>
<td>Engraulis encrasicolus</td>
<td>Anchovy</td>
<td>Overfished</td>
</tr>
<tr>
<td>Galeus melastomus</td>
<td>Blackmouth catshark</td>
<td>Overfished</td>
</tr>
<tr>
<td>Merluccius merluccius</td>
<td>European Hake</td>
<td>Overfished</td>
</tr>
<tr>
<td>Micromesistius poutassou</td>
<td>Blue whiting</td>
<td>Overfished</td>
</tr>
<tr>
<td>Mullus barbatus</td>
<td>Red mullet</td>
<td>Overfished</td>
</tr>
<tr>
<td>Mullus surmuletus</td>
<td>Surmullet</td>
<td>Overfished</td>
</tr>
<tr>
<td>Nephrops norvegicus</td>
<td>Norway lobster</td>
<td>Overfished</td>
</tr>
<tr>
<td>Pagellus erythrinus</td>
<td>Common pandora</td>
<td>Overfished</td>
</tr>
<tr>
<td>Physic blennoides</td>
<td>Forkbeards</td>
<td>Overfished</td>
</tr>
<tr>
<td>Raja asterias</td>
<td>Mediterranean starry ray</td>
<td>Overfished</td>
</tr>
<tr>
<td>Raja clavata</td>
<td>Thornback ray</td>
<td>Overfished</td>
</tr>
<tr>
<td>Sardina pilcardus</td>
<td>European pilchard or sardine</td>
<td>Overfished</td>
</tr>
<tr>
<td>Scyliorhinus canicula</td>
<td>Small-spotted catshark</td>
<td>Overfished</td>
</tr>
<tr>
<td>Squilla mantis</td>
<td>Mantis shrimp</td>
<td>Overfished</td>
</tr>
<tr>
<td>Trisopterus minutus</td>
<td>Poor cod</td>
<td>Overfished</td>
</tr>
<tr>
<td>Parapenaeus longirostris</td>
<td>Deepwater rose shrimp</td>
<td>Sustainably fished</td>
</tr>
</tbody>
</table>

In the GSA 9 part of Tuscany, the regulated marine areas are those included in the National Park of the Tuscan Archipelago, around the islands of Capraia, Gorgona, Giannutri, Montecristo and Pianosa, for an extension of three miles from the coast. The safeguard measures (Decree 22 July 1996) provide a complete ban on fishing, with some exceptions for residents living on these islands. Furthermore, the Ministry of the Environment is setting up three new Marine Protected Areas, e.g.: “Secche della Meloria”; “Arcipelago Toscano”; “Monti dell’Uccellina, Formiche di Grosseto, Foce dell’Ombrone, Talamone”. As for the protection of biodiversity, the terrestrial Special Protection Areas (SPA) have been extended to the marine protected areas of the Tuscan Archipelago already protected by the national Park. In particular the restrictions for fishing are the following: a) Using trawl nets, dredges, purse seines, boat seines, beach seines and similar nets on the prairie of sea grass or other seagrasses; b) Using trawl nets, dredges, shore seines or similar nets above coralligenous habitat and maerl beds. As for the landscape protection, it takes into account the provisions in the landscape plan approved by D.C.R. 37 dated March 27, 2015 (PSL-GAC Toscana, 2015).

With regards to an ecosystem approach to aquaculture, fish farming in Tuscany has always been focused on quality and environmental sustainability (Gilmozzi, 2011). However, further development of aquaculture in the sea (marine aquaculture) is highly restricted by strict landscape and archeological regulations.
4.3 Market conditions

Italy is a net importer of fish products. In 2013, imports of Italy for the fisheries and aquaculture sector reached more than 4.26 billion €, equal to 10.7% of the total national agrofood import. In the same year exports totaled 560 million €, less than 2% of Italian agrofood exports. Basically, it is a stable negative balance with a strong increase in imports, since 2007, and a substantial stability of exports. Between 2007 and 2013 the imports of salmon increased sharply (+ 173%), as well as for frozen crustaceans and molluscs and processed fish. However, between 2012 and 2013 it was possible to observe stable levels for imports (only +0,6%) and significantly rising exportation (+8%), mainly due to higher outflows of processed fish (+ 12.2%), with over 225 million € of foreign sales in 2013.

The EU-28 is still the main area partner for trade in fish products, both for imports and exports. In 2013, this area accounted for 58% (2.5 billion €) of imports and for 77% (431 million €) of the Italian exports in the sector. In particular, Spain is Italy’s main partner, both for imports (858.6 million €) and exports (104 million €). Other important areas of supply are form Asia (13.5%) and South America (10.6%), and there are significant flows from Mediterranean (4.9%) and non-Mediterranean African Countries (7.5 %). Between 2007 and 2013 the decline of exports was observed mainly with respect to Center and South America, Asia, and especially EU Countries, while exports are rising towards other purchasing countries. Exports increased towards Mediterranean non-member countries, which are becoming more important buyers (CREA, 2015).

According to the Italian National Institute of Statistics (ISTAT) Tuscany is a net importer of fishery products and aquaculture. The exports in 2013 exceeded the 4 million €, growing to a significant extent on the previous year. The coastal provinces supply 72% of the export value of these products, mainly form the area of Livorno (DINTEC, 2015).

4.3.1 Access to markets

With regards to the fisheries internal market, the most important wholesale markets for fishery and aquaculture products in Italy can be identified with the largest cities such as Milan, Rome, Turin, Naples, and Palermo. Fish wholesalers distribute most of fresh fisheries and aquaculture products while only a minor portion is sold directly by fishermen or fish farmers. At retail level aquaculture products are sold together with fishery products. The consequent competition induces a decline of the prices for fishing products. Althought at wholesale trade level there is a limited overlap between products from aquaculture and fisheries, prices are more and more interdependent as the natural fishery production declines, losing market power. Supermarkets and hypermarkets represent the largest share of retail sales, however traditional channels such as fishmongers and municipal retail markets have resisted better in Italy than in most other European countries. In the last decade, the unfavourable Italian domestic economy led to a generalised decline in food consumption that has also affected fish products. Concurrently, the high fishing effort along with elevated production costs for fuel prices increasing - as well as the pressure of restricting EU regulations - contributed to bring the Italian fisheries sector to a period of stagnation. In terms of production – between 2004 and 2012 - the principal fishing systems showed considerable declines by 36% for bottom
trawling, 37% for purse seiners and 35% for small-scale fisheries. **Market demand strongly influenced the level of production** (FAO, 2015).

The profit margin of fishing enterprises decreased significantly with a gross profit rate of 31.6% in 2007 down to only 22.7% in 2013. Also, the added value of marine fisheries in 2013 was 422.1 million €, a decrease of 47.5% if compared to 2007. Concurrently, in Italy, the domestic consumption of fish products decreased by 2%. Families who tried to limit the costs of fish consumption - as well as the cost of all foodstuff consumption - have implemented different strategies of behavior regarding both the quantity and the quality of the product purchased. Between 2007 and 2013 it was observed an increase of the percentage of Italian families who declared they had reduced the amount of purchased fish and/or have oriented their consumption towards less valuable products. However, the "Italian" fish is still considered safer, for the restrictive controls, than imported fish. Even more important factor is the orientation towards the local fish, as it is perceived, through the short chain, as traceable and fresher (CREA, 2015). Furthermore, fisheries products in Tuscany are not showing an increasing trend for exports, differently from the rest of the regional agrofood sector (PSL-GAC Toscana, 2015). In Tuscany – between 2000-2013 - the territorial economic data show a gradual contraction in the sector. The value added at current prices in 2013 contracted at an average annual rate of 4%. Also, the work units of the fishing and aquaculture sector sensitively decreased.

Within the fisheries and aquaculture value chain in Tuscany it emerges that 43% of companies are engaged in retail and 42% in primary production. In the downstream phase of the seafood chain, the retail trade is conducted primarily by specialised stores (27% of companies), and street fish vendors are still representative (16%) (Table 4.6).

**Table 4.7. Registered Companies within the fisheries value chain in Tuscany (Infocamere data from January 2015; source Dintec, 2015)**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Registered companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number</td>
</tr>
<tr>
<td>Fisheries and Aquaculture</td>
<td></td>
</tr>
<tr>
<td>- Fisheries</td>
<td>429</td>
</tr>
<tr>
<td>- Aquaculture</td>
<td>387</td>
</tr>
<tr>
<td>Processing and conditioning</td>
<td>39</td>
</tr>
<tr>
<td>Wholesale</td>
<td></td>
</tr>
<tr>
<td>Retailing</td>
<td>442</td>
</tr>
<tr>
<td>- Specialised vendors</td>
<td>277</td>
</tr>
<tr>
<td>- Retail sale via stalls and markets</td>
<td>165</td>
</tr>
<tr>
<td>Total Fisheries value chain</td>
<td>1,029</td>
</tr>
</tbody>
</table>

From the interviews of fishermen and stakeholders it emerged that fish wholesalers in Tuscany have an important market power and that are able to considerably engender a decline of the fish sales prices. Both trawlers and small-scale fishers are concerned by this market dynamics, especially when the activity costs (e.g. fuel, work, operating costs) are high. Restaurants can represent an important market channel for small-scale fisheries, however, as for wholesalers, transaction costs for payment can discourage fishers from selling to restaurants. Fishmongers still represent an adequate market channel for trawlers of small-scale fisheries well-structured cooperatives. Retailing system represent a market channel only for few big fishing company in
4.3.1.1 Aquaculture

The Italian aquaculture sector faces several problems including, amongst others, the intense competition from low priced seabass and seabream producers in other countries such as Greece and, to some extent, Turkey, as well as from developing countries. Aquaculture products are mostly sold fresh and whole, but some products are being processed by the fish farmer in order to add value to the product. Aquaculture products are largely used by the catering sector. Indeed, Italy has become the reference market in the Mediterranean for fresh products from seabass and seabream production (FAO, 2015). European sea bass, gilthead sea breams and eels, species have always been greatly appreciated in Italian fish markets (Cataudella and Crosetti, 2011). As for the product marketing, there is a strong differentiation in distribution channels and the destination of the production depending on the farmed species and, therefore, the area of origin. The main marketing channels consist of the direct sales, selling to restaurants, retail outlets, while a limited share of the product is intended for primary processing (PSL-GAC Toscana, 2015).

4.3.2 Sustainable seafood and certification

Aquaculture in Tuscany has a strong focus on quality and environmental sustainability, as a competitive strategy in the challenging context of the national and international markets. Use of the best raw materials, compliance with environmental sustainability and an internal standards policy adopted by most of the local companies are meant to guarantee a quality product, appreciated and valued both in Italy and beyond, as for all “Made in Tuscany” products. The voluntary decision to carry out regular water analysis and nutritional, chemical and microbiological analysis of the final product assures consumers of the quality, freshness and safety of the purchased product (Gilmozzi, 2011). With regards to the main aquaculture retail Consortium in Tuscany (Coopam) the voluntary certifications such as the independent own label, the ISO (9001 and 18001), including the adoption of the “Friend of the Sea” (FOS) sustainability label, are considered key for guaranteeing the supply to supermarkets, as well as durable business relationships with big retailers.

A lagoon fishing Cooperative (Orbetello) have the benefit of three Slow Food Presidia related to food products such as for the Orbetello Grey Mullet Roe, the Tuscan Sea Palamita, as well as for the Orbetello Lagoon Traditional Fishing.

4.4 Key issues identified in the media and interviews

Combining sources of information on the fisheries sector in Tuscany it is worth mentioning a common agreement of stakeholders on the lack of structures and logistics organisation for distribution, retailing and public fish markets in the region. On the one hand the lack of Basic infrastructure and accessibility in the ports for the fleet is attributed to the competition for space between fisheries and the nautical tourism sector, the latter being more profitable for
the local management. On the other hand, the lack and the failure of public fish markets are attributed to conflicting interests of the stakeholders involved and to the administrative and management issues of within local communities and institutions. Generally, there is a call for increasing investments, for the modernisation of the portual structures as well as for a centralised decision-making mechanism.

With regards to the role of fisheries policies, in Tuscany it is observed a progressive decline of productivity and profitability for all the fisheries that is also attributed to the EU driven fishing effort adjustment which led to the reduction of the fleet in terms of number of vessels, engine power and gross tonnage, as well as to the consequent rising of the age of the fleet. Furthermore, the elevated age of the vessels implies an increase of the operating and maintenance costs and it is considered to be an obstacle to technological innovation. Concurrently, the budget that was allocated and used for innovation is not perceived to have been effective for improving the performance and safety of the vessels. Concerning potential investments from fishermen, accessing credit in order to further invest in the vessel or in the business activity is considered difficult especially for small-scale fishers. Accessing to public fundings can also be difficult for the perceived heavy administrative burden, especially for diversifying the business activity. Less trained fisheries producers and less structured fishery enterprises may face more difficulties in applying to subsidies. Then, working in the fisheries sector is not considered attractive, and generally it emerges a lack of skilled workforce willing to work in fisheries. There is a call for encouraging training schemes for improving business skills of the fisheries staff, also in order to enhance the capacity for marketing of local fish products as well as for diversifying fisheries activities such as through fishing-tourism.

Concerning the fishery market potential in Tuscany, it is worth mentioning that the fishery business sector is strongly fragmented. The small-scale fisheries are considered to be dispersed and vulnerable because of individualism as well as for the strong specialisation of the fishing activity related to the ecological characteristics of the original fishing area. Also, there is a growing competition between small-scale and trawling fisheries, especially when they share the same harbour-side for sale and when it happens that trawlers go fishing close to the small-scale fisheries coastal area. Furthermore, there is a rising competition from external and cheaper markets. Within this conflicting context it is difficult to envisage the possibility to create a regional label for fishery production. Some attempts have been put in place but did not have a long success. However, the most capital intensive and structured fishery enterprises in Tuscany are increasingly supplying the big retailers with own brands and labels with reference to the regional and local context. This labelling scheme is already a well-established marketing strategy for aquaculture producers, which are historically characterised by more structured and capital-intensive business than the fishery sector. In addition to own local labels, some aquaculture firms adopted international sustainability labels (e.g. Friends of the sea) and others were involved in regional product labelling schemes (e.g. Slow Food). Both quality-labelling schemes, together with a strong and constant fish supply capacity as well as an historical capacity of creating partnerships between enterprises, allow Tuscan aquaculture producers to enter the big retailing system with medium-high price products.
4.5 Enabling resilience: Key strategies adopted by fisheries and aquaculture producers and their impact on performance

Building essentially on a context-specific literature review – including government reports at national (Ferretti, 2011; Gilmozzi, 2011; ISMEA, 2013) and regional (ARPAT, 2008; Regione Toscana, 2005) levels of the fisheries domain in Tuscany in the last decade it has been observed that economic crisis impacted the local fisheries sector through a change in conditions such as demand and price level and volatility. In particular the demand for fish, together with fish prices, decreased sensitively (Ferretti, 2011), especially at a local level (Tuscany) in 2012 (ISMEA, 2013: p. 23). The reaction of some fishers in Tuscany has been observed through a number of strategies that have been implemented by the primary producers:

- This strategic behavioural response can be identified in actions that can be classified in the domain of rural development, in particular with concerns to diversification and territorial integration, and then strategies such as vertical integration and the shift to short food chains. More specifically, in Tuscany, some fishers developed artisanal activities such as transformation and processing of the catches for the production of fish sauces, cured roe and fillets in oil in order to create added value from the fish products (Ferretti, 2011).

- Diversification and territorial integration strategies were also observed in Tuscany through the creation of new market channels; for instance, small-scale fishers demonstrated a preference for selling to ethical purchasing groups or directly to consumers through a consortium (ISMEA, 2013).

- Other strategies of fishers in Tuscany, vis-à-vis the conditions brought about by the economic crisis (decreasing fish demand and lowering prices), can be identified within the domain of agro-industrial competitiveness. In fact, some fishers might further invest in technological innovation, such as high-tech for management, logistics and mechanization, or in intensification and upscaling by internationalizing supply and sales market. For instance, larger-scale semi-industrial fishers tended to invest in innovation, in new vessels, as well as searching for other kinds of consumers beyond the local-scale market channels (ISMEA, 2013).

The economic crisis led to a change in the production factors, including a considerable increase of the cost of energy, in particular higher fuel costs. Fuel represents the main production cost in fisheries activity. This global issue was also observed in a particular time frame (2007-2008) at a local level in Tuscany (ARPAT, 2008) and led to a number of strategies implemented by the primary producers. These strategies mainly belong to the domain of rural development strategies.

- In particular some strategies consisted of diversification techniques, thus the shift to new food products; in particular some fishers diversified the catches and changed the gear size in order to target larger size and more valuable fish species; this demanded less time spent on the boat, thus lowering the fuel consumption.

- Other strategies consisted of bringing multifunctionality to the fishery activity, in particular through implementing recreational activities, such as fishing-tourism; this allowed using fuel for both fishery and tourism activities (ARPAT, 2008).
With regards to some factors influencing the conditions in which fish farmers conduct their activities in Tuscany, increasing competition from external markets has been observed. In fact, the regional sector of aquaculture is affected by competition from both national (extra-regional) and foreign markets (Gilmozzi, 2011). The strategies observed pertain mainly to the domain of rural development.

- Strategies for responding to the competition from external markets were observed in Tuscany and can be classified as strategies of diversification and territorial integration through implementing quality and sustainability standards. In particular these strategies build on fostering quality and sustainability of the fish products, in order to apply competitive opportunities, using raw materials respectful of the environmental sustainability through the adoption of internal voluntary quality standards and physical, chemical and biological analysis of the water along the whole fish farming process (Regione Toscana, 2005).
- Other strategies of diversification and territorial integration were adopted through vertical integration, short food chains and local-based networks; primary producers opted for developing the transformation of processed fish products directly or through a consortium of producers (Gilmozzi, 2011).
- Some fish farmers, within the framework of diversification and territorial integration strategies such as the development of new food products, started to farm new and more valuable species, improve and valorise the quality of the products, develop marketing actions, prepare and preserve fish (Gilmozzi, 2011).

Regulations and policy are also part of the contextual conditions influencing the strategic behaviour of primary producers of aquaculture. In Tuscany, local and regional development plans guided public funding for innovation (Gilmozzi, 2011; Regione Toscana, 2005):

- **Fish farmers** adopted rural development strategies and used the public funding to invest in the introduction of new, higher value and strongly demanded species such as brackish water fish, meagre (or salmon-basse) and mussels (Gilmozzi, 2011; Regione Toscana, 2005).

Besides, from recent interviews to aquaculture producers and stakeholders in Tuscany, it emerged that the introduction of new and more valuable fish species in aquaculture in the last five years has not given the attended results. In fact, the demand did not respond positively to the supply of new species. The consumers showed to prefer seabream and seabass which remain now the only species actually farmed in Tuscany.

### 4.6 SWOT analysis

This section is based on Task 2.2 - the desk-based review plus 13 expert interviews (7 for fisheries and 6 for aquaculture), as well as the media analysis. This SWOT analysis - both for the fisheries and aquaculture sectors in Tuscany - has been compiled combining the specific information and data acquired through a context-specific literature review and a media content analysis, as well as through semi-structured interviews to producers, experts and stakeholders at a regional level.
### SWOT – Aquaculture

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cooperation and <strong>partnership between producers</strong> for obtaining public funding through the constitution of Producer Organization</td>
<td>- <strong>Lack of structures for developing juveniles</strong></td>
</tr>
<tr>
<td>- Developed <strong>entrepreneurial</strong> and technical skills; high level of education; strong marketing skills;</td>
<td>- High costs and strong landscape restrictions for starting a firm</td>
</tr>
<tr>
<td>- <strong>Policy support</strong> especially for technological innovation.</td>
<td></td>
</tr>
<tr>
<td>- Presence of natural and landscape assets and resources as well as a traditional inheritance for fish farming</td>
<td></td>
</tr>
<tr>
<td>- Very good <strong>business relationships</strong> with important <strong>wholesalers and big retailers</strong>.</td>
<td></td>
</tr>
<tr>
<td>- <strong>Export</strong> exchanges are well developed</td>
<td></td>
</tr>
<tr>
<td>- Adoption of own <strong>brands</strong>, private <strong>label</strong> and certification schemes, <strong>sustainability</strong> and local <strong>labelling</strong>.</td>
<td></td>
</tr>
<tr>
<td>- Use of high quality fishmeal</td>
<td></td>
</tr>
<tr>
<td>- Strict authority controls for food and environmental quality and safety</td>
<td></td>
</tr>
<tr>
<td>- <strong>No fishing ban and no seasonality</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>Rising demand</strong> for farmed fish</td>
<td>- <strong>Administrative burden</strong>: Overly bureaucratic processes and management</td>
</tr>
<tr>
<td>- Expanding business through <strong>sea cage farms</strong></td>
<td>- <strong>External markets</strong>: Strong competition from cheaper Mediterranean products</td>
</tr>
<tr>
<td>- <strong>Exports</strong>: Further improving exports</td>
<td>- <strong>Landscape and territorial restrictions</strong>.</td>
</tr>
<tr>
<td>- <strong>Professional fairs</strong>: Participating at sector events to create market networks;</td>
<td>- <strong>Climate change</strong>: Extreme weather events and natural disasters.</td>
</tr>
<tr>
<td>- <strong>High quality products</strong>: Keeping focusing on quality, transparency and <strong>sustainability</strong> to resist on the market with high quality and price products, to cope crisis and competition</td>
<td>- <strong>Economic crisis</strong>: Low consumption.</td>
</tr>
<tr>
<td>- <strong>Genetics</strong>: Using different species for farming building on scientific research outcomes</td>
<td>- <strong>Administrative burden</strong> and rigidity: Difficulties for asking institutions and obtaining permissions to expand the activity to the sea</td>
</tr>
<tr>
<td>- <strong>Juveniles</strong>: through the internal development of juveniles the fish production could double.</td>
<td>- <strong>Consumer preferences</strong>: there is not consumer education for letting people know other species that could be farmed</td>
</tr>
<tr>
<td></td>
<td>- Increase <strong>cost of fishmeal</strong></td>
</tr>
<tr>
<td></td>
<td>- <strong>Consumer preferences</strong>: prejudgement of consumers for aquaculture farmed fish</td>
</tr>
</tbody>
</table>

(Source: Our elaboration)
**SWOT – Fisheries**

<table>
<thead>
<tr>
<th><strong>STRENGTHS</strong></th>
<th><strong>WEAKNESSES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Producer/fisher technical skills: Appropriate technical competences</td>
<td>- Fragmentation of the business</td>
</tr>
<tr>
<td>- Biodiversity richness and presence of high value target species</td>
<td>- Detachment and isolation of small-scale fisheries</td>
</tr>
<tr>
<td>- Governance: <strong>Regional Institutions</strong> engaged with local stakeholders in management plans</td>
<td>- Low education level of fishers</td>
</tr>
<tr>
<td>- Food safety: proper <strong>application of food safety measures</strong></td>
<td>- Lack of business and computer skills of fishers</td>
</tr>
<tr>
<td>- Control of regulatory restrictions for fishermen in the region</td>
<td>- Old and unsafe vessels</td>
</tr>
<tr>
<td>- Activity of the <strong>Fisheries Local Action Group</strong> in supporting fisheries’ competitiveness, profitability and employment</td>
<td>- Low stocks</td>
</tr>
<tr>
<td>- Environmental and landscape protection action through producers, civil society, NGOs, and local Institutions engagement and actions against illegal activities</td>
<td>- Low exports</td>
</tr>
<tr>
<td></td>
<td>- Low investments</td>
</tr>
<tr>
<td></td>
<td>- Lack of structures, logistics, distribution organisation and public marketplaces</td>
</tr>
<tr>
<td></td>
<td>- Difficulty in accessing credit for fishers</td>
</tr>
<tr>
<td></td>
<td>- Problems to physically access subsidised fuel</td>
</tr>
<tr>
<td></td>
<td>- High fuel expenses for trawling</td>
</tr>
<tr>
<td></td>
<td>- The seasonal fishing ban opens to competition from external markets and compensation subsidies are delivered very late</td>
</tr>
<tr>
<td></td>
<td>- High maintenance costs for vessels</td>
</tr>
<tr>
<td></td>
<td>- Low fish sales prices imposed by wholesalers and restaurants</td>
</tr>
<tr>
<td></td>
<td>- Heavy administrative burden especially for diversifying the activities</td>
</tr>
<tr>
<td></td>
<td>- Fragmentation of fishing area</td>
</tr>
<tr>
<td></td>
<td>- <strong>Crisis of distribution channels</strong> especially for small-scale fisheries</td>
</tr>
<tr>
<td></td>
<td>- <strong>Tension/competition</strong> between small-scale and trawling</td>
</tr>
<tr>
<td></td>
<td>- Low budget for innovation</td>
</tr>
<tr>
<td></td>
<td>- Ineffective regulations of fisheries systems</td>
</tr>
<tr>
<td></td>
<td>- <strong>Difficulties to access public funding</strong> for fishers</td>
</tr>
<tr>
<td></td>
<td>- High variability of catches in the Tyrrhenian Sea</td>
</tr>
<tr>
<td></td>
<td>- Poor coordination between environment management and production activities</td>
</tr>
<tr>
<td></td>
<td>- Lack of labels of production</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OPPORTUNITIES</strong></th>
<th><strong>THREATS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Relevant entrepreneurial skills of few producers</td>
<td>- Rising competition from external markets</td>
</tr>
<tr>
<td>- Establishment of a <strong>Producer Organisations (PO) to apply for EMFF’s funding</strong></td>
<td>- Stock depletion</td>
</tr>
<tr>
<td>- <strong>Diversification of the business activity</strong>: Fishing tourism, catering, processing, and transformation, selling directly to consumers</td>
<td>- Progressive reduction of the fleet</td>
</tr>
<tr>
<td>- Assistance and <strong>institutional support</strong></td>
<td>- Recruitment and generational change</td>
</tr>
<tr>
<td>- <strong>Value chain integration</strong></td>
<td>- High operating costs (especially for trawlers)</td>
</tr>
<tr>
<td>- <strong>Product valorisation of local and neglected fish</strong> for small-scale fisheries, value chain integration, agreements, consumer education</td>
<td>- <strong>Age of the fleet</strong></td>
</tr>
<tr>
<td>- <strong>Sustainable fishing</strong> for natural resource conservation and new market channels</td>
<td>- <strong>Recreational fishing competition on prices</strong> with small scale fisheries</td>
</tr>
<tr>
<td>- <strong>Traceability, transparency</strong> and establishment of a Regional brand to</td>
<td>- <strong>Lack of control over recreational fishing</strong></td>
</tr>
<tr>
<td></td>
<td>- Environment depletion</td>
</tr>
<tr>
<td></td>
<td>- <strong>Low sales prices by big retailers and wholesalers</strong></td>
</tr>
<tr>
<td></td>
<td>- Progressive dismantling of <em>Aphia Minuta</em> fishing</td>
</tr>
<tr>
<td></td>
<td>- <strong>Destruction of gears</strong> by large vessels or dolphins and robberies</td>
</tr>
<tr>
<td></td>
<td>- <strong>Discarding</strong>: Transport discards (for trawlers)</td>
</tr>
<tr>
<td>Objective</td>
<td>Reason</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Improve product quality and reputation</td>
<td>Changing seasonal ban according only to specific fishing areas</td>
</tr>
<tr>
<td></td>
<td>Improving business skills of fishermen</td>
</tr>
<tr>
<td></td>
<td>Identifying target commodities and market niches</td>
</tr>
<tr>
<td></td>
<td>Demand: the demand for fish is increasing</td>
</tr>
<tr>
<td></td>
<td>Participation in professional events: for creating networks and acquiring knowledge</td>
</tr>
</tbody>
</table>

- can be difficult since discards take place in the vessel
- Wholesalers’ market power
- No vision for positive globalisation
- Illegal fish market
- Competition for structures
- Lack of data
- Aquaculture competition
- Climate change: change in seasonality and species

(Source: Our elaboration)
5 Italian Case Study B: Pears

5.1 Case study introduction

Emilia-Romagna (ER) Region is classified as NUTS2 level. ER region is predominantly rural except for two provinces, which are classified as intermediate region.

Farms in ER are only 4.5% of the national total in terms of number, but have a much higher weight (8.3%) in terms of UAA. Among the main type of land use, the regional specialization is arable crops: cereals, industrial, horticultural, forage alternated, etc. In fact, ER is the region with the largest area under arable crops (832,000 hectares in 2010 corresponding around the 11.8% of the national total). The second type of land use is Orchard with around 130 thousand hectares. It is also traditionally an important part of animal husbandry in Italy with about 10% of the national bovine (rising to about 15.5% considering only dairy cows), 14% of pigs and 17% of poultry.

The average size of UAA per farm in ER is about 15 hectares. Comparing to the Italian average, which is about 8 ha, the farm size in ER is considerably higher. Farmers are mainly landowners but in the last years there has been an increase in renting, which also contributed to the increasing of the UAA average size.

Commonly, at each altimetry the most extended land use is represented by arable crops, however in the mountain area there is a higher heterogeneity since 52% is covered by arable and 43% pasture. Such diversity is quite maintained also in the hill with 70% of arable lands, 15% pasture and 13% of orchards. Crops different from arable gradually disappear in the plain where 88% of land is covered by arable crops. The irrigated land corresponds to 24,000 ha approximately the 14% of the UAA of which 15,000 ha is arable and 8,000 ha orchards. Because of its heterogeneous territory the Bologna province is representative of several characteristics of regional agro-food chain systems such as the fresh fruit chain located in the area of Imola (South-Eastern part of the Province) and the Parmigiano Reggiano cheese, located in the area at the left side of Reno river (Western part of the Province). Crops such as peach trees, apricot trees and kiwi mostly outline the fresh fruit-chain with the existence of important fruit processing centres and storages. Moreover, in the province of Ferrara and Modena there is an important area for Pear cultivation.

Among fresh horticultural crops, the most cultivated are represented by onion, asparagus followed by lettuce and squash grown in the peri-urban area. Cereal production is the cultivation type that has most characterized the rural area of Bologna Province, determining the settlement and the expansion of several storage centres and important seed factories. Regarding livestock production, the most important activity is related to the existence of large medium size processing factories of milk products. Part of them processing fresh milk products are located in the plain and hill area at the right side of the Reno River the other factories located in the left side are targeted for the Parmigiano Reggiano cheese production.

Farms in Emilia Romagna have a high incidence of company types: in 2010, companies represented the 13% of all farms and control 37% of the UAA. According to the sixth rural census, the farm labors employed in ER are around 200,000.

Authors: Francesca Minarelli, Davide Viaggi, Meri Raggi (UNIBO)
ER Farm production is higher if not only compared to the Italian average but also to the average production of farms located in the northern part of Italy. Emilia-Romagna has been the cutting edge in the processing of the agricultural products. Agricultural together with the food sector in ER employs 130000 people and has a value of 25 billion Euros (Federalimentare). The exports in ER processed meats (1 billion 199 million euro), cheeses and dairy products (600 million euro), the fruit and vegetable (500 million). Above 400 million euro also fit the exports of fresh fruit, wine and cereal derivatives.

Already since 1600 pear orchards are widely spread in the Emilia Romagna region scattered along Ravenna hills and plains of Bologna and Ferrara. From the beginning of '900 across northern Italy becomes natural location for the cultivation of pears and apples (CSO). While much of the production for example of Piedmont is devoted to production of cider, for pears of Emilia Romagna the cultivation was oriented for fresh consumption. The main cultivars were Spadona, which was common in the summer and widespread in Romagna, Scipiona and some local variety such as Angelica pear or Limona in Faenza and Battocchia in Bologna.

According to Food and Agriculture Organization (FAO) the world production of pears is growing. Between 2009 and 2011, the Europe average production was equal to two million tons. The main producer is China, followed by Europe. Within Europe, Italy represents the main producer. However, the main exporters are countries of South America (Argentina e Chile) who concentrate almost the totality of their production to the international market. Italian export is concentrated in the European market (more than 90%) mostly from September to December, especially addressed to Germany, which absorbs half of the total.

The cultivation of the pear in Italy covers around 33.000 ha, of which more than 20.000 concentrated in Emilia-Romagna. Significant investments are also found in Veneto (3.200 ha) and Sicily (3.100 ha). Emilia-Romagna is then the largest producer of pears that covers around 65% of pear production, namely a quantity around 600,000 tons, excluding the years with scarce average yields per hectare.

There are 6.700 farms, 88% of farms are located in the plain with and average size of farms cultivating pear of 5-10 ha. Pear cultivation is mostly concentrated in the province of Ferrara, Modena, Ravenna e Bologna (see table 5.1). In particular, the province of Ferrara where over 20% of farms have an area destined to pear cultivation ranged between 5-10%. These are highly specialized farms with long rotation period, which is around 20-25 years.

<table>
<thead>
<tr>
<th>Province</th>
<th>Less than 0.5</th>
<th>0.5 - 0.99</th>
<th>1 - 1.99</th>
<th>2 - 2.99</th>
<th>3 - 4.99</th>
<th>5 - 9.99</th>
<th>10 - 19.99</th>
<th>More than 20</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piacenza</td>
<td>99</td>
<td>18</td>
<td>15</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>144</td>
</tr>
<tr>
<td>Parma</td>
<td>109</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>117</td>
</tr>
<tr>
<td>Reggio Emilia</td>
<td>68</td>
<td>18</td>
<td>37</td>
<td>24</td>
<td>17</td>
<td>27</td>
<td>6</td>
<td>0</td>
<td>197</td>
</tr>
<tr>
<td>Modena</td>
<td>236</td>
<td>148</td>
<td>258</td>
<td>192</td>
<td>272</td>
<td>243</td>
<td>118</td>
<td>41</td>
<td>1.508</td>
</tr>
<tr>
<td>Bologna</td>
<td>322</td>
<td>141</td>
<td>222</td>
<td>155</td>
<td>139</td>
<td>112</td>
<td>32</td>
<td>7</td>
<td>1.130</td>
</tr>
<tr>
<td>Ferrara</td>
<td>110</td>
<td>174</td>
<td>346</td>
<td>295</td>
<td>416</td>
<td>434</td>
<td>133</td>
<td>53</td>
<td>1.961</td>
</tr>
<tr>
<td>Ravenna</td>
<td>321</td>
<td>348</td>
<td>367</td>
<td>145</td>
<td>68</td>
<td>34</td>
<td>14</td>
<td>8</td>
<td>1.305</td>
</tr>
<tr>
<td>Forlì-Cesena</td>
<td>150</td>
<td>83</td>
<td>55</td>
<td>29</td>
<td>12</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>338</td>
</tr>
<tr>
<td>Rimini</td>
<td>79</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>91</td>
</tr>
<tr>
<td>Total Emilia-Romagna</td>
<td>1.494</td>
<td>943</td>
<td>1.303</td>
<td>844</td>
<td>932</td>
<td>859</td>
<td>305</td>
<td>111</td>
<td>6.791</td>
</tr>
</tbody>
</table>

Table 5.1. Number of farms with pear cultivation per Province and area classes.
The most relevant cultivar appreciated within country and cultivated in Emilia Romagna region is Abate Fètel of French origin, which represents the 44% of the offer and then 24% of William followed by less important cultivar such as Decana del Comizio, Conference, Coscia, Kaiser and Passa Crassana.

The tree training systems are Palm and Fusetto with a density is 3.000 plants per hectare. The size of the trees must be such as to allow the obtaining of high quality products; the maximum obtainable production is of 4.500 kilograms per hectare.

About 96% of the farms growing pear are owner-run and only about 3% are run with employees. About 82% of farms are individual enterprises and about 15% are companies. Sixty-percent of farms specialized in horticulture are run by people between 45-65 years old, about 20% by people between above 65 years old. Even if ER is one of the largest producers of pear, the market lately is declining. In fact, several aspects related to their market are still “old-fashion”. Especially financial issues related to investment in new plantations and some constraints and dynamics related to the credit access by new young entrants in agriculture need to be explored. For this reason, regional institution is committed in promoting organizations and cooperatives with the main purpose of improving transparency and renovates this sector.

5.2 Policy and regulatory conditions

5.2.1 Common Agricultural Policy: CMO

The important role of Producers’ Organizations (PO) in fruit sector, it is well known since 1972, with the establishment of the Common Market Organization (CMO). POs have been one of the main instruments provided by the CMO for fruit and vegetables since its establishment. The article 13 of Regulation (EC) n°1035/72 defined POs as “any organization of fruit and vegetable producers which is established on the producers' own initiative” for specific purposes, such as “promoting the concentration of supply and the regularization of prices at the producer stage” and “making suitable technical means available to producer members for presenting and marketing the relevant products”.

The majority of Italian POs are specialized in apples and pears representing the 89% of the Value of market production. Fruits and Vegetables POs are more than three hundred (MIPAAF, 2016). In Emilia-Romagna, there thirty-two POs of which eighteen include pear fruit producers: Apo.conerpo, Apofruit, AFE(Salvi), Granfrutta zani, C.I.C.O. SOC. COO (FE), OPO Europa, Europfruit, OP Ferrara, FINAF, VEBA, AGRICOLA, HORTITALIA-MINGUZZI-A.O.P., C.I.O.P, MODERNA, Diamantina, Chiara, Perarte, LA BUONA FRUTTA-CONSORZIO FRUTTETO.

The POs role changed following CMO reform. The main purposes of CMO through POs are to place on the market output from primary producers, to ensure an effective production, planned and adjusted to demand, with particular focus on quality and quantity concentration of supply, and to stabilize prices and to optimize production costs.

The Operation Programs, the planning tool implemented by POs, is co-financed at 50% by Commission and the remaining part from producers. The largest expenditure relates to
production measures, but there is a relevant share of investment also for environmental measures.

The producers’ organization must have Regional Institution approval; in order to create a PO a proposal for a detailed operative programme with dedicated 3-years max 5-years budget must be presented. Regulation 1234 of 2012 also obliges to address the 10% of the budget for the Environmental preservation.

Last CAP reform had limited implications for the fruit and vegetable sector concerning the proposal for the Single CMO Regulation (Canali, 2013). An important novelty is the extension to the Associations of Producer Organizations (AOP) of the possibility of an operational program, subject to the same rules of the programs prepared by the PO, including measures identified, but not implemented by the member organizations within their programs. This is an important innovation since the AOP has recognized an operating leading role in strengthening the fruit and vegetable industry: to organize, focus and enhance the offer are essential functions to increase the competitiveness of the market sector. As highlighted during the experience in Italy with the CMO fruit and vegetables (Petriccione and Solazzo, 2012; Ismea, Mipaaf, 2012), the AOP are able not only to achieve effective concentration of supply but also prompt greater efficiency in managing, due to the action of coordination that they have to play on the operational level.

POs and their associated forms continue, therefore, to be the core instrument of European policy for the sector, which pursues the strategy to improve the position of producers in the market, in order, also, to enhance profitability and efficiency, as well as to achieve a better redistribution of the value in the supply chain.

The proposal to maintain the current support scheme to the fruit must certainly meet the demands made by operators in the sector. However, it seems does not meet some needs/adjustments required such as simplification, some elements of flexibility in the operational programs, adjustments in the mix of instruments provided for risk and crisis management, development of incentives to POs, including forms of awards for the marketing of quality products. In term of direct payment, not many differences are highlighted for fruit compare to other crops. The main novelty of new CAP is that historical titles will move to new uniform titles. The most important payment typology is the base payment. In fact, only farmer that have access to this latter can have access to all other payment typologies. It is well known that base payment schemes rely on title. From 1 January 2015, the current historical titles have been substituted with new titles. These are subject to regionalization which consists in uniform level of subsidies per hectare. The final aim is to achieve a uniform title for all the farmers at regional or national level.

The transition from the current historical documents to new titles would have a detrimental effect to for farmers. To reduce such impact, the new CAP has provided convergence, which consists in a gradual passage from old to new system of direct payments. In other words, the CAP abandons gradually historical payment with a more consistent support for hectare at national or regional level. The new titles will be awarded based on possession of agricultural land declared in the application for aid in May 15, 2015 and will be used from 2015 onwards.
Number of titles assigned corresponds to those eligible hectares indicated in the May 2015 application.

Analyzing potential effect of this homogenization process in Italy, for Specialized Fresh Fruit Farms there would be a notable increase in the base payment per hectare. A value more than double in the south-central area it has been estimated (Canali; 2013).

Table 5.2. Impact estimation of homogenization process in Italy according to different geographical area (Canali 2013).

<table>
<thead>
<tr>
<th>Specialized Permanent Fruit Crops</th>
<th>Direct payment 2011 (€/ha)</th>
<th>Direct payment 2020 increase (€/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>169</td>
<td>+106</td>
</tr>
<tr>
<td>Center</td>
<td>113</td>
<td>+134</td>
</tr>
<tr>
<td>South</td>
<td>102</td>
<td>+144</td>
</tr>
<tr>
<td>Islands</td>
<td>100</td>
<td>+144</td>
</tr>
</tbody>
</table>

During the interview with Granata, the problem of how policies can affect production techniques has been highlighted. In 2011, European Union decided to abolish the use of Ethoxyquin on the base of the Program review of Active Substances Contained in Phytosanitary products (Directive 91/414 / EEC). Ethoxyquin is a chemical considered in some countries as a food preservative while in others a pesticide that is used to control the “Stop-Scald” in pear after harvesting. In Europe is considered as an additive (E324) as well as in the United States. Instead, in Italy is listed since 1972 among agrochemical products. Since 2012, the Health Minister has authorized the disposal of all products containing Ethoxyquin. “The decision taken by the European Commission to not authorise any more the use of Ethoxyquin, is having significant negative impact on the commercialization of pear. In particular on the Abate Fétel, which is one cultivar that, more than others, during the conservation stage requires the use of this chemical in order to preserve a high quality level of the fruit texture” (L. Granata). The same problem is not so relevant for all the other pear variety such as Williams or Conference. Moreover, it has to be highlighted that competition is not equal, in fact, within Europe, for Portugal and Spain have been accorded a two-year derogation.

5.2.1.1 Rural Development

The New Rural Development Programme (RDP) in Italy was formally adopted on 20 November 2015. It outlines priorities for Italy for the use of approximately 2.14 billion EUR of public expenditure (963 million EUR from the EU budget and 1.17 billion EUR of national co-financing) for the period from 2014-2020. The RDP faces topics relating to the farm risk prevention and management, conservation of farm breeds and efficiency in the use of water resources. About 90,000 Italian agricultural holdings will receive support to implement risk management tools.
Around 395,000 hectares of land should be affected by more efficient irrigation infrastructure and systems.

Particular attention has been paid to useful tools to support quality production in the new Rural Development Plan. Such support is developed both in terms of members to the certification systems and to their promotion, taking into account the close relationship between quality and environmental sustainability that are expressed primarily in production Biological and Advanced Integrated.

The programming action has intersected, in fact, with other policies that affect the quality, in particular the fruit and vegetables CMO management. Regional Policies for the sector highlights the Quality Control Measures directly concerned are 3.01.1 and 3.02.1, respectively aimed at direct support of certification expenses first, and to provide information on and promote the second.

5.2.2 Environmental legislation

5.2.2.1 Pesticides

The maximum pesticide levels (MRL) are determined by EFSA on a scientific risk assessment. MRLs requirements are reported in regulation (EC) 396/2005. It is common knowledge how fruit is one of the sector that make an intensive use of pesticides and how this usage affects negatively the environment and human health. For this reason, EU Commission has delivered new rules in order to reduce the amount of chemical in use. The instrument developed by the EU commission is the directive 2009/128/EC (EC, 2009a; European Commission, 2016), which imposes to each member state the development of an Action Plan aimed to reduce the use of chemicals. In particular, from 2014 the application of Integrated Pest Management in agriculture must become mandatory. This directive has been adopted in Italy with the D.lgs. n.150 of August 2012 and at regional level as National Action Plan. This action set up a framework for the sustainable use of pesticides with the specific aim of introduces the “Integrated pest Management” as mandatory system and the diffusion of other alternative pest management approach. The application of these agricultural systems is then strictly related to CAP subsidies 2014-2020 period and measure that should be developed in support to this action.

As highlighted from interviewee “One particular aspect that emerges with the restriction in the use of some of the chemical is that new incoming diseases such as Psilla, Bed bug, Xilella etc., which undermines productions, are difficult to keep under control” (L. Granata). In fact, in 2014 within Modena province, the production had a significant reduction because of Halyomorpha haly. Moreover, some agrochemical companies do not invest in the discovery of new chemicals only for occasional emergency events.
5.3 Market conditions

5.3.1 Market description

Since 2004, an overall reduction has been registered for pear consumption in EU countries (Figure 5.2). From economic data can be seen clearly difficulties of the pear sector that, until few years ago, used to offer attractive margins. The main problems in Pear market is the decreasing of the consumer demand especially among young consumers. Lately, Italian market has been characterized by a contraction in pear demand. Pear consumption in Italy currently ranks seventh as consumer habits and are selected from a population group that has between 50 and 55 years on average. Today, the continuing crisis in domestic consumption has gradually reduced margin below the threshold of sustainability. A gradual reduction of the implant in designated areas. The gradual decrease of the surfaces invested, in fact, continued in 2014, leading to more than 7,000 hectares lost in the last five years.

![Figure 5.1. Pear consumption in some Eu Countries. Our Elaboration on Eurostat data.](image)

The domestic demand is oriented on Abate Fétel, particularly appreciated by consumers and produced almost exclusively in Italy, within Emilia Romagna Region. In fact, primary producers are facing several difficulties in finding new market allocation since this variety is not appreciated abroad as well. For this reason, several efforts are made by Producer Organization in order to promote Abate Fétel abroad not only among Northern European countries where the market is more interested in Conference and Williams’s variety but also outside EU.

In Italy, currently, pear fruit ranks seventh in terms of consumer habits. A survey organized by the Observatory on pear Agri2000 made in the Ferrara exhibition, suggested the need for a more modern fruit, more beautiful, that must also be recognizable, attractive and able to reach a larger population in term of age classes. The varietal research has been one of the key issues widely discussed among Pos. Today, Italian market of pear is characterized by varieties that are considered old and outdated. Instead, in Europe each country producer has over time developed its own variety specialization.
During the interview with an expert of ApoConepro, one of the issues highlighted has been the lack of quality control at the commercialization stage.

The aim for the producers is to stress on the quality of the product. However, since farmer do not have storage system within their farm, low and high quality are often mixed together at the storage stage in order to achieve a higher price. The client recognizes the presence of low quality product and then she/he is not willing to pay the required price.

In addition, packaging, in some case, allows hiding low quality pear. As a result, search characteristics become experience ones fostering opportunistic behaviors. Comparing to other European countries, farmers in Italy do not own fruit storage systems. Hence, the problem of opportunistic behavior by using packaging in this case concerns storehouses, not farmers.

Some issues are also concerned with the restriction on the use of agrochemical. Several restrictions are going to be applied on the use of some active substances leading to an increase of production costs. In addition to this, some new diseases are incoming such as Psilla, bed bug, xilella etc. that undermines well-established defense schemes.

Pear producers can access to market by selling their product to independent trader or associating in Producer Organization. One of the main problem faced by farmer is the difficulty in covering all embossment undertaken, since trader often liquidate (selloff) producers almost one year after the beginning of production. The POs present several advantages from both producer and food chain side. These are related mostly to stability factors. Income stability from producers’ side and supply stability, in term of quality and quantity, for the traders and the rest of the food chain. On the other side however, the farmer entrepreneurship becomes considerably limited depending on trader decisions/requirements. In fact, transactions are often regulated by contract where often, besides the definition of payment aspects, for the accomplishment of the output, the application of specific agricultural equines is required.

The varietal research has been one of the key issues widely discussed among POs. Today, Italian market of pear is characterized by varieties that are considered old and outdated. Instead, in Europe each country producer has developed, over time, its own variety specialization. So far, Italian market was addressed in satisfy internal consumer requirements more keen in the consumption of Abate Fétel, which is less recognized and appreciated abroad. In addition, this cultivar shows higher cost of production compare to other variety because of higher labor input.

Processed products derived by pear fruit represent another important market for pear fruit. In particular, pear juice and marmalade. “Conserve Italia” represents the first company of fruit processing in Italy, for both fruit juices and the fruit syrup production. Every year over 120,000 tonnes of fruits are processed into puree for subsequent production of nectars and drinks based on fruit of peaches, pears, and fruit. The fruit is provided by member cooperatives. The selected products are specifically for the industrial use. In fact, they coming from fruit and cultivated areas according to Standards Required by Conserve Italia more suitable for obtaining the quality according to the final product destination. Conserve Italia includes some well known brands such Valfrutta.
5.3.2 Land Market

Difficulties reported in the economy at national and international level move the investments toward rural lands maintaining a robust land market. In particular, a high concentration of the demand for medium large farm size is registered. However, the number of transactions is limited, influencing the land prices. Land values between 2002 and 2011 reported a rate of increase of 3.9% for arable 2.6% for tree crops and 2.8% vineyards. It can be stated that the increasing value of rural land confirms the robustness of the land market compared to other market factors. In addition, 2011 showed an increasing demand of marginal lands for the application of agro-environmental measures. However, the Agricultural Land Value between 2010 and 2012 registered just a slight increase in the Bologna Province of 2.2% for orchard and vineyard in the hill. An increasing of the land rent demand has been highlighted between 2000 and 2010 so almost the 42% of UAA in Emilia-Romagna Region is now rented. Because of the establishment of the direct payment, based CAP the demand for rented land is increasing. The demand focuses on large size parcel. On the contrary, small size parcel with high presence of infrastructure are lacking of value. The trend shows a positive trend evolution of the value quotation. However, the value can be subjected to high variation depending mostly on the parcel characteristic. According to 2015 Report Orchard quotation are maintained unvaried.

5.3.3 Costs of production

Since 2015, it has been stressed how pear production is not convenient for farmers anymore, having a cost of production higher than their farm gate price. As can be seen, in terms of total cost per hectare, the greater outlay is found between the cases considered for Abate Fétel in Ferrara, with almost 18,500 €/ha. For the same cultivars in the Modena area and for Conference are required just over 17,000 €/ha, while for the very early varieties (William and Carmen) the expenditure calculated varies from 15,700 to 16,400 €/ha. Minor is the cost for Kaiser and William with biological technique, which totalled around 14,300 €/ha.

Regarding the cultivar Abate Fétel, the tendency to seek an improved quality of the fruit must be emphasized, which is obtainable with more careful pruning. Such operations, despite the reduction in yield allow collecting the fruits of greater size, thus raising the economic value of the gross production. In fact, observing the price lists of the last five years some important cooperatives detect a difference in terms of price range between 40-90% with variation in fruit calibre of 65 mm to 70 mm.

Investigating on cost production emerges that the labour affects from 35% to 44% of the total production. These values vary, depending on the variety and the location. Thirty-five percent is estimated for Abate Fétel in Modena area and 44% is estimated for growing Conference in the Province of Ferrara. Extremely relevant is also the raw material (such as fertilizer, seed, chemicals etc.) expenditure that can range again from a minimum of 3,700 €/ha for William and Kaiser up to 5,600€/ha for Abate Fétel.

In particular, it is highlighted that William organic cultivation has a raw material expenditure, which is around 3,000 €/ha. Depreciation rate has a low impact on the total cost because of the normal long life of the implant. The total cost of production ranges from 0.41€/kg for William to 0.65€/kg for Abate Fétel.
5.3.4 Access to European and Global market

According to CSO (Centro Servizi Ortofrutticoli) elaboration on data of 2015 provided by EUROSAT, Germany is the first Market of export for Italy with over 65,000 tons of pears in 2014/15. France is also stable at second place with over 20,000 tons in the last season. Then, Libya with an increasing trend that reach over 10,000 tons of pears (i.e. 7% of the total). Romania and Austria follow with around 6-7%. While the United Kingdom just about 3%. Similar percentages for Croatia and Hungary.

In addition to European countries, the Italian pears are exported to 33 more countries overseas. Eighty seven percent of Italian exports are delivered within the EU, while the remaining 13% goes to non-EU countries. Very often, access to new markets outside Europe is hampered by phytosanitary barriers, which actually hide true protectionist measures to defend local production. In particular, the export of pears from Italy to the United States is legally admitted but in practice, it becomes not feasible, because of several inspections to pass through both for economic and commercial reasons. In fact, Italian companies, in order to face lower costs of controls must be co-ordinated with each other to carry their export during the same periods and so companies are forced to ship within defined periods. The result is that American customers are seen to get the entire product together, with the difficulty of placing them in the market and, hence, a reduction of sales.

Export to China is also difficult. Chinese agri-food sector is subject to particularly restrictive sanitary standards. The authorities direct their attention to agent phytopathogens and to avoid their introduction, in some case, there is a total ban of imports agricultural and food products, as they do not trust that the exporting country offers sufficient guarantees. On this point, some experts have highlighted an institution responsibility and the lack of a stronger coordination within PO in facing export barriers. Some European countries, such as Belgium, have successes through negotiation with Chinese institution in overcome phytosanitary barriers and they can actually export their product to China.

The export to Russia suffered a contraction already before the establishment of the embargo; in Period 2011/14, this destination accounted for 3% of the total. On August 7, 2014, Russia (Decree n. 778) bans the importation from the United States of America, Canada, the EU, Norway and Australia of several food products such as fresh fruit.

Among the EU countries that send the product in Northern Africa currently stands Spain, followed by Italy. France and Portugal export amounts that are more restricted. Different are the destinations reached from the suppliers: the Spanish pears hold the first Place in Morocco and secondarily in Algeria. The products of Italian origin are almost exclusively placed on Libyan Market.

Spain also stands out among EU countries for sending the product in the Middle East. In the last two seasons, the volume of sent Spanish pears averaged around 10,000 tonnes. However, export from Italy within this area is increasing.
5.3.5 Public and private standards

Public standards are mandatory requirement of quality and safety imposed by the government. Government impose such requirements by means of legal regulations. In case these standards are not equal between countries, further cost can be allocated in production to countries where the standards are less strict (Hobbs, 2010). Private standards are voluntary but usually become a necessary condition in order to place the product on the market. In fact, several big retailers require the acquisition of some standards as a condition to allow the trader of the products to the final consume. Hence, become implicitly mandatory (Hobbs, 2010).

GLOBAL G.A.P., standing for ‘good agricultural practices’ represents one of the most well known private standards in agricultural sector. It was established in 1997 by a number of EU retailers taking into account increasing consumer quality demands, and considers several aspects, which are related to waste management, responsible crop protection, water use, as well as health and security measures for personnel.

Pears of Emilia-Romagna in 1998 were entitled the recognition of Protected Geographical Indication by the European Union. PGI label Products follow integrated pest management schemes. In particular, the areas designated by the Protected Geographical Indication are the provinces of Modena, Ferrara, Bologna, Reggio Emilia and Ravenna. PGI Pear from Emilia-Romagna Region includes the following varieties: Abate Fétel, Conference, Decana del Comizio, Kaiser, Max Red Bartlett, Passa Crassana and Williams.

In May 2002 in Ferrara, the Consortium for protect and promote Emilia-Romagna PGI pear was created. The constitution of the Consortium, in accordance with EU guidelines, opens new perspectives to the promotion of typicality and the close link between the product and the territory of origin.

The Consortium, as set out in Article 4 of the Statute that constitutes it aims to:

- obtain and carry out the protection and supervision of the name "Pear of Emilia-Romagna PGI", in Italy and abroad, promoting consumption, facilitating trade and exports;
- encourage the marketing in accordance with the Production Regulation filed for recognition of the "Protected Geographical Indication" under the EEC Regulation no. 2081/92;
- cure and ask the appropriate changes to the "Protected Geographical Indication product specification;
- organize and run events designed to inform and to promote PGI products and in any case every initiative to enhance the product or to enhance their reputation or to improve its image, including through the management of collective trademarks.

Beyond fresh consumption, the use of pear fruit for industrial purposes as a processed food is notable. Among these, there are some traditional processed food (such as fruit juice, jam, syrup) and innovative food (dried pear, ready-to-eat).

In particular, certification represents one of the most important aspect. Factories have different certifications of Product and Process. Certifications have different purposes: some
are required to export the products in certain markets; others are Voluntary certifications to find new opportunities of within internal or foreign markets.

The British Retail Consortium (BRC) certification is required by the retail chains operating in the UK market, in the first place and in international markets. It sets standards to which companies operating in the food sector must comply in order to obtain a certification that ensures distributors the reliability of their suppliers. The BRC certification covers both processes and products, for which Safety, Quality and Legality are checked. It is essentially a product safety and legality certification, as well as the satisfaction of customer requirements, through the verification of production methods establishment.

International Food Standards is a process and product certification similar to the BRC, but according to a standard defined by the chains of modern distribution of Germany, France and Italy (Coop, Conad, Federdistribuzione). The audit is conducted by third parties (NSF Italy and Bureau Veritas) and relates to security systems, Quality and Legality adopted by the establishments.

5.4 Key conditions faced by producers and identified by producers.

One of the main issues affecting the pear market highlighted by the General Manager of “OPera” is the extreme fragmentation of the sector that determine a lack of power from the producer side within political and market context. In the basin of Ferrara-Modena-Ravenna, an almost 90% of the Italian pear production is concentrated (L. Granata).

The control of quality delivered along the supply chain from the farmer to the consumer represents another aspect that needs to be addressed. In many cases, besides effort from farmer side in delivering a high-quality product, the outcome sold to the consumers is a mix of different levels of fruit quality.

Another issue is represented by the commercialization, which is dominated by some big trader group, together with the necessity of joining in producer Organization in order to overcome this influence. However, the subscription into PO, beside important positive aspects such as stable income and reduction of risk, determines a strong dependency of farmers in the farm management decision.

Moreover, interviewers have highlighted the type of variety cultivated in farms is strongly dependent on the reference market. In fact, preferences are diversified based on the geographical area of consumption. In the Internal market still, the preference for Abate Fétel is more persistent, although this variety is not always equally appreciated abroad.

In the end, a problem of marketing is underlined. What comes at a conclusion is the necessity of promoting the pear fruit consumption among consumers by means of more appealing varieties and appropriate marketing action.
5.5 Enabling resilience: Key strategies adopted by pear producers and their impact on performance

In this situation, it becomes increasingly strategic to find and consolidate new markets. Italy can export without particular difficulties in markets such as Hong Kong, Canada, United Arab Emirates. Producers have now diverted their production to the Far East. However, according to stakeholders, much should be done in order to overcome phytosanitary barriers and succeed in the export toward strategic market such as Chinese. The main strategy that have been pursued is the aggregation of diverse existing groups in order to concentrate production and negotiation power; improve quality and organization of the supply chain.

Innovation variety is an important strategy. However, because pear implants have a long-time rotation, with a remarkable initial investment and some unproductive years at the beginning of the implant life, the introduction of new varieties in commerce must be carefully evaluated.

In particular, besides new variety research carried out by Public Institutes, there are also private centres such as New Plant, which is a breeder centre, funded by Apo Conerpo. Recently New plant has launched a new variety “Falstaff” protected by patent until 2017 (Fig. 5.3). Panel tests carried out in the area of Ravenna reported high level of appreciations by consumers. In the most part of the cases, it is preferred to Abate. New implants have been set up this year and the production will start in 2017. The main difference is in the peel colour, which is red.

Figure 5.2. Innovation in product: new variety

In addition, according to G. Pallotti (ApoConerpo) the decision on which Variety has to be carefully considerate based on the market where producer intend to allocate the product. In particular, for the export market, each country shows different preferences, and because of the long life of the implant

“Fruit sector, have always been highly fragmented. Salvi and Mazzoni are historically the most powerful traders in Emilia Romagna and are both placed in the Ferrara Province. During years several groups have been establish also with the purpose of contrasting the imposition of big traders. Diverse group have been established. This high level of fragmentation have
represented a weakness point of the sector, which haven’t allowed to farmer to have the appropriate negotiation power also to represent” (G. Minarelli).

Operators and experts of the pear sector are prompting cooperation, trying to join several POs. “In this context, in the cases where pear production is almost under sustainability, in terms of economic return, the collaboration represents the cheapest solution” (L. Granata). This action should allow opening to new markets as well as open up new business opportunities.

Experts agreed that a better organization and efficient management should be achieved. The main strategy that have been pursued is the aggregation of diverse existing groups and producers in order to consolidate production and negotiation power; improve quality and organization of the supply chain. An attempt is represented by “O-pera”, an organization that involves exclusively Italian Fruit Growers specialized in the cultivation of pears (see Figure 5.3) with the objective of becoming the reference point for the entire chain of pear in Italy. Opera has the objective of becoming the reference point for the entire pear supply chain in ER and Italy. This represents the most important emergent companies involved in the industry and more than 1,000 expert pear fruit growers, with the support of agronomists, technicians and responsible business. Each Opera pear follows a precise path, from cultivation to packaging. Opera commitment is to makes use of cutting-edge facilities and infrastructure, as well significant investments in research, especially in the techniques of cultivation and storage. Opera also try to boast the most authoritative certificati ons of product and process, achieved through constant monitoring of every stage of the production cycle. The organization focuses on innovation in new varieties and innovations in product packaging in a way to provide a more attractive and suitable product to consumer needs (Figure 5.4).

![Figure 5.3. Innovation in product: packaging](image)

This action should allow opening to new markets, and open up new business opportunities. In particular, they are working on the marketing promotion, with the creation of a unique label, which identify high quality pear.
5.6 Key strategies

Loss on foreign and national markets makes urgent put in act technical and organizational solutions to foster the optimization and the overall efficiency of the fruit system. In fact, according to the Agri-chains Competence Centre (ACC) the development of fruit supply chain management activities would improve profit margins, thanks to the development of long-term relations among partners in the chain. However, the fruit sector is highly fragmented, by number and small size of actors, making it difficult to organize a supply chain i.e, a systemic flow and organized of products from producer to consume.

Fruit sector in Italy, and in particular pear, has a weak position compared to major competitors (European fruit and vegetable producers), where the grouping capacity of POs carry and commercialize much of the fruit and vegetable production. This POs’ ability to group the fruit production is rather more limited in the Mediterranean countries. Some reasons that reduce the efficiency of POs are related to regulation and control activities operated by regional institutions.

Summarizing, the following area of action have been highlighted to improve levels of competitiveness in the pear sector:

- To improve levels of aggregation and concentration of the supply through organized facilities, in order to promote structural quality and economic development, of agricultural firm. Best levels of production organization can indeed help foster the market orientation of farms, raising quality level of production and the environmental performance of farmers.
- Encourage a more active role of the POs supporting regulatory action on the following fields: crisis management; financial subsides management; relations with the market and management of operational programs.
- Consolidate actions that can help increase the consumption of products fruit and vegetables and increase the well-being linked to greater consumption of products healthful, including through the promotion of quality labels.
Innovation is a key word for promoting consumption, in a country where currently pear fruit ranks seventh in terms of consumer habits and its consumers belong to a middle age population group. Now the focus on innovation is oriented in the creation of new varieties and new packaging.

5.7 SWOT Analysis

This section is based on Task 2.2. This SWOT analysis – for pears in Emilia Romagna - has been compiled combining the specific information and data acquired through a literature review and through interviews to experts and stakeholders at a regional level.

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- High technical skills;</td>
<td>- Difficulties in selling the product to the market because Consumer preference is oriented toward other type of fruit</td>
</tr>
<tr>
<td>- High quality level of product</td>
<td>- High Fragmentation of the supply chain.</td>
</tr>
<tr>
<td>- Cultivation of a Wide range of varieties</td>
<td>- High costs of labour for harvesting</td>
</tr>
<tr>
<td>- Strict regulations in relation to safety aspect and environment</td>
<td>- Not all variety are appreciated in the north European countries</td>
</tr>
<tr>
<td>- Well established farm expertise and historical know how in pear cultivation</td>
<td>- Storage systems and transportation can compromise quality</td>
</tr>
<tr>
<td>- Emilia Romagna is the leading Region in terms of pear production.</td>
<td>- Issues related to aging</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cooperation and partnership for obtaining more market</td>
<td>- Export markets: Phytosanitary barriers (China, USA), Russian Embargo. Strong competition with Belgium and Spain</td>
</tr>
<tr>
<td>- Organization of the supply china from the cultivation to the packaging</td>
<td>- Import: strong competition with south American countries and Spain</td>
</tr>
<tr>
<td>- Exports: further improving exports also by means of the intermediary work of political institutions.</td>
<td>- Climate change: Extreme hot season can damage the quality of the product and increase irrigation cost.</td>
</tr>
<tr>
<td>- High quality products: keeping focusing on product quality and environment</td>
<td>- Restrictions from EU on preservative compromise the quality of some varieties</td>
</tr>
<tr>
<td>- Access to eastern countries</td>
<td></td>
</tr>
<tr>
<td>- Innovation in new variety</td>
<td></td>
</tr>
<tr>
<td>- Innovation in new type of packaging, different way to propose the product on the market</td>
<td></td>
</tr>
<tr>
<td>- Innovation in agricultural practices</td>
<td></td>
</tr>
</tbody>
</table>

(Source: Our elaboration based on literature review and interviews)

5.8 Fruit supply chain arrangements: focus groups, additional interviews and workshop

The following section reports findings of questionnaires and a workshop, which were undertaken as part of the activities of task 2.3 in order to improve and validate the results of task 2.2.
For the several purposes of the SUFISA project (tasks related to Asymmetric information analysis, Delphi, Desk Based Analysis, Focus Group, Participatory Workshop and survey), Unibo has established a very early (and promising) coordination with local networks related to pear and fruit in general and had several preparatory meetings, including agreement about them providing farmers contact and support to focus group organisation.

Unibo has also arranged several preparatory meetings, including agreement about providing farmer contacts and supporting the focus group organisation. Between them, one of the main Cooperatives is ApoConerpo. In particular, with ApoConerpo cooperative representative we had several meeting dedicated meetings have been addressed in defining stratification for FG organizations.

However, after several delays, it has not been possible to organise the focus groups directly with farmers in the way planned by the project. After notifying the encountered difficulties to coordination and WP2 leader parties, Unibo has obtained the consensus from the Task leader of covering the topics expected in wp2 focus groups by mean of questionnaires. Presenting the results of questionnaires in one workshop with farmers, which provided input for a further discussion, has covered the PW.

Questionnaires have been distributed around participants at an important local exposition that took place on the 11th of May in Rimini (Macfrut), through event coordinators.

Macfrut is a leading exhibition for professional and farmers operating in the fruit and vegetables sector in Italy and in Europe. The companies involved represent the entire supply chain with additional events occasion for learning and discussion. At this purpose, Unibo has contacted different event coordinators who agreed in distributing the questionnaire to participants during four events that have taken place at the Macfruit exhibition. Twenty questionnaires have been collected. Among respondents, 40% are farmers.

The questionnaire has been structure in order to cover the main common topics required in the focus groups guidelines. Then a focus on the Institutional arrangements, in particular the existence of formal contract rather than informal agreement, has been carried out.

The questionnaire is structured in two parts and has been carried out anonymously in order to facilitate participation.

The first part addresses, with five direct questions, the main topics required in guidelines:

- Market and marketing conditions,
- Financial condition and Political and regulatory conditions (how this policies impact on consume, inspection, production and commercialization),
- Strategies adopted by farmer in order to face issues,
- Institutional arrangements in the form of contract adoption.

The second part of the questionnaire has been addressed only to farmers. In order to meet the stratification criteria, at the beginning of the questionnaire one question has been dedicated to group respondents into one of the following categories: high quality level and GPI, Organic and Conventional. In fact, during interviews has been highlighted that in Emilia Romagna Region producers that face similar external conditions develop different strategies in term of
product segmentation. Therefore, four main fruit producer categories have been identified according to interviews carried out during the FG preparation.

The group composed by 20 interviewed belong to the categories as follows:

- 24% High quality and Identity Preserved (GPI)
- 47% Organic,
- 29% Conventional.

We returned twenty questionnaires completed with the following composition:

- 40% farmers,
- 20% technicians,
- 20% market agents,
- 15% institutional officers,
- 5% academics.

As previously explained, the respondent group was composed not only by farmers but also by other type of actors that differ to farmers, although questions were addressed in order to catch the farmer conditions.

5.8.1 Market and marketing conditions

The question regarding the market condition that respondents had to answer was the main commercial issues affecting producers along the fruit chain within Emilia Romagna Region. The questions have been structured in a form of a close answer with the following possible choices: 1) a demand reduction, 2) export due to price competition, 3) export due to phytosanitary berries, 4) increasing of quality standard, 5) increase of environmental restriction.

![Figure 5.5. Analysis of the market](image)
The first aspect to be highlighted is that organic sector is the only one to suffer from the demand reduction, which seems to be crosscurrent. Secondly, almost all respondents except for registered Origin Designation reported their main concerns for the export in relation to the price (see Figure 5.6), which is coherent. In particular, some producers from the organic sector stated also their concerns in respect of the price competition for imported product from abroad. Phytosanitary barriers seem to concern more conventional farmers than other producers. The increasing of quality standard represents instead a concern only for organic and Identity preserved.

The first aspect to be highlighted is that organic sector is the only one to suffer from the demand reduction, which seems to be crosscurrent. Secondly, almost all respondents except for registered Origin Designation reported their main concerns for the export in relation to the price (see Figure 5.6), which is coherent. In particular, some producers from the organic sector stated also their concerns in respect of the price competition for imported product from abroad. Phytosanitary barriers seem to concern more conventional farmers than other producers. The increasing of quality standard represents instead a concern only for organic and Identity preserved.

### 5.8.2 Financing system

According to interviews carried out during the previous task 2.2, some of the main financial tools highlighted, besides own funds have been: public subsides, credit institutions, cooperatives. The specific question has been addressed in order to know if to be part of the food chain facilitate farmer’s credit access or not. From answers, it appears that for high quality producers and conventional producers to be part of a supply chain is considered advantageous but not for organic producers (Figure 5.7).

**Figure 5.6. Access to credit**

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic (%)</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>Origin (%)</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>High quality (%)</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>Conventional (%)</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>
In addition to the question, “what are the main financing systems?” we obtained only six responses of which 33% of organic producers rely on subsidies. Conventional producers make use of private funding (Figure 5.8).

5.8.3 Coordination forms

In the fruit sector, the adoption of the production contract between farmers and cooperatives is not so common.

The question has tackled the frequency in the arrangement of formal or informal agreements, first between farmers and retailers (Figure 5.9) and then between retailers and cooperative (Figure 5.10). In Figure 5.9, the question gathers 60% of respondents, 40% of them engage sometimes in contract. Of this amount, 15% are organic then 15% High Quality and GPI and only 10% conventional producers.

In the following section is reported the frequency in the arrangement of formal or informal agreements, first between farmers and retailers (fig.5.8) and then between retailers and cooperative (Fig. 5.9). We gather 60% of respondents, 40% of them engage sometimes in contract. Of this amount, 15% are organic then 15% High Quality and GPI and only 10% conventional producers. Between cooperatives and retailers, the adoption of formal agreement seems to be more consolidated.

Between cooperatives and retailers, the formal agreement seems to be more consolidated.
5.8.4 Institutional arrangements

Experts highlight the main role of cooperatives in Emilia Romagna in particular for small medium size in many cases they arrange the production among their members in order to meet market requirements (prescribe manly by big retailers and consumers). In many cases, the cooperative set up strategies that are planned based on market trends. Strategies are developed upstream. Consumer preferences are detected by retailers then pass to intermediate dealer or cooperative that influence not only future farmer productions but affect also the development of new fruit varieties and new technologies. In particular, in order to meet different market segmentations, which are based on different standard levels expressed by retailers, the cooperative or the intermediate buyer, distribute the production between efficient and inefficient farmers. The small and medium size farms convey they
product to the main regional cooperative which is APO-Conerpo and it is the main planner of strategies. According to the expert, there is market segmentation and the cooperative arranges the production based on the standard level of the provisioning producers.

In fact, besides mandatory safety requirements, which are related to phitosanitary standards that must be satisfied by producers, the pear sector is characterised by market segmentation with different quality requirements (organic, PGI, high quality). In many cases these standards are not yet observable or detectable at the time of purchasing which is the case of “credence good”. The fulfilment of these standard in agriculture implies the application of specific agricultural practices that cannot be fully observed by the buyer, in many case represented by the cooperative.

The Cooperative allocates the different type of productions based on farm capability of compiling to specific quality level requirements. The cooperative need to match the different quality level produced by the farmers with the right market segment. Farmers, in order to meet specific quality standard, adopt different agricultural practices facing different production costs, which are not observable by the Cooperative. The nature of the problem is ascribable to a Principal Agent problem that imply the existence of asymmetric information in which the principal (buyer or cooperative) cannot have a complete information on the action/practices adopted by the agent (farmer).

5.8.5 Contractualisation and pricing instruments

Issues on contractualization have been tackled by the question whether fruit producers have difficulties in complying with food quality and safety requirements established by big retailers. We provided three levels of choice: high, low difficulties and none. Among respondents, more than 80% stated that there are difficulties in complying with quality requirements. Much less compare to safety requirements (Figure 5.11). Looking in details within categories (Figure 5.12) it can be observed that this aspect is more stressed for organic than conventional producers.

Figure 5.10. Safety requirements - all categories (PGI, Organic, Conventional, High quality)
5.8.6 Regulation and policies

In the questionnaire has been asked how policies affect production, inspection, commercialization and consumption. From a general overview, it can be observed (Figure 5.13) that, except for commercialization there is an overall positive perception of policies impact on each aspect. Although, focusing on the different product categories, some differences can be noted. Looking in detail (Figure 5.14), one of the main evidence is that based on the category of product the impact has sometimes very different behaviour. For example, the impact on commercialization, according to respondents’ is reported as negative for organic producers, instead it is perceived as positive for the other part of producers. In the same way, impact on inspection is negative for organic producers and positive for designed origin producers’. Respondents also highlight the need of more subsides (to PO and farmers) to prompt innovation in pest management.

Secondly, it has been highlighted the need for more cooperation. The fruit sector has always been highly fragmented. This high level of fragmentation represented a weakness of the sector, which does not allow farmers to have an appropriate bargaining power. According to farmers, it is essential to aggregate producers under a unique organization able to protect farmers, and improve their negotiation power. Furthermore, it has been reported the important role of contract and the need for the adoption of collective contracts to be engaged with processing and commercialization parties. Finally, more commitments by institution in the protection of local products.
5.9 Fruit workshop: Strategies

The workshop was conducted in May 2017, thanks to the collaboration with the CCPB (Inspection and Certification Body for agrifood and “no food” products). The main insights arise from the questionnaires and the interviews have been discussed. More in detail, the workshop objective was to present key findings from SUFISA Questionnaires that were
distributed during the Macfrut exhibition. The group attending the Workshop was heterogeneous including farmers, members of CCPB and institutional actors such as Regional minister for agriculture and a representative of Nomisma’s Observatory.

The need of a more efficient supply chain has been stressed confirming the opinions expressed by interviewers. It is essential to prompt coordination and aggregation among producer and supply chain actors. This can be pursued by means of an organization able to create value for the whole chain, guaranteeing the right price to the producer and the right quality to the consumer. Among important activities, there is to communicate adequately the benefit of the final product and its specifications. In order to achieve these goals, the development of new form of contractualization such as multiple chain contracts (which still remain unexplored in practice) that allow integration between vertical and horizontal food chain has been proposed. These are prominent aspects for farmers in order to reduce farmer risks and provide more stability in their income.

Other points of discussion deal with the poor competitiveness of Italian fruit compared to foreign countries. In particular, due to lower price of foreign product compare to domestic one a strong competition exists for organic products. In addition, new market requirements for a high quality and healthy products obtained with environmental sustainable input of chemical are very challenging for producers also in consideration of incoming climate changes.

In fact, due to climate change, maturation of several varieties occurred in parallel with Italian product, and this has created a partial overcapacity on the markets. In addition, always due to climate change, there is an increasing in irrigation costs and some time fruit sizes have not reached the qualitative standard in order to satisfy the market. Finally, the increasing restrictions in pest management in many cases do not allow facing new incoming pest disease.
### 5.9.1 Understanding pear producers’ institutional arrangements (questionnaires + interviews)

<table>
<thead>
<tr>
<th>Guiding question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Can you please explain where and how (channels) you commercialize your products?</td>
<td>Mixed pear producers sell their product through the cooperative. Specialize pear producers sell direct to the market. Cooperatives organize sell strategies for their producers based on market requests.</td>
</tr>
<tr>
<td>14. What are the main challenges you have with your customers and the demand for your commodities?</td>
<td>To restore customer preference toward pear consumption. In particular, by stimulating the consumer preference through targeted sale strategies. Sale strategies include the ability to create a new fruit image with an appropriate label or brand that suggest quality.</td>
</tr>
<tr>
<td>15. What marketing strategies do you implement in order to secure better deals?</td>
<td>Marketing strategies are organized by cooperatives based on market requests. There is market segmentation with different qualitative standards. Quality is at the core of this system. There is also a strong commitment in the marketing in order to present a product under a unique recognised label. However, not all farmers are able to achieve high quality level. Cooperative arranges the production based on different farmer capabilities in achieving standards. Also, organic has a great potential but still represents a small part of the production and most of all; it must be coherent with the farmer vision.</td>
</tr>
<tr>
<td>16. Is certification part of your strategy?</td>
<td>Safety aspects are highly monitored. In Emilia Romagna Region fruit producers need to meet pesticide requirements imposed. All fruit producer now applies integrated pest management. Furthermore, because of requests from big retailer and cooperatives additional Certifications are adopted such as the PGI, Organic high-quality label etc. Recently, thanks to Opera Organization, a consistent amount of pear producers are conveying and selling their production under a unique label. This label “Opera” is working on the marketing side to encourage consumer’s preference and promote purchases. The label system is important for retailers or other supply chain intermediaries, in fact it become a guaranty of the product quality.</td>
</tr>
<tr>
<td>17. Has there been any recent contextual change that has influenced your current business model?</td>
<td>Nothing significant to present.</td>
</tr>
<tr>
<td>18. How do you finance your activities</td>
<td>Several respondents have skipped this question. Those who answer declared that mainly the activity is Financing.</td>
</tr>
<tr>
<td>and what would you require to change this?</td>
<td>financed with their own income. However, they also declare that the presence of cooperative, in several occasions, support to facilitate access to credit, to finance innovation, marketing and promotion in external markets.</td>
</tr>
<tr>
<td>19. Do you work with other pear/fruit producers? How did this start? How is it going? Will you continue in the future?</td>
<td>Respondents agree on the need for greater supply chain consolidation. The sector is highly fragmented with a consequent lack of bargaining power and a lack of a common marketing strategy.</td>
</tr>
<tr>
<td>20. Do you collaborate with others in the value-chain? How did this evolve? Will you continue with this in the future?</td>
<td>As previously mentioned, most producers do not collaborate with others. They mainly have stable relationships with cooperative and technicians.</td>
</tr>
<tr>
<td>21. Do you feel that the current policy context helps you to improve your business performance?</td>
<td>Respondents provided different perceptions of policy impact based on their category of production (Organic, PGI, High quality and Conventional). For example, organic producers reported positive feedback from policies on commercialization, on the contrary for the others.</td>
</tr>
<tr>
<td>22. What environmental constraints and social challenges do you need to address?</td>
<td>In terms of environmental constraints, there is a growing concern about climate change which is increasing the irrigation costs. Furthermore, there are some difficulties in reaching the regular development of fruits due to abnormal thermal changes after the time of setting. However, in spite of a fruit size reduction due to the particularly warm and sunny weather, there has been an excellent production quality this year. A severe damage caused by the Asian lynx (Halyomorpha halys) which is expanding the infestation zone.</td>
</tr>
<tr>
<td>23. How do you deal with current policies and regulations? What are your main strategies?</td>
<td>The producer follows the strategy adopted by the Organization or cooperative that belong to, that now is clearly oriented in offering a high quality and attractive product able to catch consumer preference.</td>
</tr>
<tr>
<td>24. What is the impact of your production activities on the</td>
<td>The ability to promote a high-quality product with respect to environmental restriction is perceived as a key issue and at the same time represents a big challenge. In term of economic sustainability, it is crucial to concentrate and organize the production through collaborative and coordinated action among different</td>
</tr>
<tr>
<td>sustainability of the sector; furthermore, how would you define this impact?</td>
<td>producer organizations and cooperatives. This action can reinforce the marketing and at the same time the contractual power against big retailers.</td>
</tr>
</tbody>
</table>
5.10 Insights from the producer survey B (Pear)

5.10.1 Introduction

The survey’s objectives are developed in the context of the conceptual framework. The objective of the survey undertaken is to map existing IAs in pear supply chain across Emilia Romagna Region, describing different typologies of IAs and their prevalence. In the following will be provide information on the most prevalent IAs.

Secondly, identify the attributes characterizing IAs of Pear supply chain. This will include analysing how different parameters of a given type of arrangement (e.g. length of contracts, services) shape the terms of the relationship between producers and buyers.

The target population comprises farmers within Bologna and Ferrara Province producing pear. Data have been collected by hiring a consultant agronomist. The consultant has carried out face to face interviews each lasts around 40 minutes. Interviews took place from November ‘17 until the February ‘18. The data delivered in the Excel database have been ‘cleaned’, removing potential errors. Interviewees are only “main sale”.

In the questionnaire, three short questions related to the farm soil use and investments on the commodity have been added. We consider that this information could help to have information on the level of crop intensity and so on the quality level of the production.

The dataset consists of 105 interviewees. On the average, the total area of farms in the group is around 23 hectares, with a maximum of 94 ha and minimum of 3.8 ha. In term of area invested in pear production, we have an average value of 6 ha with a minimum value of 0.50 and a maximum area of 20 ha. It can be observed (Figure 5.14) that the age class ranged between 51-64 represents the most consistent in term of frequency in the group.

The age structure is quite diversified and the most represented category is the group of people aged 51-65 (41%). The second largest age group includ people aged 41-50 (38%). The next group consisted of people aged 40 and under (18%). The least numerous group included people above the age of 65 (3%).

69% of farms are run by farmers who claim the status of owner & manager of which the majority in the range of 51-64 has the highest level of education (Table 5.2). Only the 3% of interviewees have more than 65 years old. Although, the percentage of younger farmer under forty’s is just 18% and do not have a university level of education.
Table 5.2. Status of farmer, age and level of education

<table>
<thead>
<tr>
<th>Status</th>
<th>less than 40</th>
<th>41-50</th>
<th>51-64</th>
<th>more than 65</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>11%</td>
<td>0%</td>
<td>7%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>Middle school</td>
<td>50%</td>
<td>67%</td>
<td>33%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>50%</td>
<td>33%</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager</td>
<td>0%</td>
<td>8%</td>
<td>0%</td>
<td>33%</td>
<td>4%</td>
</tr>
<tr>
<td>Elementary school</td>
<td>0%</td>
<td>100%</td>
<td></td>
<td></td>
<td>25%</td>
</tr>
<tr>
<td>High school</td>
<td>100%</td>
<td>0%</td>
<td></td>
<td></td>
<td>75%</td>
</tr>
<tr>
<td>Owner &amp; Manager</td>
<td>63%</td>
<td>63%</td>
<td>77%</td>
<td>67%</td>
<td>69%</td>
</tr>
<tr>
<td>Elementary school</td>
<td>0%</td>
<td>0%</td>
<td>3%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Middle school</td>
<td>8%</td>
<td>44%</td>
<td>33%</td>
<td>100%</td>
<td>35%</td>
</tr>
<tr>
<td>High school</td>
<td>92%</td>
<td>56%</td>
<td>58%</td>
<td>0%</td>
<td>61%</td>
</tr>
<tr>
<td>University</td>
<td>0%</td>
<td>0%</td>
<td>6%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Renter</td>
<td>26%</td>
<td>30%</td>
<td>16%</td>
<td>0%</td>
<td>23%</td>
</tr>
<tr>
<td>Middle school</td>
<td>20%</td>
<td>25%</td>
<td>71%</td>
<td></td>
<td>38%</td>
</tr>
<tr>
<td>High school</td>
<td>80%</td>
<td>75%</td>
<td>29%</td>
<td></td>
<td>63%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

5.10.2 Sales channels: reporting the results of section B of the questionnaire

All the interviewees declare to sell 100% of their production. Only 11 farmers are certified organic pear producers.

Data highlight that the main sale is toward an Individual organisation even if the farms can be divided almost equally: 50 collective and 55 individuals. Data shows that individual sales channels are not very diversified. Trader is the most popular channel of individual sales (76%) followed by auctions (22%) and shops (2%). In the same way. The cooperative represents almost the exclusive form of collective organization (92%). Considering all sales channels as a whole the main form of sales channels is cooperative, which represents 48% of the total respondents (Figure 5.14) followed by traders (44%) then auction (13%) and only few farmers sell to OP (3%), Union (15) and Shops (1%). In term of production (2016-2017), an amount of 8960 t has been sold to individual channels. The amount sold to collective organization is 6820 t, which has been conveyed by 50 farmers mainly to cooperative.
More than half of respondents declared membership in some agricultural organization: Cooperative and Producer Organization.

Respondents were also asked to describe what kind of services the organization provided to their members. All farmers who convey to cooperative belong to a cooperative and they sell in a form where the product is transferred in account to the cooperative (payment is distributed in several different times during the production year). The cooperative acts as an intermediary between producers and buyers and provide support while working on contract/transaction terms (i.e. duration of the contract, notice period, etc.). All interviewees that belong to cooperative belong to PO as well. The association to PO, almost for all, absolve to the role of gathering public subsides.

All respondents are associated to Union relying on them mainly for accounting or administrative services.
5.10.3 Characteristics of sale agreements: results of section C

The next series of questions dealt with terms of contracts/agreements, which were previously described (individual or collective channels). The diversification of agreements is quite significant in term of sale agreements. It can be observed (Table 5.3), that almost the whole of farmers who belong to collective organization subscribe to the Cooperative rules. These rules consist of a long term written contract with membership, delivering and sale conditions. On the contrary, the engagement in contract on individual sale, especially for auctions, consists of contract agreement at the before or at time of sale.

Table 5.3. Type of sale agreements

<table>
<thead>
<tr>
<th>Type of contract</th>
<th>Count (N°)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collective</strong></td>
<td></td>
</tr>
<tr>
<td>A legal contract or oral agreement before or during the production phase</td>
<td>50</td>
</tr>
<tr>
<td>A legal contract or oral agreement at the time of sale, just prior to delivery</td>
<td>1</td>
</tr>
<tr>
<td>Membership rules/conditions of the collective organization</td>
<td>1</td>
</tr>
<tr>
<td><strong>Individual</strong></td>
<td></td>
</tr>
<tr>
<td>A legal contract or oral agreement before or during the production phase</td>
<td>55</td>
</tr>
<tr>
<td>A legal contract or oral agreement at the time of sale, just prior to delivery</td>
<td>29</td>
</tr>
</tbody>
</table>

Next, the respondents describe the characteristics of their agreement, typical for sales in the production year 2016-2017. The analysis of collected data was quite surprising, as it did not allow for determining the typical structure for the majority of contracts. Almost the whole of contracts has in common the possibility of receiving support with storage, transport, etc. (Table 5.4). Respondents specified that they rely mainly on transporation. More than half of the agreement requires exclusivity. In particular, this requirement regards agreements with cooperative. Moreover, almost all farmers who belong to cooperative receive also technical assistance. Slightly half of interviewees have the possibility of receiving premiums for delivering high quality. It has also been reported by the Interviewer that in many cases the farmer does not possess a complete knowledge of all the information existent on the contract.
Table 5.4. Characteristics of the agreement

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes (N°)</th>
<th>No (N°)</th>
<th>Empty (N°)</th>
<th>Do not know (N°)</th>
<th>Total (N°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusivity</td>
<td>64</td>
<td>41</td>
<td>0</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>Penalties</td>
<td>12</td>
<td>91</td>
<td>0</td>
<td>2</td>
<td>105</td>
</tr>
<tr>
<td>Safeguards</td>
<td>33</td>
<td>69</td>
<td>0</td>
<td>3</td>
<td>105</td>
</tr>
<tr>
<td>Price premiums</td>
<td>47</td>
<td>58</td>
<td>0</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>Interests</td>
<td>2</td>
<td>102</td>
<td>0</td>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>Services</td>
<td>95</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>Managerial and technical assistance</td>
<td>49</td>
<td>55</td>
<td>1</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>Credit</td>
<td>35</td>
<td>67</td>
<td>0</td>
<td>3</td>
<td>105</td>
</tr>
<tr>
<td>Assets</td>
<td>0</td>
<td>105</td>
<td>0</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>Automatic extension</td>
<td>40</td>
<td>62</td>
<td>1</td>
<td>2</td>
<td>105</td>
</tr>
<tr>
<td>Other, specify</td>
<td>0</td>
<td>97</td>
<td>8</td>
<td>0</td>
<td>105</td>
</tr>
</tbody>
</table>

Table 5.5 highlights the importance of quality and safety standards for all producers. It is remarkable instead, the neutral answers concerning specific climate standards.

Table 5.5. Specific production/quality standards that you have to comply with, required by the buyer/collective organization. (Number of interviewees)

<table>
<thead>
<tr>
<th>QC.36</th>
<th>QC.37</th>
<th>QC.38</th>
<th>QC.39</th>
<th>QC.40</th>
<th>QC.41</th>
<th>QC.42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality standards</td>
<td>Safety standards</td>
<td>Natural resources standards</td>
<td>Animal welfare standards</td>
<td>Climate standards</td>
<td>GM-free standards</td>
<td>Other, please specify</td>
</tr>
<tr>
<td>Yes</td>
<td>104</td>
<td>104</td>
<td>67</td>
<td>0</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
<td>37</td>
<td>0</td>
<td>103</td>
<td>80</td>
</tr>
<tr>
<td>Empty</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Do not know</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Not applicable)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>104</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
</tr>
</tbody>
</table>

5.10.4 Sustainability: results of section C1

Figure 5.15 shows that farmers have mainly a neutral position on the environmental effects of agricultural activity. They are, instead, more involved in economic aspects stating that the type of agreement engaged for the majority of them, allow to maintain profitability and to invest in their farm.
5.10.5 Strategies and drivers of farming: results of section D

There is not a general intent to expose in new expansion, but to maintain the existent scale (70% of interviewees) Fig.5.16.

Among those who intend to maintain the existing operational scale it can be observed (tab 5.6) that the main production related change consists into invest more in production facilities. Among those who plan to expand their production, which are 24% of the total, the majority of them plan to invest in production facilities (ex. anti-hail nets) and to insure the crop.
Table 5.6. Expected changes to be implemented in the coming 5 years. Production related changes (Count)

<table>
<thead>
<tr>
<th>Maintain the existing scale of operations (N°74; 70%)</th>
<th>Plan to invest more in production facilities</th>
<th>Plan to externalize particular aspects of my operations</th>
<th>Plan to specialize my production</th>
<th>Plan to insure against crop/livestock losses</th>
<th>No plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>10</td>
<td>65</td>
<td>43</td>
<td>13</td>
<td>67</td>
</tr>
<tr>
<td>Yes</td>
<td>64</td>
<td>9</td>
<td>30</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td>1</td>
<td>1</td>
<td>30</td>
<td>59</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expand the existing scale of operations (N°25; 24%)</th>
<th>Plan to invest more in production facilities</th>
<th>Plan to externalize particular aspects of my operations</th>
<th>Plan to specialize my production</th>
<th>Plan to insure against crop/livestock losses</th>
<th>No plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>15</td>
<td>11</td>
<td>10</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25</td>
<td>9</td>
<td>14</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Concerning market related changes, interviewees show to be more interested in the diversification of products/crops followed by the development of new sale channels, partnerships and the addition of value such as the conversion to organic or even (seldom) to biodynamic agriculture (Figure 5.17).

Figure 5.17. Expected changes to be implemented in the coming 5 years. Market related changes (Count)
Conclusion

The Pear sector is facing some challenges mainly related to the reduction of internal consumption, difficulties in the export due to phytosanitary barriers and competition and finally fragmentation of the supply chain.

In particular, some POs within Emilia Romagna recently have grouped forming a new Organization named “OPERA” which is also represent the brand associated to the pear product. The focus is on prompting high quality attractive fruit through innovation varieties and new form of packaging.

Survey results showed that sales are mainly dominated individual sales. However, the main sale channels is cooperatives. In term of agreements all farmers who belong to cooperative, have a formal written contract that consists in the membership rules. Overall, all farmers are quite satisfied with the agreement with cooperative even if this satisfaction is linked to the fact that guaranteed higher income stability, reducing the risks of price volatility.

The most frequent features in the sales agreements concern sales exclusivity, price premium and technical services. Almost all producer farmers have to satisfy minimum quality and safety if either they sell to collective or individual organisations.

The agreement with collective organisations is perceived by farmers not as particularly important in term of connections with other actors in the farming system.

Farmers are still facing high production costs also related to the high-quality level and safety standard requirements with a low remuneration in price. Farmers profits are limited and not sufficient in order to allow new investment on their farm activity.

Data collected through the survey are highly valuable and it is planned the use of econometric methodologies to provide more insights on the pear sector. In particular, more detailed analysis with focus on existing institutional arrangements.
6 Italian Satellite Case Study 3: Mussels

6.1 Case study introduction

On a global scale, China and the EU are the two largest producers of mussels, followed by Chile and New Zealand. Europe supplying over a third of the total production. The overall production of mussels in Europe peaked at nearly 750,000 tonnes. The level of consumption is highly variable according to country, but it is mainly concentrated in four countries Spain, Denmark, Belgium and France. Aquaculture is by far the main source of mussels and is responsible for over 90% of total production.

There are three breeding methods used on EU coastline:

• On strings (in Spain, the Mediterranean, Ireland and the United Kingdom): mussels are fastened on ropes that hang vertically the water begins with a fixed or floating structure (Raft). In Galicia (Spain) the floats are located in the Estuaries. The mildew cultivation in low coastal areas is practiced in France, Ireland and Belgium with long lines.

• On poles (called "filari" in France) - This kind of cultivation is made on rows of wooden poles planted in the plus area. A rope of a 3-5 m catch tube filled with mussels is rolled around the pole and fastened to the pole. A net covers the set to prevent mussels from falling.

• On piano “in pianoforte” (mainly in the Netherlands, Ireland and United Kingdom) - mussels are scattered on shallow desks, generally in bays or sheltered places, fixed to the ground. Harvesting is done after 12-15 months.

In Italy, the cultivation of mussels is well developed and this species represents 48% of the volume of all farmed marine products. Italy represents the third main producing country with about 65,000 tonnes. Installations of mussels are distributed throughout the coast region, mainly concentrated in the part of coast from Porto Garibaldi to Goro.

In Emilia-Romagna, as well as at national level, mussels suddenly developed in the 80’s, with the advent of technologies related to the “off-shore” implants. In fact, with the spread of the first breeding facilities in the second half the 80’s ER has reached considerable technological and productive level. In Emilia Romagna region, the mussel breeding is related to a single species, *Mytilus galloprovincialis*. This is a native species of the local fauna. The seed which is used for breeding is mostly found locally in its natural environment. Since seeds from artificial reproduction may cause genetic differences these are not used.

Italy is characterised by having a coastal profile poor of deep inlet. For this reason, the development of technology that allows off-shore implant allowed cultivation to be extended to new areas. The aquaculture sector in Emilia-Romagna employs around 1,400 people. The mussel is a seasonal product having some problems related to the fragmentation of the supply chain due to the lack of a solid organization among producers.

About 200 companies that cultivate mussels exist in Italy. The region with the largest number is Liguria (about 65 companies/ businesses).

---

7 Authors: Francesca Minarelli, Davide Viaggi, Meri Raggi (UNIBO)
Before then, the regional production of mussels was largely constituted by the harvest of natural ban, took place along the coast straddles between Emilia-Romagna and Marche. The port of Cattolica was the main point of landing, and from the collection on the structures of methane platforms distributed along the regional coastline, whose point of landing is concentrated in Marina di Ravenna.

Off shore implants have higher costs (both for their installation and management) compared to traditional long line in use along the coast. For these reason around the world there are very few places where this type of implant has been taken in use.

Among cost for their construction the quality and robustness of the material to be used represents one of the main aspect.

**Figure 6.1. Distribution of mussel plant along Emilia-Romagna Region and Northern Marche (Source: “Studies and operational proposals in the shellfish industry in Emilia-Romagna” Final Report Progetto EcoSea).**

In 2014, Emilia-Romagna produced 22.200 tonnes of mussels becoming the first region in Italy for mussel production. Emilia-Romagna has become the location of the most important manufacturing companies, equipment and boats for this activity. Over time, the technological evolution of vessels and processing equipment have increasingly relieved the operators from the most demanding tasks, allowing to increase the production capacity of individual plants.

In the late 90s’ a census survey of national mussel farming structure was realized, which considered also the reality of Emilia-Romagna. The purpose was a better understanding of the state of the industry in its various aspects, from the nature of the company components of production structures. The “Censimento Nazionale sulla Molluschicoltura del Consorzio
Unimar”, was released in 2001 (Prioli et al., 2001). The census revealed that in Romagna Sea there are 27 companies with a mussel plant offshore in long-line. The province with the largest number of companies is Ferrara with 16 units, followed by Rimini with 6, Forlì-Cesena 3 and Ravenna with 2.

Zooming outside Emilia-Romagna, there are two companies with extra regional headquarters, one in Veneto (Rovigo) and one in Friuli Venezia Giulia (Udine), each with a plant located in the seaside in front of Goro (Ferrara Province). All together, these companies employ 314 production workers, of which 248 are on fixed contracts and 66 temporaries. As for the fixed operators, the province with the highest labour force is Ferrara, with 129 units, including four employees of undertakings established in the Veneto and Friuli Venezia Giulia, follows Rimini, Forlì-Cesena and Ravenna with 50, 49 and 20 workers, respectively.

Information collected provided a sufficiently complete picture of the structure of the regional mussel cultivation and allows making a detailed analysis of those that are the most relevant parameters of the sector.

It can be noted that the most part of the concessions and consequently implants, are currently co-operative that, in most cases, entrust/relay on to companies associated to them for production facilities. These are micro businesses, traders, or limited companies, employing a small number of employees and that are equipped with one, rarely two boats to carry out the farming activities. In most cases, they shall independently carry out the marketing of the product and the investments for the improvement of facilities or purchase of machinery. Nevertheless, there are cases in which the members of one or more plants are brought together to market their product. This fragmentation is a major limitation in terms of product enhancement and, in most cases, does not allow having sufficient capital to cover new investments and to face crises caused by natural disasters. Although, this has not prevented certain dynamism in the last five years, in which they performed several, mainly modernization, investments (purchase of boats and ancillary equipment).

With regard to the management and processing operations, the production process can be summarised in three main phases: sewing, socking and harvest. From the beginning of sewing, it takes a period of about 8 to 12 months to the harvesting of the finished product. The seed gathering occurs twice a year, more copious in late winter and then during autumn. When the molluscs have reached a size of 2 to 2 ½ cm that usually corresponds to summer season the retrieval and incalzo take place. For socking, plastic tubes are used. Along with the grow-out management the most delicate stage, is the periods preceding the first and second socking because, as these steps take place during the summer, the increase in temperature accentuates the problems relating to the adherence of the molluscs to the substratum. Once packaged, the new socks in length of about 2 to 3 metres are hung to the line at a distance of about 60 to 70 cm from each other. The sale usually ossurs in late autumn to other mollusc farms, when the product is not yet ready to be commercialized, because the size is not suitable for consumption; the end of winter to the beginning of summer with more consistent size to traders.

The shellfish found along the regional coasts, are attributable to the classic type spinning half-submerged, where we find anchor, placed at a distance of at least 100-150 m from each other, from which branch lines anchoring joined together, near the surface, by a top - said Ventia or
beam. These are kept at a depth of about 3 meters from floating, to which the rest of mussels are hung. Each row is generally located at about 50 m from each other, in relation to the area of settlement depth. This general scheme may vary from system to system, as well as the type of material of construction and the dimensions of the various components. Each plant, in fact, can differentiate to the size of the dead bodies, the distance between them, the shape and arrangement of the mooring line, the diameter of the peaks used and the volume of livelihood buoys. The characteristics of all these elements significantly influence the resistance to marine events and, in some cases, the productivity of the plants and the study of the various solutions adopted, among the objects of the present investigation, can bring useful indications for the identification of a "standard" to follow in the future.

The production of mussels has a main peak in the period from March to June, and this creates considerable problems for the organization of marketing. This is due largely to the influence, often concomitant and synergistic, three main factors: the adoption of breeding technique, the natural recruitment of young fish, and the performance of the reproductive cycle.

In these last few years, there has been a negative market trend mainly due to the adaptation to new productive and sanitary regulation introduced by EU. During last decades shellfish farming has become a prominent activity in Emilia-Romagna contributing not only to creating a new occupation, but also to mitigate the fisheries crisis. In fact, a large number of Fishermen is converting all or part of their activities. This type of trend has determined a gradual change not only in term of production, but also in respect of marine resources management and exploitation.

6.2 Policy and regulatory conditions

6.2.1 Financial support

Subsidies in Aquaculture depend on European Maritime and Fisheries Fund (EMFF), which cover around 50% of the investment. “A large amount of fund is devoted to aquaculture” (Prioli). However, since the majority of firms in this sector are small-medium size enterprises that do not have the necessary financial resources to cover the remaining part of investment, they need to apply for a credit access.

ISMEA represents a possible creditor able to give guaranty to the firms. MARE.A is collaborating with political institution in order to help firms to gain access to convenient form of credit such as bond, insurance. Insurance is not a recognized instrument in this sector because of the lack of reference/information in respect of level of risk and failure cases in this sector.

Emilia-Romagna Region is increasing funding designated to support aquaculture; in fact, they have been raised from 19 to 49 million euros.

Because of the regulation in 2004, the public concessions have a different cost depending on if they are a private enterprise or a cooperative. Cooperatives pay a contribution of 0.4 Cent while an entrepreneur pays 1€. This aspect has an important impact in terms of cost to be corresponded to the Regional institution for the public concession.
This difference in price has determined a large conversion of private enterprises into co-operatives. This transformation is in fact, more from a formal point of view than practical, where the commercial management remain the same as in an enterprise.

“In the south of Italy, one can encounter suboptimal conditions for sales due to wrong costume/ habits. Such as the opening of sack or the wetting with water, which in Emilia-Romagna is not allowed” (G. Prioli).

6.2.2 Legislation and regulation

Mussel in order to be sold to the big retailer organization must pass through the inspection centre. At this stage, all sanitary controls are performed. Regulatory sanitary conditions are established at regional level and then applied with different protocol at municipality level. The levels of control imposed by law are very high and frequent; however, the accomplishment of them is not homogenous in the Italian territory.

The Adriatic Sea coast and offshore in the northern-centre part is highly controlled. The collection and growth of mussels is subject to strict health regulations Reg.CE 852, 853, 854 of 2004 which provide specific analysis, methods, times and in particular: weekly sampling of shellfish for analysis of biotoxins (PSP, ASP, okadaic acid, Yessotoxins, Azasparacids); monthly sampling of mollusk bacterial samples (Escherichia coli, Salmonella); semestral sampling of shellfish samples for chemical analysis (Pb - lead, Hg mercury, Cd - cumin). In the presence of positive results, the authorities immediately issued a ban on the collection and marketing of the product for human consumption, serve at least two additional negatives to resume harvesting the product. The sampling frequency, in the presence of positivity, is halved.

Since 1991 these analyzes have been carried out in Emilia-Romagna by the competent Local Sanitary Agencies (AUSLs) and around 900 analyzes have been carried out annually, which in 24 years have over 20,000 analyzes for all the mushroom farms and offshore platforms present on the regional territory.

In 24 years of samples and analyzes to detect the presence of chemicals in offshore offshore mines, only a one-off drilling effort was detected in pending further analysis in 2015, for all other parameter analyzes were within the limits of law and of national and communitarian sanitary legislation in material.

The collection of mussels from the platforms is hand-made by the divers of two fishing cooperatives in Marina di Ravenna, with the assistance of eight boats equipped for about 50 operators.

On 26-28 June 2015, Marina di Ravenna was held at Marina di Ravenna with stands, debates, gastronomic initiatives with the mussels of Taranto, La Spezia, Porto Novo and the precious collaboration of Slow Food Ravenna.
6.2.3 Labels

Big retailer's entry into the major aquaculture product distributors has given modernity to the industry by imposing protocols, productions, quality standards and models reliable control for all the supply chains. Beyond the "impositions" generated by a strong client, big retailers’ entry has led to increasing attention for compliance obligations safety and labeling rules and has generated competition on the control level of the supply chain and quality. In ER, the label “Cozza di Cervia” has been created; it is an organic product, which is internationally unique because of its organoleptic flavour and texture among the productions of mussels. From December 2013, the Fenice Company has certified its production with the logo of organic product that guarantees the traceability of the organic sector.

6.2.4 Environmental issues

Some of the main environmental issues related to the mussel growth is related to the dispersion of catabolism substance expelled by mussels that can reach the coast. In particular, in case of offshore implants, where the implant level is not as deep as in depth coastal zone, the sea flow lead back rests to the coast.

According to Keeyley et al. (2009), the main effect on environment, derived by the mussel can be divided in three main areas: effects on the sea bottom, on the water column, on marine living organism and microorganism. On the other hand, mussel absorbed Nitrates and Phosphates responsible for the Eutrophication. In the long run, it has been possible to observe as breeding techniques in plants located in geographically different areas have led to substantial differences in quantitative and above all qualitative terms of the product with significant economic consequences. It is known that factors such as river flooding, abundance of rains and the existence of currents are all elements that act significantly on the main hydrological parameters, including salinity, temperature, transparency, dissolved oxygen, etc. ... and on the presence of nutrients and trace elements, thus influencing the larvae development and the growth of individuals, rewarding the areas that can guarantee a richer product in the flesh, as well as more pleasing to the sight. This has led to an increase in breeding facilities in areas that apparently offer a better product but at the same time could represent more at risk as they are subject to greater environmental variability. (G. vPrioli, 2011)

In term of ecological footprint, data obtained from studies on mussel culture done in Trieste, allow to state that the activity is comparable to planted crops, and much lower than those of another animal production (Solidoro et al., 2010). It is clear then that the ecological footprint of mussel farming appears particularly light and support the conclusion that the activity is undeniably environmentally friendly. Furthermore, bivalves are able to intervene in the carbon cycle due to their ability to remove carbon from the environment and thereby contribute as an "extractor" of CO2, depending on the season and several different local features, such as farming practices, the temperature, the phytoplankton population, nutrient availability, etc.
6.3 Market conditions

ER region covers 20% of the production (about 16,000 tonnes) that is concentrated in 34 implants. Each of them contains more companies. In fact, an implant, can delivers up to three companies. Hence, in total there are around more than 100 companies within the Region. Companies are usually cooperatives or LTD. The offer of mussels in the EU mainly depends on local production Chile and New Zealand are the two leading mussel suppliers in the EU, they provide our market with frozen products used as raw material for the European processing industry. The Commerce within the EU is well developed and has equal value to about half of the overall EU market value. The main trading flows start from Spain, the Netherlands and Denmark (mussels in the case of Denmark) towards Belgium, France and Italy. The EU mussels market is highly segmented, with different marketing prices and seasons, depending on the origin. EU exports are very limited and directed mainly towards Switzerland and Russia.

The mussel production is not uniform over the year, but it has a peak in the period April to June, and this creates a several problems in organizing marketing. This is due to the often concurrent and synergic influence of three main factors: the breeding technique adopted; natural recruiting of young mussels; the course of the reproductive cycle. The breeding technique based on packing mussel sock to hang on rows entails considerable economic expense due to the product handling and collection plus packaging of the new mussel socks. This means that when the commercial size is reached (fixed at 5 cm and reached after about 10-12 months from the settlement), sales operations begin. Further retention of the remaining mature entails risks, decreases adherence of mussels to the substrate and the action of the wave motion can result in detachment and consequent loss of product. To this is added the need to start the new breeding cycle, which requires a considerable amount of time and work, creating competition with the management of the previous production mussels. In addition, the new recruitment, which occurs more abundantly in the spring months, tends to colonize even pre-existent mites with adults, resulting in considerable size disparity over time, which greatly depreciates the product at the time of sale. Much of the edible component of this mollusk consists of gonads, located in the mantle, the degree of filling, the "yield" in the pulp, and is therefore a direct consequence of the state of the moll scum.

It is generally considered a good quality mussel with a yield of about 25%, great if it exceeds 30%. These values can be derived from two states of the individual: the presence of mature gonads ready for the release of the gametes; accumulations, always in the mantle, of reserve substances, mainly consisting of glucids, to be used in the subsequent reproductive phase. This latter case represents the situation where milder mushrooms are of the highest quality, with a more pleasant taste, and this is generally the case in the summer, with water temperatures above 20-25 °C. In contrast, the worst quality, both in weight and in taste, is achieved when mussels release gametes, emptying. The period of gastric emitting generally coincides with the winter months.

In Italy, the first mussel product is harvested in Emilia-Romagna Region and northern coast of Marche Region. The first harvesting area defines the price of the product, which is in Goro within Ferrara province. In this area price is the lowest because mussels are grown simultaneously with clam reducing total production costs. Moving to Cattolica and Cesenatico price increases, because of the labour costs, reaching highest values and suffering the competition form the other Italian area.
Italian mussel producers lack commercial skills. The businesses deal almost exclusively with the production aspects while marketing is managed almost entirely by dealers. Hence, as stated during the interview “The core issue of mussel growth is not to produce them but how to sell them” (Prioli). In fact, producer organization does not exist. This aspect complicates not only the commercialization but also the definition of price.

An alternative to the trader is the direct commercialization with restaurant, to the growing implant or privates. Some areas of the Romagna (ex. Cesenatico, Cervia) coast have identified a common trader “Mitilicesenatico” and have applied for certification. Growers of other area instead, have maintained an autonomous commercialization.

In Italy, about 60,000 tonnes of mussels are produced and 30,000 tonnes are imported from Spain during the winter season. In fact, during this period the Italian mussel is not ready to be sold yet. Spain represents one of the main competitors on commercialization. In particular, Mussel market is characterized by the presence of Producer Organizations and absence of off shore implants allows keeping lower price compare to Italian once, which usually are estimated to be around 60-70 Cent/kg. The existence of Producer Organizations in Spain is strictly related to the mussel variety cultivated in those areas. In fact, this one requires a processing treatment before commercialization that variety cultivated in Italian area does not require. Another competitor is represented by Greek market, more than Spain, because the Greek product reaches the maturity level in the same period of the Italian one, i.e. from May to September.

However, there are still a number of issues that are not easy to see at this time. One of the main concerns is the excessive fragmentation of supply due to the lack of a solid producer organization. This is often linked to the lack of commercial skills by breeders, with mollusc farming companies that deal almost exclusively with production aspects, while marketing is almost entirely owned by traders and intermediaries and producers have marginal benefits. Over the years, this has led to excessive production price stability following a gradual rise in production costs, which also has a strong competitive edge with both foreign countries within the European Union and with other production at national level, also due to imbalances in production costs.

6.4 Key conditions identified in literature, media and interviews

Due to the lack of POs, the difficulty in commercialization is remarkable. Companies committed themselves into emerging markets, especially abroad in the north of Europe. However, mussel varieties cultivated in Italy are not appreciated in most part of northern countries (Netherlands, Sweden, and Denmark) which preferences are oriented toward other mussel varieties. So Northern countries import mussels from Denmark and Ireland. An option offered is the reintroduction of mussel cultivated in Italy into existing growing in France and in South of Spain.

In particular, the adoption of Organic certification allowed some Italian companies to deliver their product to big France retailer (Carrefour). The ultimate price of the product does not change, and the growing conditions are very similar to conventional mussel growing except for the density. Even if there is not a return in terms of price for the organic certification.
implementation, the opportunity to guarantee purchase from the client represents a valuable aspect.

6.5 SWOT Analysis

This section is based on Task 2.2. This SWOT analysis – for mussels in Emilia Romagna - has been compiled combining the specific information and data acquired through a literature review and through semi-structured interviews to experts and stakeholders at a regional level.

**SWOT – Mussels**

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
</table>
| - High technical skills.  
- Adoption of own brands, private label and certification schemes, sustainability and local labelling.  
- Use of high quality mussel varieties.  
- Strict local authority controls and regulations in relation to safety aspect. | - High costs of labour.  
- Consumer preferences: not well informed in the added value of local product.  
- High Fragmentation of the supply chain.  
- Difficulties in selling the product to the market because of the lack of Producer Organizations and/or Associations.  
- Mussel variety not appreciated in the north European countries. |

<table>
<thead>
<tr>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
</table>
| - Rising demand for mussels.  
- Cooperation and partnership for obtaining public funding through the constitution of Consortium such as Mitilicesenatico.  
- Exports: further improving exports of Juveniles to growing plants (Spain, France).  
- High quality products: keeping focusing on quality, to resist on the market.  
- Financial support from EU. Increasing attention from EU commission with Remarkable financial support from Policies. | - External markets: strong competition from cheaper Mediterranean products in the same period (Spain and Greece).  
- Climate change: Extreme hot season can damage the quality of the product.  
- Consumer preferences: there is not consumer education for letting people know domestic product vs imported. |

(Source: Our elaboration based on literature review and interviews)
7 Case Studies references

7.1 Media Analysis References

The coding of the analyzed sources is available on the share point in a separate Excel document.

7.2 Wine, Fisheries, Aquaculture, Pears and Mussels references


ARPAT (2008) *La pesca professionale, l’acquacoltura e lo stato delle risorse ittiche nel mare toscano*. Agenzia regionale per la protezione ambientale della Toscana, Livorno, Italy.


Centro Servizi Ortofrutticoli. COSTI, PREZZI E COMPETITIVITA’ NELLA FILIERA PERO: UN’ANALISI DEI MAGGIORI SISTEMI PRODUTTIVI EUROPEI, 2010.


IRPET - Istituto regionale programmazione economica della Toscana: http://www.irpet.it


ISTAT – Istituto Nazionale di Statistica (2010), La Toscana al 6o censimento Generale dell’agricoltura risultati definitivi: http://www.regione.toscana.it/censimentoagricoltura2010


Palmieri, A. Pero, situazione italiana e previsioni per la campagna. *Informatore Agrario* 2015.


STUDI ED INDAGINI RIVOLTI AL MIGLIORAMENTO DELLA MITILICOLTURA IN EMILIA-ROMAGNA. Regione Emilia-Romagna, 2006


## 7.3 Appendices Wine

### 7.3.1 Appendix 1: Wine interviewees

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Organic wine producer, province of Lucca</td>
<td>Owner</td>
</tr>
<tr>
<td>2. Organic wine producer, province of Lucca</td>
<td>Owner, President of CIA Toscana Nord</td>
</tr>
<tr>
<td>3. Wine producer province of Livorno</td>
<td>Oenologist and export manager of the company</td>
</tr>
<tr>
<td>3. Wine Corporation, province of Florence</td>
<td>Oenologist</td>
</tr>
<tr>
<td>4. Wine producer province of Florence</td>
<td>Owner and Manager of the company</td>
</tr>
<tr>
<td>5. Independent wine producer, province of Pisa</td>
<td>Oenologist, cellar responsible</td>
</tr>
<tr>
<td>6. Organic producer province of Livorno</td>
<td>Oenologist</td>
</tr>
<tr>
<td>7. Wine producer province of Florence</td>
<td>Sales manager</td>
</tr>
<tr>
<td>8. Wine producer province of Pisa</td>
<td>Oenologist</td>
</tr>
<tr>
<td>9. Wine producer Bolgheri</td>
<td>Oenologist</td>
</tr>
<tr>
<td>10. Wine producer province of Florence</td>
<td>Oenologist</td>
</tr>
<tr>
<td>11. Wine producer province of Grosseto</td>
<td>Owner, Oenologist</td>
</tr>
<tr>
<td>12. Organic wine producer province of Pisa</td>
<td>Owner, Oenologist</td>
</tr>
<tr>
<td>13. Wine analysis laboratory</td>
<td>Owner</td>
</tr>
<tr>
<td>14. Support services company</td>
<td>Innovation broker, consultant</td>
</tr>
<tr>
<td>15. Wine producer province of Florence</td>
<td>Oenologist</td>
</tr>
</tbody>
</table>
### Appendix 2: Supplementary Wine interviewees

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Large wine producer, province of Pisa</td>
<td>Commercial/Marketing director</td>
</tr>
<tr>
<td>2. Wine Cooperative, province of Pisa</td>
<td>President of the Cooperative</td>
</tr>
<tr>
<td>3. Large wine producer province of Livorno</td>
<td>Main Oenologist</td>
</tr>
<tr>
<td>4. Large wine producers, province of Florence</td>
<td>Main Oenologist and manager of the company</td>
</tr>
</tbody>
</table>
## Appendix 3: Wine focus group summary data

<table>
<thead>
<tr>
<th>FG Site</th>
<th>Code Number</th>
<th>Municipality</th>
<th>Type of activity</th>
<th>Number of employees</th>
<th>Number of grape varieties</th>
<th>Wine typologies produced</th>
<th>Average turnover (in reference to the year of production, 2015 or 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pisa</td>
<td>1</td>
<td>Capannori (Lu)</td>
<td>Wine-oil</td>
<td>10</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sapereta (Elba)</td>
<td>Wine-oil</td>
<td>15</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Macchia (Pi)</td>
<td>Wine</td>
<td>2</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
</tbody>
</table>

### Producer characteristics

<table>
<thead>
<tr>
<th>FG Site</th>
<th>Code Number</th>
<th>Municipality</th>
<th>Type of activity</th>
<th>Number of employees</th>
<th>Number of grape varieties</th>
<th>Wine typologies produced</th>
<th>Average turnover (in reference to the year of production, 2015 or 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pisa</td>
<td>1</td>
<td>Capannori (Lu)</td>
<td>Wine-oil</td>
<td>10</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sapereta (Elba)</td>
<td>Wine-oil</td>
<td>15</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Macchia (Pi)</td>
<td>Wine</td>
<td>2</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
</tbody>
</table>

### Production strategy

<table>
<thead>
<tr>
<th>FG Site</th>
<th>Code Number</th>
<th>Municipality</th>
<th>Type of activity</th>
<th>Number of employees</th>
<th>Number of grape varieties</th>
<th>Wine typologies produced</th>
<th>Average turnover (in reference to the year of production, 2015 or 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pisa</td>
<td>1</td>
<td>Capannori (Lu)</td>
<td>Wine-oil</td>
<td>10</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sapereta (Elba)</td>
<td>Wine-oil</td>
<td>15</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Macchia (Pi)</td>
<td>Wine</td>
<td>2</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
</tbody>
</table>

### Relevant Conditions (last 5 years, relevance 0-5)

<table>
<thead>
<tr>
<th>FG Site</th>
<th>Code Number</th>
<th>Municipality</th>
<th>Type of activity</th>
<th>Number of employees</th>
<th>Number of grape varieties</th>
<th>Wine typologies produced</th>
<th>Average turnover (in reference to the year of production, 2015 or 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pisa</td>
<td>1</td>
<td>Capannori (Lu)</td>
<td>Wine-oil</td>
<td>10</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sapereta (Elba)</td>
<td>Wine-oil</td>
<td>15</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Macchia (Pi)</td>
<td>Wine</td>
<td>2</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
</tbody>
</table>

### Strategies

<table>
<thead>
<tr>
<th>FG Site</th>
<th>Code Number</th>
<th>Municipality</th>
<th>Type of activity</th>
<th>Number of employees</th>
<th>Number of grape varieties</th>
<th>Wine typologies produced</th>
<th>Average turnover (in reference to the year of production, 2015 or 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pisa</td>
<td>1</td>
<td>Capannori (Lu)</td>
<td>Wine-oil</td>
<td>10</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sapereta (Elba)</td>
<td>Wine-oil</td>
<td>15</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Macchia (Pi)</td>
<td>Wine</td>
<td>2</td>
<td>na</td>
<td>PGI, PDO</td>
<td>Between 500 thousand and 1 million</td>
</tr>
<tr>
<td>Florence + interviews</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>----</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colline Pisane</strong></td>
<td>100</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colli Fiorentini</strong></td>
<td>300</td>
<td>30</td>
<td>11</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grattamacco</strong></td>
<td>12000 hl</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grattamacco</strong></td>
<td>na</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pomona</strong></td>
<td>90,000 hl</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pomona</strong></td>
<td>25,000 hl</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Torri a Cenaia</strong></td>
<td>0</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bonissi</strong></td>
<td>140 hl</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Boriassi</strong></td>
<td>140 hl</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Florence</strong></td>
<td>25.000 hl</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Castellani</strong></td>
<td>na</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Castellani</strong></td>
<td>na</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colli di Romanino</strong></td>
<td>9/11 million</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colli di Romanino</strong></td>
<td>12 million</td>
<td>PDO, PGI</td>
<td>na</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(na means not available)
Methodological notes:

At the very beginning of the activities, we plan to collect some information about participants and their occupation, the type of farm, the type of production, the number of employees etc. Then it follows an opportunity of interaction between participants and the SUFISA team members.

1. Initial presentation (10 minutes):

In a first step we carried out a smart presentation about the project (what type of project, what analysis we are going to do etc.) in order to explain to the participants the research question and the reason and the objective of the Focus Group.

2. Methodology presentation (5 minutes)

During this second step, a SUFISA member introduced the methodology and the activities that the group will have to carry during the FG.

Objectives and expected outcomes

- What are the most relevant conditions (obstacles and facilitating factors) and trend (threats and opportunities), which have influenced or can influence the wine sector in Tuscany?
- Which are the most important strategies for wine sector in Tuscany?
- Bring out the strategies of the companies in response to emerging trends
- Bring out the approaches to sustainability (= survival resilience and adaptability of the company)

Before starting we asked to fill with their relevant information the Participant form.

<table>
<thead>
<tr>
<th>Name of the company</th>
<th>Municipality of provenience</th>
<th>Typology of activities</th>
<th>Hectares of agricultural area of the prevailing farm activities (es. vineyard)</th>
<th>Number of employees</th>
<th>Typology of wine produced</th>
<th>Quantities of wine produced (2015, 2016)</th>
<th>Percentage of wine produced but not sold (if available)</th>
<th>Main distribution channels</th>
</tr>
</thead>
</table>

- Then, we asked participants which of the following conditions have more influenced their farm activities in the last 5 years. Thus, we asked to express their judgment within a 0-5 scale (i.e. with 5 most relevant) and finally we asked to express among the cited conditions if they expected some changes (predict) or they happened suddenly.

<table>
<thead>
<tr>
<th>Conditions (last 5 years)</th>
<th>Relevance (0-5)</th>
<th>Type of changes (P=predictable/I=sudden change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to the markets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wine price and volatility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental factors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- After we asked to participants what are the key strategies that they have implemented in their activities in the recent years.

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Select the relevants with a cross</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competition</strong></td>
<td></td>
</tr>
<tr>
<td>Input reduction</td>
<td></td>
</tr>
<tr>
<td>intensification, specialisation</td>
<td></td>
</tr>
<tr>
<td>extensification</td>
<td></td>
</tr>
<tr>
<td>Farm diversification</td>
<td></td>
</tr>
<tr>
<td>Product diversification</td>
<td></td>
</tr>
<tr>
<td>Technological development</td>
<td></td>
</tr>
<tr>
<td>Partnership development</td>
<td></td>
</tr>
<tr>
<td>Farmer unions involvements</td>
<td></td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td></td>
</tr>
<tr>
<td>Market orientation</td>
<td></td>
</tr>
<tr>
<td>Development of new markets</td>
<td></td>
</tr>
<tr>
<td>internalizzazione valore aggiunto</td>
<td></td>
</tr>
<tr>
<td>Cooperative marketing</td>
<td></td>
</tr>
<tr>
<td>Long terms contracts</td>
<td></td>
</tr>
<tr>
<td>Hedging contract</td>
<td></td>
</tr>
<tr>
<td><strong>As a response to farm decline</strong></td>
<td></td>
</tr>
<tr>
<td>Diversification of farm incomes</td>
<td></td>
</tr>
<tr>
<td>Incomes from not agricultural activities</td>
<td></td>
</tr>
<tr>
<td>part-time</td>
<td></td>
</tr>
<tr>
<td>Reduction of external work</td>
<td></td>
</tr>
<tr>
<td>Farm reduction</td>
<td></td>
</tr>
<tr>
<td><strong>External support and policy</strong></td>
<td></td>
</tr>
<tr>
<td>Lobby</td>
<td></td>
</tr>
<tr>
<td>Education and consulting</td>
<td></td>
</tr>
<tr>
<td>Research of support</td>
<td></td>
</tr>
</tbody>
</table>
At this point the participative stage of the FG starts:

- We ask to each participant to write on a post-it the most relevant threats and opportunities for their farm as a response to future conditions (the same that we have asked before but directed to the future) (i.e. a maximum of 5 threats and 5 opportunities for each participants). We use two different colored post-it (i.e. threats green and opportunities red) and we ask to write just a single threat or opportunity for each post-it (each participant has got 15 min to complete this task).
- After this step it followed a common work of distributing and discussing the post-it in the next table.

<table>
<thead>
<tr>
<th>Future conditions</th>
<th>Threats</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market access (considering each distribution/sale channel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wine price level and volatility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production factors access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial availability and credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation and Policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-demographic change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency and quality of the institution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Once we are collecting the post-it the facilitator helps the process reorganising post-it and clustering the most similar concepts.
- At the end it followed a discussion in order to find a general agreement or point of disagreement with the results.
Then we asked participant to select the most relevant threat or opportunity and to reallocate the in the next table. Then to write in another post-it (with different color) the strategies they would apply as a response to the relevant threats or opportunities.

<table>
<thead>
<tr>
<th>Threats</th>
<th>Opportunity</th>
<th>Potential Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the end we discussed with participant about their decisions, in order to explain the implication for each strategies.
### Appendix 5: Wine production in Tuscany workshop agenda

#### Sangiovese purosangue Workshop – Sustainability of viticulture in Tuscany

**Venue:** Padiglione Aule Esterne – Aula Magna Complesso San Niccolò – Università di Siena. Porta Romana /Via Roma, Siena

**Agenda**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.30 – 10.00</td>
<td>Arrival, registration</td>
</tr>
<tr>
<td>10.00 – 10.20</td>
<td>Prof.ssa Sonia Carmignani, Prorettore alla Didattica e Ordinario di Diritto Agrario, Università di Siena. Brief introductions and round of presentations</td>
</tr>
<tr>
<td>10.20 – 10.40</td>
<td>Prof.ssa Eloisa Cristiani, Ordinario di Diritto Agrario, Scuola Superiore Sant'Anna di Pisa. “The legal profiles of wine with particular regard to organic wine”</td>
</tr>
<tr>
<td>10.40 – 10.50</td>
<td>First round of discussion / stakeholder feedback</td>
</tr>
<tr>
<td>10.50 – 11.00</td>
<td>Dott. Lorenzo Costa, Università degli Studi di Siena. “Recover marginal land with sustainable agronomic practices”</td>
</tr>
<tr>
<td>11.10 – 11.20</td>
<td>Second round of discussion / stakeholder feedback</td>
</tr>
<tr>
<td>11.20 – 11.40</td>
<td>Prof.ssa Angela Zinnai, Associata di Enologia, Università di Pisa. “Wine project without added chemistry”</td>
</tr>
<tr>
<td>11.40 – 11.50</td>
<td>Third round of discussion / stakeholder feedback</td>
</tr>
<tr>
<td>11.50 – 12.00</td>
<td>Fourth round of discussion / stakeholder feedback</td>
</tr>
<tr>
<td>12.00 – 12.20</td>
<td>Dott. Daniele Vergamini Post-doc presso il Dipartimento di Scienze Agrarie, Alimentari e Agro-ambientali di Pisa. “The sustainability of wine production in Tuscany”. The coordination and consolidation processes of the sector, the new marketing strategies: The first results from the Tuscan case study of the European project H2020 SUFISA. Presentation of work to date / key findings</td>
</tr>
<tr>
<td>12.20 – 12.30 (10 mins)</td>
<td>Discussion of work to date / stakeholder feedback</td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>12.50 – 13.00</td>
<td>Sixth round of discussion / stakeholder feedback</td>
</tr>
<tr>
<td>13.00 – 13.30</td>
<td>Synthesis of the works and conclusions</td>
</tr>
</tbody>
</table>

Organiser: Enoclub Siena (Davide Bonucci) in collaboration with the University of Siena, Scuola Sant’Anna Pisa and University of Pisa (SUFISA project)
### Appendix 6: Wine production in Tuscany workshop attendees and questionnaire respondents

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angela Zinnai</td>
<td>Professor</td>
</tr>
<tr>
<td>Gabriele Ferrari</td>
<td></td>
</tr>
<tr>
<td>Dario Montesano</td>
<td></td>
</tr>
<tr>
<td>Romina Magrini</td>
<td></td>
</tr>
<tr>
<td>Silvia Parigi</td>
<td></td>
</tr>
<tr>
<td>Fabio Ratto</td>
<td></td>
</tr>
<tr>
<td>Angelo Bertaccini</td>
<td></td>
</tr>
<tr>
<td>Daniele Borri</td>
<td></td>
</tr>
<tr>
<td>Giuseppe Ferroni</td>
<td></td>
</tr>
<tr>
<td>Mauro Galardi</td>
<td></td>
</tr>
<tr>
<td>Lorenzo Costa</td>
<td></td>
</tr>
<tr>
<td>Monica Cinquini</td>
<td></td>
</tr>
<tr>
<td>Francesca Ventura</td>
<td></td>
</tr>
<tr>
<td>Roberto Rondelli</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 7: Tuscan wine sector – workshop questionnaire

Questionario multi-attori settore vino Toscana

“Implicazioni, prospettive e pareri sulle condizioni del settore e le strategie attuate dai produttori di vino in Toscana”

Obiettivi:

- Comprendere le principali condizioni economiche, ambientali, politiche, sociali e di mercato che influenzano le attività e le strategie nel settore vitivinicolo in Toscana.

- Identificare pareri e raccomandazioni su quali politiche possono aiutare il settore vitivinicolo rispetto ai principali problemi esistenti oltre a quelli discussi in questa mattinata.

I dati raccolti verranno utilizzati esclusivamente ai fini della ricerca, per tali scopi è garantito l’anonimato e il rispetto della privacy.

Scheda partecipante

<table>
<thead>
<tr>
<th>Nome e Cognome:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comune di Provenienza:</td>
</tr>
<tr>
<td>Qualifica:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apporre una crocetta:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produttore</td>
</tr>
<tr>
<td>Ricercatore/Professore</td>
</tr>
<tr>
<td>Enologo</td>
</tr>
<tr>
<td>Professionista laboratorio analisi enologiche</td>
</tr>
<tr>
<td>Referente istituzioni (Ministero, Regione ecc.)</td>
</tr>
<tr>
<td>Referente associazione di produttori</td>
</tr>
<tr>
<td>Rappresentante consorzio</td>
</tr>
<tr>
<td>Ente di appartenenza</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
</tbody>
</table>

### [Solo per le aziende: rispondere in riferimento all’annata 2015 o 2016]  

Nome Azienda e tipologia attività:

<table>
<thead>
<tr>
<th>Ha di superficie per attività prevalente (es. vigneto):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numero dipendenti:</td>
</tr>
<tr>
<td>Tipologie di vino prodotto:</td>
</tr>
<tr>
<td>Quantitativo medio di vino prodotto:</td>
</tr>
<tr>
<td>Fatturato medio annuo:</td>
</tr>
</tbody>
</table>

#### Apporre una crocetta:

- Sotto 500.000 Euro
- Tra 500.000 e 1.000.000 Euro
- Tra 1.000.00 e 2.000.000 Euro
- Altro

Percentuale di vino prodotto ma non venduto

Percentuale uva prodotta e venduta

Percentuale Uva acquistata

Principali Regioni/Paesi di esportazione:

<table>
<thead>
<tr>
<th>Quali condizioni hanno influenzato il settore vitivinicolo in Toscana negli ultimi 10 anni?</th>
</tr>
</thead>
</table>

#### Apporre una crocetta sul livello di importanza:

<table>
<thead>
<tr>
<th>Condizioni (negli ultimi 10 anni)</th>
<th>Per niente importante</th>
<th>Poco importante</th>
<th>Neutro</th>
<th>Abbastanza importante</th>
<th>Molto importante</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carico burocratico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aiuti all’espianto</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eliminazione diritti di impianto</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambiamenti nella normativa sull’etichettatura dei prodotti (DOC, IGP, Biologico, ecc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aiuti PAC e PSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlli su produzione e qualità</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registro telematico settore vitivinicolo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frammentazione dell’offerta regionale e conseguente debolezza sui mercati</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinta differenziazione nelle tipologie di processi e di prodotti</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambiamento dei modelli di consumo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambiamento climatico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animali selvatici</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aumento domanda vino biologico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instabilità dei prezzi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evoluzione tecnologie di comunicazione (internet, social network, e-commerce)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

238
Quali strategie possono contribuire al miglioramento del settore vitivinicolo in Toscana nei prossimi anni?

Apporre una crocetta sul livello di importanza:

<table>
<thead>
<tr>
<th>Strategie</th>
<th>Molto importante</th>
<th>Abbastanza importante</th>
<th>Neutro</th>
<th>Poco importante</th>
<th>Per niente importante</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricerca della qualità a tutti i costi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrazione verticale ad opera di grandi distributori (es. un attore della filiera <em>controllo</em> altre attività della filiera, a monte o a valle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forme di collaborazione orizzontale tra aziende del settore, associazioni di imprese, partnership, ecc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forme di consolidamento e networking per compattare l’offerta e acquisire più potere di mercato (es. AVITO, Distretti Biodinamici, ecc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Azioni collettive per la promozione e la comunicazione del territorio e dei prodotti biologici</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Azioni collettive per la facilitazione e la riduzione del carico burocratico (es. Supporto delle Istituzioni (Ministero, Regione, Ecc.) nella creazione di azioni collettive di promozione e marketing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supporto delle Istituzioni (Ministero, Regione, Ecc.) per l’innovazione (energia, bioeconomia, nuove pratiche, comunicazione) creazione di azioni collettive di promozione e marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Azioni di supporto delle Istituzioni per facilitare l’accesso al credito</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differenziazione dei canali di vendita anche attraverso il supporto di altri settori (vendita diretta, turismo, wine club)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Raccomandazioni per il settore:

Quali politiche potrebbero secondo lei contribuire a superare i problemi del settore nei prossimi anni?

<p>| Nell’ambito della promozione e comunicazione | COME? .............................................................................................................................................. |
| Nell’ambito dell’accesso al credito           | COME? .............................................................................................................................................. |
| Nell’ambito della                            |                                                                                                   |</p>
<table>
<thead>
<tr>
<th>Vendita (export)</th>
<th>COME? …………………………………………………………………………………………………………………………</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nell’ambito del cambiamento climatico</td>
<td>COME? …………………………………………………………………………………………………………………………</td>
</tr>
<tr>
<td>Altro</td>
<td>………………………………………………………………………………………………………………………………………</td>
</tr>
</tbody>
</table>

**Consent for Participation in Interview Research**

I volunteer to participate in a research project conducted by Dr. [Name of the Principle Investigator] from Century University. I understand that the project is designed to gather information about academic work of faculty on campus. I will be one of approximately 30 people being interviewed for this research.

1. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty. If I decline to participate or withdraw from the study, no one on my campus will be told.

2. I understand that most interviewees will find the discussion interesting and thought-provoking. If, however, I feel uncomfortable in any way during the interview session, I have the right to decline to answer any question or to end the interview.

3. Participation involves being interviewed by researchers from Century University. The interview will last approximately 30-45 minutes. Notes will be taken during the interview. An audio tape of the interview and subsequent dialogue will be made. If I don’t want to be taped, I will not be able to participate in the study.

4. I understand that the researcher will not identify me by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

5. Faculty and administrators from my campus will neither be present at the interview nor have access to raw notes or transcripts. This precaution will prevent my individual comments from having any negative repercussions.

6. I understand that this research study has been reviewed and approved by the Institutional Review Board (IRB) for Studies Involving Human Subjects: Behavioral Sciences Committee at the Century University. For research problems or questions regarding subjects, the Institutional Review Board may be contacted through [Information of the contact person at IRB office of Century University].

7. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

8. I have been given a copy of this consent form.

My Signature

Date
### Appendices Pears

#### Appendix 1: Pears interviewees

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apo Conerpo</td>
<td>[Fruit producer consortium] Chief</td>
</tr>
<tr>
<td>2. Istituto Delta Ecologia Applicata</td>
<td>[Research activity and technical assistance to agriculture and aquaculture] Associated Agronomist</td>
</tr>
<tr>
<td>3. University of Bologna</td>
<td>[Research in Agricultural economics] Professor</td>
</tr>
<tr>
<td>3. University of Bologna</td>
<td>[Research in Agricultural economics] Tecnichan</td>
</tr>
<tr>
<td>4. Opera</td>
<td>[Cooperative of pear producer] executive director</td>
</tr>
<tr>
<td>5. Mazzoni group</td>
<td>[Pear producer, storage and trader] Marketing area</td>
</tr>
<tr>
<td>6. Chinaglia Vivai</td>
<td>[Nurseries]</td>
</tr>
<tr>
<td>7. Regione Emilia Romagna</td>
<td>[Market organization and supply chain synergies] Officer</td>
</tr>
<tr>
<td>8. MARE.A /Mussel producer Consortium</td>
<td>[Research activity and technical assistance to fisherly and aquaculture production] Chairperson</td>
</tr>
<tr>
<td>9. Apo Conerpo</td>
<td>[Fruit producer consortium] agricultural technician- innovation variety</td>
</tr>
</tbody>
</table>
7.4.2 Appendix 2: Pears questionnaires

[Image of questionnaire with text in Italian]