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# GREEN ECONOMY: THE DEVELOPMENT OF MARGINAL AREAS IN THE HORIZON 2020 STRATEGY

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### Abstract

Bioeconomy refers to a system based on the smart utilization of biological resources based on sources from land and sea as industrial input and production of food. The Bioeconomy will also contribute to limiting the negative impacts on the environment, reduce the heavy dependency on fossil resources, mitigate climate change and move Europe towards a post-petroleum society. The work aims to investigate how the territorial marginality linked to socio-economic disparities can be a competitive advantage for the challenges proposed by the bioeconomy innovation strategy. An example of a Sicilian bio-cluster is indicated for a significant product differentiation and functional integration of agricultural and non-agricultural land, in which the spatial component rather than the sector-based one, reveals a new sustainable development process.

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## **1. Introduction**

What is bioeconomy? There is still no single definition, bioeconomy is often associated with the industries employing biotechnology, such as medicine. For the European Commission, however, the bioeconomy refers to products made with biological resources, and the use of biological material, such as plants to be used in innovative production processes thanks to the biomass plant. Some experts and the Kyoto Club, refer to the use of local raw materials plant in marginal lands or in rotation with food crops, food waste and agricultural waste and turn them into renewable raw materials. Renewable raw materials are used to produce in chemical sites through the use of new technologies, a number of bio-products. This can allow the innovative development of the entire supply chain, pulling even the company of transformation, which has always played an important role in the Italian industry. The aim of this work is to associate the European concept of bioeconomy to local development, linked to the processes of change in the internal and rural areas, which are usually seen as marginal by the economic point of view, but that can turn their disadvantage into positive elements of growth if related to the capacity of the economic and social agents network. In the first section, then, the concept of bioeconomy is presented in its European vision and in particular anchored to the innovation strategies identified in the Program of Europe 2020 and Horizon 2020. The second paragraph shows the conceptualizations of territorial clusters in which the space becomes dynamic container of competitiveness, while the third part presents the case of the Sicilian village of Valledolmo where, in the light of local characterizations of agricultural products, the case is proposed of a bioeconomy proto-cluster that needs greater institutional support, along with financial tools able to expand processes of growth which are no more spontaneous but organized on the territory.

## **2. Europe and the bioeconomy**

The Europe 2020 Strategy aims to boost the EU economy over the next decade, creating the conditions for a competitive economy that will allow the Member States to value existing resources, focusing on sustainable, inclusive and smart development. It sets out priority objectives to pursue and achieve, the tools to use and the method of governance to be adopted in this decade. The strategy, therefore, aims to fill some of the weaknesses of the models of growth by focusing primarily on innovation, that is the center of economic growth and competitiveness of enterprises.

In this context, Europe has given itself five objectives to be achieved by the end of the decade, covering:

- employment;
- education, research and innovation;
- social integration;
- the reduction of poverty;
- climate and energy.

The success of the strategy depends on a determined and targeted action, both at European and National level; member states should direct their policies under the seven priority initiatives that the strategy includes focusing on innovation, the digital economy, employment, youth, industrial policy, poverty and the efficient use of resources. In order to exploit this strategy it is necessary to create a strong network of communication that involves the whole scientific world, the political and business community. The funds to implement the European strategy are those for the common agricultural policy, the Horizon 2020 research program and other Community and National programs. In particular, the Horizon 2020 is the program for research and innovation for the financial period 2014 -2020, with an allocated budget of about €78.6 billion in current prices. The structure of the Horizon 2020 is composed of three pillars and five cross-cutting programs. The three pillars provide investments for excellence in science, industrial leadership and societal challenges. In particular, within the third pillar it has developed the strategy for the bioeconomy, which refers to an economy that is based on the intelligent use of biological resources and renewable energy from land and sea as factors of industrial production and output as food and feed, including the use of organic waste and processes based on bio-products for a sustainable industrial sector. These are areas that have a strong potential for innovation, as their products are used in many scientific fields (natural sciences, agronomy, ecology, food science and social science) as long as in enabling and industrial technologies (bio-technologies, nanotechnologies, information and communication). The European Commission, in response to the complex debate and to the recent steps on the path to sustainability, approved the *Innovation for Sustainable Growth: A Bioeconomy for Europe*, the strategy to encourage sustainable development through enhanced bioeconomy. The strategy leads to operational proposals under two main initiatives of the Strategy Horizon 2020: *Innovation Union* and *A resource-efficient Europe*.

The strategy includes a plan of action that evolves in an interdisciplinary approach, inter-sectoral and consistent to the problem. The goal is to create a society that can innovate and a low emissions economy, reconciling the requirement of sustainable agriculture and fisheries and food security with the appropriate use of renewable bio-resources for industrial purposes, while protecting biodiversity and the environment. The action plan is based respectively on three horizontal levels of intervention:

1. Investment in research, innovation and skills: this should include EU, national, private

investment and the promotion of synergies with other policy initiatives.

2. The development of the market and competitiveness in the fields of bioeconomy through sustainable intensification of primary production, the conversion of waste streams into value-added products, as well as mutual learning mechanisms for improved production and resource efficiency.
3. A closer policy coordination and a greater commitment of stakeholders, achieved through the creation of a platform on bioeconomy and an observatory that can verify over time the progresses and activities of the subjects interested in the topic.

The strategy aims to create synergies with other sectors, instruments and sources of funding for policies that share the same goals, such as the cohesion funds, the common agricultural and fisheries policies (CAP and CFP), the integrated maritime policy, environmental, industrial, employment, energy and health policies. The Bioeconomy in Europe in 2013 corresponds economically to about 2000 billion Euros in the fields of agriculture, forestry, fisheries, food production, the production of paper pulp and paper, chemistry industry, biotechnology and energy. It employs over 22 million people, accounting for 9% of total employment in the EU. The implementation of the strategy on the bioeconomy, according to estimates by the European Union, should multiply this value by 2025. For Europe, the strengthening of a large-scale bioeconomy provides benefits to the economy of rural areas, coastal zones, and industrial areas affected by the current economic crisis, reducing in this way the use of fossil fuels and increasing environmental and economic sustainability of industrial processes and in the production of primary goods. Europe decided to focus significantly on bioeconomy in order to face some social challenges come into being in the last years. The first challenge relates to food safety. The exploitation of biomass requires new strategies to achieve a sustainable increase in primary production, taking into account the technical options that are able to develop tacit local knowledge and indigenous productions that territories have (Schmid et al., 2012). This mechanism requires, therefore, a new management of natural resources in agriculture, forestry, fishery products and aquaculture for the production of biomass. The objective of the European Union is to produce "more with less" but even better. Following the trend of growth in global demand for biomass for foodstuffs and industrial products it is important to intervene in the processes of reduction and adaptation to climate change. The European Union, in fact, aims at the development of production systems with reduced emission of gases and adapting to the changes resulting from drought or floods. As regards the social dimension and in particular the creation of jobs, the bioeconomy is directed towards the growth of sustainable primary production, food processing industry and creation of bioraffineries and biotechnology industrial plants. The creation of new high-skilled jobs, thus, becomes a necessary requirement for these new industrial

equipment. The research and innovation in Europe need a new approach for the development of the bioeconomy. A good support is the design of a different international cooperation that will facilitate the exchange of scientific expertise in issues such as food security, climate change, environment and resources, capacity building and trade. Some EU Member States, including Denmark, Finland, Germany, Ireland and the Netherlands have already developed strategies for bioeconomy, while globally, Canada, China, South Africa and the U.S. can count on ambitious strategies in this field. It is no coincidence, then, that as part of the Horizon 2020 program, it was proposed the expansion of investments together with the emergence of new participatory models to draw with citizens and local communities. The Commission, in fact, predicted the development of partnerships both within the concluded Seventh Framework Program that in the current program Horizon 2020. But the success of this strategy requires the rethinking of the size scale of approach and a different valuation of the territories.

## 2.1. Natural Resources and European policies for the marginal areas

With the expected increase in world population and the consequent depletion and reduction of natural resources, Europe needs renewable bio-resources to produce safe and secure food and feed, materials, energy and other products.

The projections for the year 2045 about the world's population, as indicated in Table 1, show an estimated future population of 9 billion. The population growth would lead to a 70% increase in food demand, with an expected doubling of meat consumption.

*Table 1 (in millions). World's population. Distribution by continents. Years 2000-2050*

Year	World	Asia	Africa	Europe	Latin America	North America	Oceania
2000	6,115	3,698 (60.5%)	819 (13.4%)	727 (11.9%)	521 (8.5%)	319 (5.2%)	31 (0.5%)
2005	6,512	3,937 (60.5%)	921 (14.1%)	729 (11.2%)	557 (8.6%)	335 (5.1%)	34 (0.5%)
2010	6,909	4,167 (60.3%)	1,033 (15.0%)	733 (10.6%)	589 (8.5%)	352 (5.1%)	36 (0.5%)
2015	7,302	4,391 (60.1%)	1,153 (15.8%)	734 (10.1%)	618 (8.5%)	368 (5.0%)	38 (0.5%)
2020	7,675	4,596 (59.9%)	1,276 (16.6%)	733 (9.6%)	646 (8.4%)	383 (5.0%)	40 (0.5%)
2025	8,012	4,773 (59.6%)	1,400 (17.5%)	729 (9.1%)	670 (8.4%)	398 (5.0%)	43 (0.5%)
2030	8,309	4,917 (59.2%)	1,524 (18.3%)	723 (8.7%)	690 (8.3%)	410 (4.9%)	45 (0.5%)
2035	8,571	5,032 (58.7%)	1,647 (19.2%)	716 (8.4%)	706 (8.2%)	421 (4.9%)	46 (0.5%)
2040	8,801	5,125 (58.2%)	1,770 (20.1%)	708 (8.0%)	718 (8.2%)	431 (4.9%)	48 (0.5%)
2045	8,996	5,193 (57.7%)	1,887 (21.0%)	700 (7.8%)	726 (8.1%)	440 (4.9%)	50 (0.6%)
2050	9,150	5,231 (57.2%)	1,998 (21.8%)	691 (7.6%)	729 (8.0%)	448 (4.9%)	51 (0.6%)

**Source: United Nations, 2011**

We can capture immediately the dimension of the problem: the indiscriminate use of natural resources would become unsustainable without compensatory trade-off, and will have adverse effects on biodiversity and climate change. The basic needs of future populations are in contrast, then, with the exploitation of resources that are not endless. This contrast could be mitigated by the development and growth of a different approach to the economy, as well as the use of bio-economic sectors. The hope of the bioeconomy is to turn greater attention to the use of resources and their degree of substitutability in the long run.

The bioeconomy has the characteristics of an inclusive and multisectoral model, where different disciplines converge; it implies a deeper knowledge at the sectoral level, and on the other hand the need to make research broadly interdisciplinary, so as to break down complex problems into simple elements. Both the European policies that national policies leave room for a program that starts from the knowledge of the territory and its design. Regional development should consider the possibility of using the marginal areas, often excluded from the processes of change, but holders of little explored economic and environmental resources, suitable and compatible to the restructuring of the economic system. Regional policies assume, therefore, an important role, in particular for those regions that are located in economically disadvantaged situations. The actions of local actors become fundamental in the direction of development of these areas (Provenzano, Seminara, 2014). The implementation of the strategy requires, therefore, a local approach that takes into account the geographical, developmental and environmental circumstances, the individuality and uniqueness of European territories. Marginal areas become holders of economic and environmental resources that have been little explored which are consistent with an alternative model of growth proposed by Europe. Since the 90's of the last century there has been a gradual transformation of the policies of intervention for the development of marginal areas, using issues of analysis such as integrated and sustainable development, promotion of endogenous resources and bottom-up development. Amin (1998), Amin and Hausner (1997), Granovetter (1985), provide contributions based on methodologies that rethink the role of the state in the dynamic of development and in a broader sense enhance the role of institutions in local development planning, mobilizing endogenous potential of less favored regions as a tool to improve competitiveness. The development, therefore, is seen as a progressive enhancement of unused stock of existing resources, that are scarcely transmitted and exchanged in markets. It follows, then, the contemporary development of regional and national strategies of bioeconomy through the mapping of existing activities, promoting a "strategic dialogue with the authorities

responsible for rural and coastal development and cohesion policies in order to maximize the impact of existing funding mechanisms "(European Commission, 2012), promoting the strengthening of regional markets on both the demand and the supply of bio-economic goods.

The improvement in demand is obtained through the reduction of information asymmetries of consumers with respect to the production and properties of the products, especially in highlighting characterization of credence goods (Provenzano, 2008). The bio-economic goods become trustees products more responsive to the needs of discerning consumers wishing, in this way, to participate actively with their purchases to the process of the correct determination of the demand. On the supply side, the change occurs through the development of new biomass and primary production in various sectors, the creation of different marks, while the production requires the establishment of logistic networks, such as bio-refineries, associated with public-private partnerships focused on research and innovation. This is, indeed, a very ambitious plan which is characterized on specific lines of action of the real European economy in which, ignoring different approaches to bio-economy as the issue of bio-technologies (McKelvey, 2008), it offers significant opportunities to territories hitherto partially influenced by processes of endogenous growth and development of the territory. Each country is characterized by economic, social and spatial differences with an inhomogeneous distribution of resources, wealth, work activities, infrastructure, probably not in network, but taking a new role in the stages of structural change in economy. Each region should be able to follow their own areas and develop a strategy specifically dealing with bio-economy. The actions of local actors become fundamental in the direction of development of their area. The sociological and economic theories agree on the existence of possible synergistic effects in the implementation of development policies, from the dialogue between institutions and civil society, expanding the number of subjects involved in the very definition of local growth strategy (Ruzza, 2004). Administrative decentralization, programming bottom-up and the evolutions of the regional policy of the European Union are the main elements of these changes. Responsibility for regional prosperity is transmitted from the central government to the regions themselves, reflecting the transition to neo-liberal model as the guarantor of the welfare of the citizens towards a higher degree of self-sufficiency of individuals. The bio-economy adjusts to a local approach and the territories that have remained on the margins have the ability to implement new models of growth being more inclined to innovation and creativity. The creation of a European bioeconomy is, therefore, a great potential, as it maintains and fosters economic growth and the creation of jobs in industrial, rural and coastal areas; reduces dependence on fossil fuels; improve the economic and environmental sustainability of primary production and processing industries. The outlying territories, which have not been protagonists of the great industrial growth and characterized by structural delays, can take advantage of the

great opportunities that the bioeconomy offers, just focusing on the peculiarities that distinguish them. The absence of large industrial complexes, which allowed the preservation of green areas, as long as agriculture, forestry and fisheries, which are the main sectors of these areas, can, if placed in a new economic perspective, become elements of potential for all marginal areas. These areas can use their marginality for their economic restructuring that give more focus on the methods and principles of bioeconomy. The characteristics of the marginal territories excluded from economic growth can today offer a competitive advantage. Focus on the singularity of a territory and the uniqueness of its products, without transcending its resources and the environment, can become the trump card for local development. Enterprises and government agencies can offer regional, cultural, and environmental peculiarities, highlighting the attractive elements of their place of origin or emphasizing the natural environment of their place of production; In other words, it is possible to carry out maneuvers of "encapsulation of the territory-culture within products" (Ray, 1998), leading to increased competitiveness inasmuch as structurally differentiated. This process of local recognition, however, requires a dimension of market and offer that only a set of enterprises, or network, is able to guarantee.

### **3 The territorial Clusters and the local development**

Networks are widely used in socio-economic studies and may be useful for understanding some forms of local development. In the last two decades the key concept of stability has lost consistency and has been supplanted by that of flexibility, considered as "the ability of rapid adaptation to external changes, otherwise the survival of the organization itself in danger" (Trigilia, 1999). The research for greater flexibility was then accompanied by the pursuit of quality of products, in order to respond to the growth of heterogeneity of individual preferences (Weisbrod, 1964). The search for flexibility and quality, translatable in innovation processes, are now more closely linked to cooperation processes involving the sharing of a common language, forms of tacit knowledge that enable to exploit the peculiarities of territories, not involved in the processes of economic growth until a short time ago. The innovation is a central factor in the development of marginal areas, both in terms of diversification as in terms of competitiveness, as well as in relation to new forms of governance. The social-economic actors play a fundamental role in the development of a local context, especially for areas that are characterized by limited access to resources (Espercia, 2014). The interconnection between sectors, which Europe hopes for the development of the bio-economy, would find ample space in new forms of aggregation and network processes, collaboration and cooperation, well interpreted by the clusters. In terms of definition: "*Clusters are geographic concentrations of interconnected companies, specialized*



*suppliers, service providers, firms in related industries, and associated institutions in particular fields that compete but also cooperate... The geographic scope of a cluster relates to the distance over which informational, transactional, incentive, and other efficiencies occur"* (Porter, 2000), that is interconnected production systems, involving sectors related to a particular territory, that compete but also cooperate. The definition of a cluster should however be extended, compared to a mere categorization of the sector; it captures important linkages, complementarities, and spillovers in terms of technology, skills, information, marketing, all needs that cross businesses and industries. It is also necessary to grasp the relational aspect that characterizes the cluster, the relationships that develop between enterprises, institutions, organizations, and communities (Becattini, 1998), reflections of social capital as a network of relationships, the glue that holds together the stakeholders within a cluster (Coleman, 1990; Putnam, 1993). Research in the area of economic and social relations becomes search resource, through a strategic approach that promotes the competitiveness of an area. The competition and innovation are made possible by the presence of common values and interests that transcend the collective and the individual. The search for flexibility and quality not only leads to a restructuring that increases the autonomy of the internal structures of the companies, but especially can cause a greater need for external cooperation. The proximity in geographical, cultural and institutional terms, allows the access to special relationships, better information, strong incentives, and other benefits in terms of productivity and productivity growth, otherwise difficult to perceive at a distance. The mechanisms of formal and informal organization and cultural norm can play an important role in the development and operation of the cluster that provides a vehicle to conduct businesses and institutions in a constructive and collective dialogue . The clusters become, therefore, a different way of thinking about national economies, regional and local authorities, with a diversified dynamic hierarchy and new roles for enterprises. An element present in marginal areas is the fact that interpersonal relationships can also be a result of geographical proximity; in fact, at the local level everybody knows each other, helping to create an atmosphere similar to that of the local district of Marshall. Drawing the boundaries of the cluster involves a creative and informed process with the understanding of linkages and complementarities of all sectors and institutions. The cluster are groups of companies and institutions located on the same area and they constitute a significant economic sector in the European context (Rocha, Sternberg, 2005). The management model of these groups can not be universal, but there are different methods that vary within the European Union, designed and implemented at local, regional and national level depending on their scope and ambition. The formation of clusters, instruments able to enhance the competitive strength of a place can become the tool to take advantage of the financial resources of Europe. The cooperation and relations between regional and local institutions, universities, research

centers, businesses and communities are crucial aspects in the change of economic policy management. Competing at the global level poses challenges especially at the local level and the formation of clusters that choose the bio-economy as an engine of development can make the necessary change required at this stage of economic difficulties.

### **3.1. The space and the dynamics of local entrepreneurial**

The regional development, especially the development of the weakest regions, requires incentives towards fertile lands that are pervaded by business dynamism. Entrepreneurship has received in the recent past a prominent place in economic theory, since it represents a key role for economic growth. In contrast to the traditional theories of growth, where technological progress and innovation have been considered as an exogenous force (manna from heaven), the theories of endogenous growth confirms that innovation and entrepreneurship are endogenous forces led by various actors in the economic systems and can be guided by smart public policy.

This new theoretical framework puts a lot of emphasis on critical success factors such as competition, acquired interests, the R & D, knowledge spillovers, human capital, industrial culture and entrepreneurship (Fisher, Nijkamp, 2009). In this context, the marginal areas are incubators of business change. They are characterized by widespread information that allows a localized learning, thanks to the interaction between local actors participating in the same production and culture system (Camagni, 1991; Storper, 1992, 1993). The economic process becomes immaterial, intended as conversation and coordination; stakeholders in the process are not factors but reflexive human actors, individual and collective, and the nature of economic accumulation is not only in material goods but also in relational activities (Storper, 1996). Such framework encourages the creative and innovative personality, that is entrepreneurs who are capable of an internal change in the economic structure. A paradox of globalization is that the territories are important because the spatial proximity to knowledge can confer a competitive advantage (Audretsch, Aldridge, 2009). The continuous search for new knowledge becomes imperative for companies and can come from two main sources (Scott, 2006). First, firms acquire knowledge as learning based on their own internal resources. Learning by doing is without any doubt the most pervasive means by which they do it, especially in the case of small firms (Antonelli, Calderini, 1999). Second, firms also learn appropriating knowledge produced by external sources, from other firms or institutions such as universities or research institutions. The ways in which companies tap the knowledge are many and varied and include written texts, informal conversations, inter-company mobility of employees, strategic alliances, and so on. In this way, the knowledge produced in a territory is acquired through spatial interaction (Audretsch,

Fritsch, 2002).

#### **4. The marginal Enterprises of Valledolmo: a protocluster of bioeconomy?**

An example of the reasoning developed in the previous sections is given by Valledolmo, village within the province of Palermo. Here are some regional references to catch the peculiarities of the considered area. Sicily with about 5 million inhabitants (2011) represent 8.4% of the Italian population, and is ranked fourth among Italian regions in terms of population.

The 9th general census of industry, services and non-profit institutions recorded in the island 271.714 enterprises (6.1% of the national total). The province of Palermo, with its 1.239.808 inhabitants, is the sixth largest province as regards demographic size representing about 25% of the Sicilian population and 2.1% of the Italian population. The territory is composed almost entirely of hilly and mountainous areas, so the coastal area consists of large urban concentrations: only 312 kmq out of a total of 4.992 Km<sup>2</sup> is located in the plains. This factor contributes to keep high the share of the population living in towns with more than 20.000 inhabitants (70,57%) is much higher than the Italian average (52.68%) as well as the Sicilian average (64.54%). The small hilly and mountainous countries are generally united by a low level of local planning due, in part, to a lack of capacity of government and, in part, to a low entrepreneurial dynamism, linked to obvious forms of depopulation, to the reduced number of tourists, the precariousness of the system of infrastructure connecting area (Abbate, 2005). The province of Palermo, in contrast to the picture outlined before, has proved to be a lively area over the years, where aggregations have been able to distinguish themselves for organizational and planning capacity. They were born during the years of the pact society, local agencies for development that have contributed to the adoption and diffusion of territorial policies that depart from the bottom. In particular, the villages of the Madonie fall into geographical areas which, although peripheral, have established institutional forms of inter-organization and socio-economic partnerships . Since the beginning of 1995, the territory started the Forum on Territorial Pact of the Madonie, signed at CNEL on the 23 October of the same year and approved by the CIPE on the 10 December 1996. The premises of the Territorial Pact revolved around the local context and environment of Madonie, characterized by a cultural and natural heritage of great interest, which deserves to be valued and promoted for the purpose of socio-economic development of the whole territory. The task of the Pact was to bring together the existing resources, stimulate local entrepreneurship and intervene to bridge the existing infrastructure and services deficit. The Pact, finally, has placed among its objectives the formation and retraining of local human capital. In the context of the Covenant of the First Generation (1997) a total of 7 infrastructural interventions and 21 entrepreneurial

interventions have been funded, for a total amount of 52.726 billion lire.

Six out of the 21 beneficiary companies are related to the supply chain of agro-food (dairy products, bread, tomato and honey) that triggered investments of around €2.2 million of euros corresponding to 16.3% of the total investments made. In the field of services two transactions have been made that have resulted in investments of approximately 1.9 million of euros or 14% of the total. The tourism sector and in a special way the activity of agritourism and rural tourism has been involved in the activation of seven new firms with investments amounting to 3.1 million euro. The bulk of the investments was attracted by the actions pertaining to the manufacturing sector and traditional crafts (ceramics stone and wood processing,) with approximately 6.1 million euro equal to 45% of the budget of the Covenant. The inland area of the province of Palermo is also the protagonist of the territorial Pact “Valle del Torto e dei Feudi” approved by Ministerial Decree n. 2385 /2000. The Territorial Pact has provided 28 business initiatives and investments for a total amount of 53.686 billion lire. As part of the negotiated planning of these territories, Valledolmo is notable for some interesting experiments. Its territory is configured as a particularly active system, characterized by positive examples of local programme, and a strong entrepreneurial spirit. The production system of Valledolmo is comparable to the Black Swan by Taleb (2007), something new and never seen before, an economic and entrepreneurial innovation and creativity in an area extremely difficult, both for its geographical remoteness, both for the distance from the centers of greater economic importance in Sicily and in the presence of strong lack of basic infrastructural facilities. Businesses in the “valledolmese” area, thanks to the efforts of negotiated procedures and a strong partnership with the local credit institution (BCC Valledolmo), have created an economic reality, which if supported and expanded, could act as a springboard for the bio-economic development of the entire area. The business is affected by the prevalence of small and very small enterprises. Agriculture is the predominant economic activity and for people from Valledolmo is almost a way of life, a way of thinking and acting according to a logic that is handed down from generations to generations. The potential of this area is based on agro-food firms, and a few really interesting crafts. The entrepreneurial density is among the indicators that describe the health and vitality of a local economic system, a measurement of the concentration of business initiatives in an area, so that the higher the entrepreneurial density, the higher the probability that new businesses develop according to existing patterns of specialization. The business structure of the province of Palermo consists of more than 98.590 local units presenting a decidedly low business density: 7,9 firms per 100 inhabitants by more than 2 percentage points below the national data.

*Table 2. The entrepreneurial density in the municipalities of PIST Madonie – Termini*

<b>Cod. ISTAT</b>	<b>Municipality</b>	<b>Population</b>	<b>Number of local units</b>	<b>Entrepreneurial density ( l.u. per 100 inhabitants)</b>
82076	Valledolmo (PA)	3.753	682	18,17
82069	Sclafani Bagni (PA)	454	76	16,74
82055	Petralia Soprana (PA)	3.469	497	14,33
82065	San Mauro Castelverde (PA)	1.896	270	14,24
82036	Gangi (PA)	7.102	948	13,35
82024	Castellana Sicula (PA)	3.612	441	12,21
82051	Montemaggiore Belsito (PA)	3.574	425	11,89
82037	Geraci Siculo (PA)	1.943	231	11,89
82027	Cefalù (PA)	13.807	1.583	11,47
82068	Sciara (PA)	2.856	320	11,20
82002	Alimena (PA)	2.187	244	11,16
82058	Polizzi Generosa (PA)	3.656	399	10,91
82015	Caltavuturo (PA)	4.219	456	10,81
82028	Cerda (PA)	5.369	573	10,67
82003	Aliminusa (PA)	1.334	141	10,57
82056	Petralia Sottana (PA)	2.980	288	9,66
82012	Bompietro (PA)	1.503	144	9,58
82001	Alia (PA)	3.907	372	9,52
82032	Collesano (PA)	4.118	391	9,49
82044	Lascari (PA)	3.489	331	9,49
82082	Blufi (PA)	1.094	95	8,68
82017	Campofelice di Roccella (PA)	6.939	592	8,53
82022	Castelbuono (PA)	9.301	790	8,49
82042	Isnello (PA)	1.638	138	8,42
82070	Termini Imerese (PA)	27.702	2.324	8,39
82081	Scillato (PA)	637	53	8,32
82041	Gratteri (PA)	1.016	79	7,78
82059	Pollina (PA)	3.070	218	7,10
	<b>Total</b>	<b>126.625</b>	<b>13.101</b>	<b>10,82 average</b>

*Processing of data from the Institute Tagliacarne (2011), Source: The Atlas of competitiveness of the provinces and regions.*

The entrepreneurial tissue is characterized by the prevalence of small and very small firms and the almost complete absence of large-scale businesses. Valledolmo, with 18 businesses per 100 inhabitants, appears to be the first country in the Madonie and the second in the province of Palermo, after Camporeale, for entrepreneurial density. The entrepreneurial spirit is alive in the territory, as also seen from the set of interviews conducted on site. The presence of a large number of entrepreneurs allows the development of collective learning processes that enhance entrepreneurial skills (Andersson, Koster, 2009). The spatial proximity of firms in a given area affects the economic development prospects of the same. The actions taken at the micro level affect the evolutionary processes of knowledge creation at the aggregate level (Maskell, Malmberg, 2007). The geographical marginality was source of research for innovation and creativity for companies of Valledolmo, and cooperation and collaboration are essential to the survival and presence in the market. A best practice is that of some “valledolmesi” companies of the agri-food sector that in the form of a consortium have experienced an identity linked to the characteristics of the territory in order to obtain a competitive advantage. The Productive Consortium of Valledolmo, as indicated in the statute, is a consortium of local businesses that create "networking", and highlight the colors, perfumes, flavors, traditions and the quality of life of the area to enhance the historical agriculture passion, handicraft industry, to turn them into opportunities for local economic development. The consortium model, adopted by enterprises, reflects a pattern of horizontal network (Murdoch, 2000). The advantage of this model is that it does not require geographical proximity between its nodes, but rather mechanisms of connections between them. The horizontal network describes a development path characterized by product differentiation and functional integration of agricultural and non-agricultural land, in which the spatial component prevails over the sector one. The dynamics of these networks are based on the associative capacity and organizational flexibility, rather than on hierarchy and specialization. The result is a more active role of local actors, and their greater centrality in the control of knowledge and generation of innovation. According to this view the same system of knowledge can be modeled as a network of information, which helps to structure other networks and co-evolve with them (Provenzano, 2008).

The aggregation of the consortium is set up as the first experiment, almost unconscious, of a different economic model, where the bio-economy has a prominent role and cooperation becomes essential in order to gain an international competitive advantage, not possible if managed separately from associated companies, because of the size of scale. The consortium or even better the bioeconomy proto-cluster partly reflects a union of partly dynamic firms, which in addition to the individual development call for an overall locally growth. The quality of the products in which the territory is reflected is the distinctive element and appreciated by the demand

(Provenzano, 2008). The Consortium of Valledolmo was born on 28 March 2009 and includes eight companies of the following sectors: agro-food industry, handicraft, tourism.

*Table 3. Enterprises in the consortium*

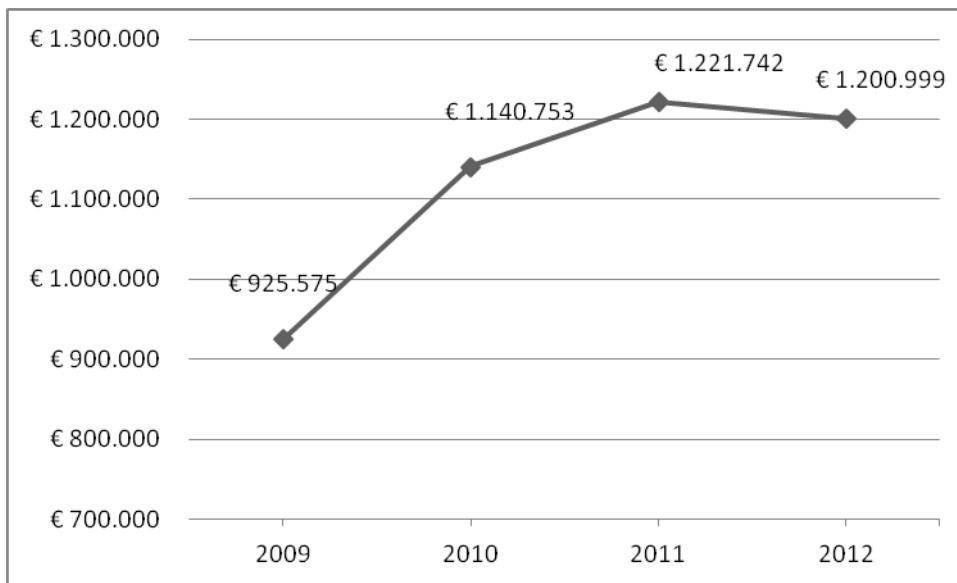
<i>Enterprises</i>	Code ATECO	Legal Form	Production of	Year of birth	Year of transformation
1. winery	110210	S.p.A.	wine	1974	2005
2. pasta	107300	s.r.l.	pasta	1998	2004
3. dairy	16300	s.s.	cheese	1972	2007
4. agricultural	16300	Soc.Coop. a.r.l.	tomato sauce	1970	2006
5. agricultural	16209	Soc. Coop.	pkg. meat	2004	
6. agricultural		Ass. agricola	oil	1998	2008
7. building	234100	S.n.c.	pottery	2005	
8. agritourism		Impr. Individ.	service	2002	

The companies of the consortium, shown in Table 3, are characterized by the production of high quality products, and the search for an efficient use of local resources that respects the environment by using renewable energy sources (different companies have plants PV) and moving towards an economic model of eco-sustainability. The turning institutional point for companies of the Consortium is registered with the participation in the Territorial Pacts “Valle del Torto e dei Feudi” and that of the Madonie previously indicated. The funds have allowed us to implement a radical transformation, a structural and organizational renewal that has allowed to invest in quality and complete the production chain. The financial resources are not the only factors of the small local economic revival. Creativity and entrepreneurship, together with the network of fiduciary relationships that have been established in the territory have allowed to take a quantum leap from the individual companies that subsequently have sought the aggregation.

*Table 4. The cluster of the associated companies, turnover and number of employees.*

	2009	2010	2011	2012
N. of companies surveyed	6	6	6	6
Total Business Volume	€925.575,00	€1.140.753,00	€1.221.742,00	€1.220.999,00
Tot. n. of annual employees	13	16	14	13
Tot. n. of seasonal workers	22	19	23	26

*Chart 1. The evolution of the turnover of the cluster.*



In particular, the agro-food companies that have focused on the processing of the products of the territory (eg: local, non-irrigated tomato "siccagno", wheat and indigenous grapes), between 2009 and 2012, characterized by systemic crisis, recorded a positive trend in terms of both turnover and stability of the labor factor. The role of local BCC was crucial in order to allow small businesses in the area to access to credit, underlining the important role for banks that operate in local communities and civil society. The knowledge of the area, proximity to economic operators allow to reduce the costs associated with the assessment of creditworthiness and the management of credit. The reduction of information asymmetries makes it possible for types of customers that would otherwise remain excluded, to access to bank loans.

## **5. Conclusions**

The genesis of the Consortium of Valledolmo in his spontaneous growth, started with the mechanisms of negotiated planning, shows how the bioeconomy, if supported by policies and actions on the ground, reflects new modulations of local development in a perspective of environmental sustainability and size of the processes of local growth. The challenge, then, is the creation of an environment conducive to the formation of clusters, involving small and medium-sized enterprises of industries located in the inland areas of Sicily, using methods and tools that are compatible with bio-economic processes and public-private partnerships, can trigger a virtuous circle of development in marginal areas. The example of Valledolmo directed towards a green growth and investing on local products, pointing to aggregation to compete at international



level in a programming framework of regional policies in the period 2014-2020 look to the bio-economy, is of considerable interest. Accurate knowledge of the territories is a prerequisite, so that you can actually implement policies that really support the ability of the marginal territory rarely exploited until now. An integrated approach to bio-economy, based on incentives, European regulations, knowledge of the territories, can respond to the new strategic plan for 2020 but integrated with the regional and local priorities for an intelligent encoding of production specialization and a real competitiveness. If the experience of a bioeconomic protocluster in Sicily was initiated, it remains still a working hypothesis the size of scale to be achieved and the credit conditions of support necessary for the growth; these elements are unavoidable for a growth that over time proves not simply the result of a set of initial conditions hardly repeatable if not to a little dimensional scale.

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