

AGRO-PASTORALISM AS AN ASSET FOR SUSTAINABLE MEDITERRANEAN ISLANDS

Abstract

The Mediterranean represents a rich and fragile setting, in agro-ecological, as well as in socioeconomic terms. The region is increasingly beset by a growing human presence, as well as by climate change dynamics. A number of complementary and contradictory trends are putting huge pressure on the natural resource base, the traditional systems of resource utilization and management and the overall sustainable development dynamics of the region. Despite the fact that their economic importance decreases within the development process, agro-pastoral production systems are still important activities on Mediterranean islands in terms of employment and income, but also for the functioning of the ecosystem and landscape management. Traditional agro-pastoral systems have gone through important reshaping in recent decades, and today they have to confront with a number of factors which challenge their future development patterns. Tourism development in many areas represents an interesting opportunity to link traditional production systems with wider market opportunities, while the migrant labour force holds an important potential in tackling the generational renewal problem. Based on a territorial-development approach, the paper looks at the potential and challenges of agro-pastoral systems in averting agro-ecological and socioeconomic desertification processes on Mediterranean islands.

Key words: pastoralism, Mediterranean, biodiversity, agriculture, cheese

INTRODUCTION

The restructuring of the agricultural world that has characterized economic development patterns in the last decades has contributed to the intensification of social and spatial differentiations in the rural world. In the Mediterranean, this phenomenon is particularly intense due to the features of the region and to the environmental change caused by demographic pressure and climatic patterns. The main problems that rural communities and agricultural enterprises face today in Southern Europe relate to the decreasing economic viability of agricultural production, which triggers the exodus of rural youth in search of a more promising future away from the countryside, leading to demographic ageing and problems of generational renewal.

Mediterranean islands are particularly exposed to dynamics relating to agro-ecological as well as sociocultural and economic drivers. In particular, Mediterranean islands have increasingly suffered from patterns of dualistic, asymmetric development. Coastal areas face urbanization, while traditional livelihood systems are based in the inlands, where agro-pastoral activities tailored to the local climate and soil conditions

constitute the main economic activity. In recent decades, the core of the local economies has shifted significantly towards the coastal, touristic areas which are crowded by tourists in summer and attract more and more permanent population throughout the year due to economic development and diversification. As a result of these discrepancies, problems of poverty, abandonment and population ageing have been increasingly appearing in inland areas, whereas income and employment opportunities become scarcer. The primary sector has lost dynamics vis-a-vis tourism-related activities, and the fact that local food value chains are not adequately connected to the booming opportunities developed by the tourism industry lies behind these developments.

Agro-pastoralism represents a key practice to maintain large parts of the Mediterranean alive and productive by providing income and employment, contributing to the management of the rich-but-fragile natural resource base and also defining a part of the local identity and sociocultural heritage. This activity shows interesting signs of resilience and adaptation to the restructuring that has recently affected the livestock sector. However, modern agro-pastoralism faces degrees of unpredictability and risks that relate not only to ecological and climatic factors, but also increasingly to the factors originating in the political, commercial and administrative spheres. Paradoxically, the products and services of agro-pastoralism have been increasingly appreciated by modern society (quality proteins, organic production, biodiversity, ecosystem services, landscape and culture, etc.), but the number of flocks and shepherds has been decreasing all over the countryside. Foreign workers have played an important role in maintaining inland areas and agro-pastoral settings alive and have thus importantly contributed to the maintenance and evolution of this traditional practice process. Notwithstanding these trends, agro-pastoralism remains the most important asset in tackling climate change and desertification patterns affecting marginal territories in the Mediterranean (Nori & Davies, 2007).

The purpose of this paper is to provide insights into the role of agro-pastoral activities on Mediterranean islands and particularly to discuss the potential of these activities to contribute to the islands' balanced development. The multifunctional outputs of these systems represent valuable resources for supporting territorial development; the paper discusses ways and strategies to initiate social innovation in these environments, which will assist locals to recognize these outputs as development assets and integrate them into the vibrant tourist activity of the islands.

PASTORALISM ON MEDITERRANEAN ISLANDS

The rearing of small ruminants represents the most traditional production system on Mediterranean islands, and it still constitutes an activity critical to maintaining their inland territories inhabited and productive. In general, small ruminant production systems vary from extensive sheep and goat farms, which make small investments in infrastructure and take advantage of natural vegetation and autochthonous breeds, to intensive farms, which rear improved breeds and are based on forage and concentrates. The lat-

ter type is emerging in some areas in order to contribute in achieving nationwide goals (e.g. Cyprus), or as a result of changes in economic activity and social models, e.g. Greece (Ragkos & Abas, 2015) and Sardinia, Italy (Pulina & Biddau, 2015; Meloni & Farinella, 2015; 2017). However, agro-pastoral systems — the most important among extensive livestock production — are the most abundant. In particular, agro-pastoralism is an extensive livestock system, a traditional practice in all countries bordering the Mediterranean, where much of the animal feed is obtained from grazing. Such systems enable the development and management of natural resources in marginal territories, whose agro-ecological characteristics hinder agricultural intensification. In the Mediterranean context, these include mountain areas or semi-arid lands and many island territories. Most agro-pastoral enterprises lie somewhere along the intensive-extensive continuum, involving specific managerial features, product qualities, as well as socio-economic and environmental implications, and move along the different options according to existing opportunities (i.e. farm gate price of organic production, price of fodder etc.). Pastoralism has been increasingly appreciated in Europe and elsewhere for its primary (quality animal proteins), as well as for its secondary products (ecosystem services); however, as it will be discussed in the subsequent section, this awareness is not reflected in the European Union's (EU) policies and in the prices of these products.

Agro-pastoralism is multifunctional; as a working definition, this corresponds to the fact that agro-pastoral systems produce a wide range of goods and services alongside food — milk, meat, dairy products, etc. (Meloni & Farinella, 2017; Meloni et. al., 2015). The former outputs are non-traded, which means that they have public-good characteristics or are externalities, affecting various aspects of human activity (Ragkos & Nori, 2016). The multifunctional character of agro-pastoralism manifests itself through numerous situations and characteristics of inland territories of Mediterranean islands, which are very briefly outlined below

- Mediterranean islands are rich territories in terms of the *biodiversity* of flora and fauna species, and the territories there are a result of long-standing and intricate human-nature interactions. Agro-pastoralism is a traditional activity in these areas, and sheep and goats which roam and graze have greatly contributed to the development of local landscapes, important natural parks and reserves. In addition, experience shows that ecosystems degrade fast once human presence disappears and risks of wildfire and hydro-geological hazards grow proportionally. Moderate livestock grazing plays an essential role in the management of natural rangelands, and thus contributes to the protection of floristic diversity and to the natural renewal of vegetation, and provides a most effective way to store CO₂.
- *The socioeconomic role of pastoralism* is of the utmost importance for inland areas where the economic activity is not sufficiently diversified, as it provides employment and income. Due to this socioeconomic role, agro-pastoralism is a pillar which protects livelihoods in inland areas and averts depopulation. Interior portions of these islands have in fact suffered severe abandonment in recent dec-

ades, with consequences for the economic tissue, socio-cultural diversity and for the management of natural resources alike; nonetheless, these issues would have been much more pressing nowadays if agro-pastoral activities had been abandoned.

- *The agricultural cultural heritage* of pastoralism and the heterogeneity of its sociocultural contributions are some of the multifunctional features that have characterized the islands' pastoral territories up to now: tacit knowledge concerning the functioning of local ecosystems, herd and rangeland management (e.g. survival and reproduction strategies, family labour management and the role of female members, etc.), valuable practical knowledge of natural processes and of flora and fauna species, habits and customs, traditions, norms and tacit rules, and especially processing skills, including the manufacturing of typical dairy products (Meloni et al., 2015). These features comprise Intangible Cultural Heritage which encompasses many traditions, practices and customs, stories and family/community events, languages, etc. Commonly intangible cultural heritage is described as a list and there is no comprehensive definition to be provided (Kurin, 2004). The reproduction of pastoral farms essentially involves passing not only the farm to future generations, but also a whole range of cultural and traditional aspects which characterize rural life in these areas.

- The relevance of pastoralism is also reflected in the production of *high-quality typical dairy products*. Traditional products from Mediterranean islands are often certificated as PDO/IGP and characterize the local territories; more often than not, these products and their production process constitute intangible cultural heritage. Local diet and traditions on each island are enriched by characteristic cheeses (i.e. Halloumi cheese in Cyprus, Graviera in Crete, Fiore Sardo dei Pastori in Sardinia, Mahón in Baleares, Paški in Pag, Flor de Guía in Gran Canaria, Toma in Sicily, the PDO Fiore Sardo), but also other local cheeses such as S'Axrida or Su Casu Marzu which have important marketing potential.

The effects of these local collective goods reach society through complex chains with multiple stakeholders. In fact, the values of non-traded outputs of agro-pastoralism are incorporated in its products; thus, agro-pastoralism generates food value chains endowed with particular social, economic and environmental features, which are not properly priced through market mechanisms. As a result, the true contribution of agro-pastoralism to societal objectives is not fully accounted for, which provides an explanation for its decreasing role on Mediterranean islands over time. In fact, the implicit values of agro-pastoral multifunctional outputs are not fully transmitted along the links of the value chain, because they are not properly valued and appreciated due to market failures. Most social, environmental and cultural values of agro-pastoral products are thus "lost" across the value chain and the final consumer is often unaware of this whole range of features.

SECTOR RESTRUCTURING

The economic role of the islands' agro-pastoral systems has decreased during the past several years, following the trend of the primary sector on Mediterranean islands. This phenomenon characterizes the rural world in general, with a specific impact on family agriculture and extensive systems. This traditional practice has suffered a dramatic decrease in terms of animal and people consistency, with about one fourth of the EU flock lost in the last two decades, according to FAO (2011). The sector, as it is, does not seem to ensure decent living and working conditions for its operators. Since agro-pastoralism is facing critical times, the food value chains it supports have also lost pace in recent decades, thus reducing its overall contribution to the development of island territories.

At the production level, most agro-pastoral farms suffer from structural and institutional deficiencies including: low productivity, inadequate marketing, high production costs (especially due to a limited production of feedstuff, whose importation involves economic and environmental costs), problems in generational renewal, changes in land uses (protected areas, energy generation, etc.), competition from large-scale producers, dairy imports and distribution chains which have accompanied the commoditization of sheep milk products in the global agri-food business.

Despite the fact that market arrangements have been taking place in certain areas to enhance adaptation to this context, agro-pastoral products typically face difficulties in receiving the economic share they deserve: conventional marketing channels, unfair commercial practices and the development of mass tourism have steered businesses away from the local production of quality. Low-cost tourist packages call for industrial products, which are cheaper, but of inferior quality, as their consumers are not interested in the 'story' that agro-pastoral dairy products 'narrate'. Having to compete in such a setting, local products are not paid for according to the qualities they have and are gradually excluded from local tourism businesses, ultimately not contributing to the local economy, society and ecosystem management according to their potential.

The main reasons for the recent restructuring of livestock production and the decline of its extensive sector are to be found in the recent agricultural and trade policies that have contributed to transforming not only the agricultural economy, but rural society as a whole in all countries of the Mediterranean, with little regard for sociocultural and ecological variables. As it is the case elsewhere in the region, the polarization of agricultural development has widened the gap between the intensification of agricultural production in the plains and coastal zones, and it has sparked a gradual abandonment of marginal areas (Gertel & Breuer, 2010; Mahdi, 2014; Nori, 2016). For agro-pastoralism, a practice forged to make marginal ecosystems productive, it is obviously difficult to remain competitive within parameters defined solely by performance based on productivity. Through this restructuring, working and living conditions of shepherds have hardly improved in the face of a significant increase in their tasks and responsi-

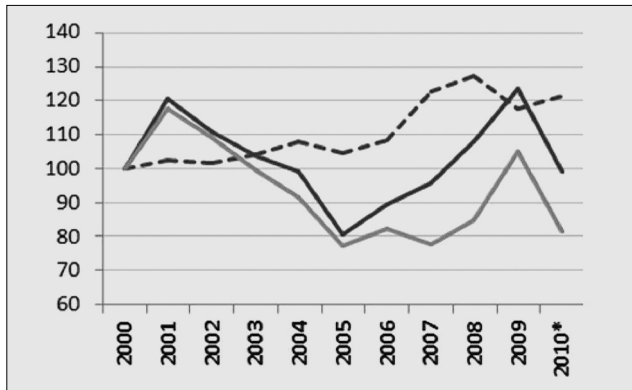


Figure 1 Decreasing profitability of dairy sheep farming in Sardinia (ISMEA, 2013) (rate for products prices, production costs and overall balance)

bilities. The prices of small ruminants' milk and meat have fluctuated, while production costs have increased steadily (ISMEA, 2010).

Compliance with regulatory requirements constitutes an additional constraint both for agro-pastoral farmers and for the value chains they support. Indeed, awareness for agro-pastoralism is not reflected in European legislation and this is partially due to the low recognition of the multiple roles that Mediterranean agro-pastoral systems play, including ecological and sociocultural roles. The reality is that, despite assertions and intentions, the recent reform of the Common Agricultural Policy (CAP) has provided little improvements — if any — to extensive livestock systems. Except for a particular reference to extensive grazing systems, the new CAP income support schemes (Reg. EC/1307/2013) do not make an actual distinction between intensive and extensive livestock farming, implying that they have the same needs. For rural development policies (Reg. EC/1305/2013), it is much the same — agro-pastoral farmers are eligible for financial support, but structural and system-specific problems are not addressed or are disregarded. In addition, Reg EC/1305/2013 favours short supply chains linking territorial actors with pastoral farmers, aiming to generate added value for local actors, but does not provide tools especially designed for this purpose.

RURAL MIGRATORY FLOWS

Overall sector restructuring has contributed to the creation of unattractive conditions for new generations, who often decide not to follow in their fathers' footsteps, and to the avoidance of engaging in a profession with uncertain prospects. Through this lens, one can understand the relative problems of generational renewal which affect this sector and challenge its reproduction and development. Despite the EU's important policy and financial commitment through its CAP¹, the decline and ageing of rural popu-

¹ which accounts for about 40% of the overall EU budget.

lations represents the main element of concern for policy-makers at different levels — particularly for marginal territories where pastoralism plays a primary role in the local socioeconomic and ecological setting. At the same time relevant proportions of migrants have come to inhabit and operate in the EU countryside in the last twenty years; flows of immigrants from other Mediterranean rural settings have contributed significantly to tackling the social and economic mismatch of the labour markets by filling the gaps left by the national population in the rural world (Kasimis, 2010).

Pastoralism in Mediterranean islands is no exception to this rule, but rather an extension of this phenomenon. In order to deal with the scarce availability of human resources, the supply of immigrant labor has, in fact, been fundamental in many cases, and today most shepherds in Southern Europe are of foreign origin. Even though the entrepreneurial trajectory pursued to adapt to the sector’s restructuring, foreign shepherds have represented quite a skilled labor force at a relatively low cost and have enabled many farms to endure through difficult times; without foreign workers, many pastoral farms would today face great difficulty in pursuing their activities. Actually, migrant workforce also represents a critical asset for young European entrepreneurs who take up this activity (INEA 2009; Nori & Marchi, 2015). The typical profile of the immigrant who works as a salaried shepherd is that of a man between 25 and 40, a native of a country in the Mediterranean region, predominantly from Romania, Morocco, FYROM or Albania, often with previous direct exposure to extensive breeding, although with smaller herds and limited distances. Immigrant shepherds are appreciated for their endurance, flexibility and adaptability, and today represent a critical asset for agro-pastoral production systems in most islands (Nori, 2016). Nowadays this issue is more relevant than ever due to the specific exposure of Mediterranean islands to migration flows (i.e. Malta, Sicily, Lampedusa, Lesvos). However, the presence of immigrants in rural regions and agriculture is complex and contradictory (Corrado et al., 2016). Some research on Romanian salaried shepherds in Sardinia (Mannia, 2011; Contu, 2013; Farinella & Mannia, 2017) shows these workers are willing to accept working conditions and salaries usually rejected by the local people, but for this reason, their presence is only temporary. Their goal is often to earn money and to reinvest them in Romania, and they complain to having limited chances to upscale and graduate in Sardinia.

Table 1 — Main features of agro-pastoral systems in Crete and Sardinia

C R E T E		S A R D I N I A
0.630 m	<i>Population</i>	1.663 m
1,1 m*	<i>Sheep</i>	3.15 m
4.800	<i>Farms</i>	11.213
	<i>Average size</i>	
229	<i>— heads/flock</i>	280
13% flocks	<i>Transhumance</i>	
Autochthonous breeds (Sfakiano, Anogeion)	<i>Breed</i>	Sardinian, milk focus

Multifunctional (also milk and meat, cheese, olive oil and wine, tourism)	<i>Production focus</i>	Milk for Pecorino Romano cheese
25% at local mitata level	<i>Dairy processing</i>	Mostly through industries
Mostly through cooperatives	<i>Marketing</i>	Industry controls
	<i>Cheese market certification</i>	
4 PDOs		3 PDOs
	<i>Role of immigrants amongst salaried shepherds</i>	
30%, mostly Albania, Bulgaria		20%, mostly Romania

Sources: Piteris, Ragkos, and Lagka (2015); www.metakinoumena.gr;

*This figure also includes goats (approximately 70% sheep — 30% goats)

**Estimation of the true number of farms (i.e. co-located farms are counted a single farm)

DEVELOPMENT IMPLICATIONS

Within the context set by the drivers previously discussed, Mediterranean islands are in search of a sustainable pattern of development which is going to mitigate the differences between inland and coastal activities so as to ensure benefits for the local societies and environment. The concept of “territorial development” (Perqueur, 2013), which has lately emerged, pertains to this objective. This type of development occurs through two pillars, i.e. the social capital in an area and the production of specific products characterizing local territories. The innovative element of this model is that it allows one to 'build' development socially through cooperation and networking among stakeholders in a specific area. Territorial development requires to detect and focus on territorial-specific characteristics which can be used as development resources. The process of discovering and focusing on such resources constitutes a *social innovation*; it is social because it is not limited to a particular group but can rather be developed by the vast majority of members of a rural society. In the context of Mediterranean islands, agro-pastoral products — especially dairy products — constitute such type of resources, which can represent a pillar of local development strategies. Based on these concepts, effective and sustainable development policies for islands should be sought and designed with a view to balance geographical, as well as socioeconomic patterns, towards a more symmetric and inclusive territorial development. In this regard, market-focused policy measures for value chain stakeholders, combined with integrated strategic planning and an enabling legislative framework, seem more appropriate than distortive subsidization schemes and income support measures.

The Greek island of Crete constitutes an example of this sort, since in the last several years, an integrated strategic plan is being implemented in order to promote local diet and locally produced food — of course including cheese and other agro-pastoral products. The “Cretan Quality Agreement” (<http://www.cretan-nutrition.gr/>) aims to achieve territorial development predominantly favoring the inland areas of the island,

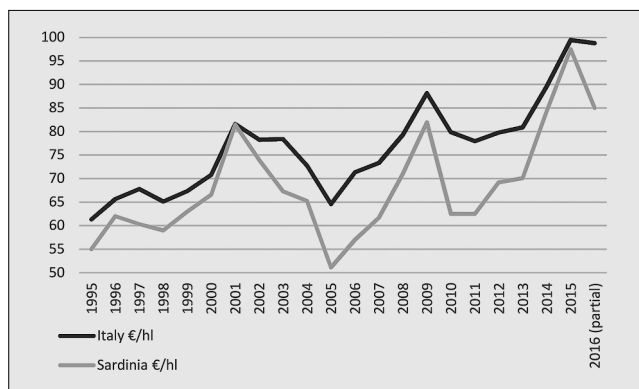


Figure 2 Volatile performance of the price of sheep's milk in Sardinia
(Source: our elaboration on ISMEA data)

where tourism is not the prevailing economic activity. Through diverse activities including food fairs, brand names, designation of PDO/PGI products, farms and manufacturing businesses available for tours, and the protection of indigenous flora and fauna, all actors are organized around these territorial resources and aim at development collectively. These actions are supplemented by other measures and funding tools at the regional level including RIS3 actions for smart specialization.

In Sardinia, the structure of dairy production systems is mainly oriented to the mono-production of *Pecorino Romano* for the US market, an industrial cheese which is very salty, used to flavor junk food. This provokes a volatile and a frequent fall of sheep milk prices (Figure 2) (see Idda, Furesi, & Pulina, 2010; Pulina & Biddau, 2015; Meloni & Farinella, 2015). In the last ten years, the Sardinian Regional Government has approved several measures with a view to tackle this negative effect in order to improve milk quality and to sustain the cooperative system and small farmers. These measures include Regional Law 15/2010 on production diversification (through which monetary incentives are proposed to diversify dairy production, which is mostly based on *Pecorino Romano*); Measure 215 on animal welfare (in the Regional Development Plans in 2007—2013 and in 2014—2020); Measures 4.9 (Investments in farms) and 4.10 (Improving the competitiveness of the agricultural and agro-industrial systems in the context of supply chain) (POR 2000—2006), through which many mini-dairies for artisanal cheese production have been established. Regional Law 3/2008 (art. 7) promotes and supports Producers' Organizations, as well as other initiatives for organic production and for preserving local breeds at risk of extinction. The implementation of these measures has often been problematic, inefficient and has not provided the expected results: e.g. most mini-dairies are actually closed, due to a lack of both managerial skills of the shepherds and of regional marketing policies. These laws often represent missed opportunities that provide food for thought so as to improve the design of future pol-

icies. On the contrary, interesting good practices have emerged at the local level, often through the initiatives of the farmers themselves:

- the artisanal production of raw-milk cheeses, as well as vegetable rennet, marbled and/or myrtle flavoured cheeses;
- the valorization of the natural grazing and extensive breeding through, e.g., the competition “Pascoli fioriti” from the GAL Marghine (PSR 2007—2013) (Gal Marghine, 2015);
- the rediscovery and recognition of historical cheeses that were almost lost: e.g. the cheese S'Axrida (made in Escalaplano, Gerrei), which obtained the national designation of PAT (Traditional Agrifood Products).
- strengthening the links between farming and sustainable tourism, with several farmers that start tourism activities, tourism linked to food, educational farms (Farinella et al., 2013; Porqueddu, 2014; Meloni et al., 2015; Meloni & Farinella, 2017).

Drawing on the examples of these two main Mediterranean islands, important proposals can be deduced for the future of Mediterranean agro-pastoralism in general and for its co-existence with tourism development in particular. First and foremost, regional strategic design should integrate the agro-pastoral products — and possibly also its services — into the tourism industry of coastal areas to revert/buffer asymmetric development. With such an orientation, the prevailing pattern of tourism development will also shift from the “traditional” “3S” *sea, sun, sand* to a more inclusive model with two more “S” that need to be added to the model — *society and sustainability*. This model will incorporate landscapes, environmental assets, intangible cultural heritage and local products (McKercher et al., 2002). A recovery of the agro-pastoral economy will also contribute to buffering the islands’ depopulation trends, whereas opportunities for entrepreneurial skills development of new generations and newcomers could be pursued accordingly. Ensuring decent living and working conditions for agro-pastoral operators and actors at all levels, together with prospects of upgrading in social and economic terms, represents priority concerns to revert ongoing abandonment processes and to tackle the problems of generational renewal of islands pastures. Specific schemes addressing the specific technical and socioeconomic needs of immigrant shepherds would also represent a valuable opportunity to incorporate and integrate young and skilled workforce into this strategic sector.

CONCLUSION

Mediterranean islands today face a variety of dynamics and problems that render their development challenges unique in social, environmental, economic and political terms. The multifunctional character of agro-pastoralism provides important opportunities for the sustainable development of these territories by protecting rural livelihoods, averting depopulation, while also producing important environmental externalities, managing public goods and, of course, providing healthy and nutritious animal proteins. En-

hancing the functioning of the value chains of dairy products, as well as their integration in the modern vibrant tourism sector, holds the potential to improve agro-pastoral contributions to islands' territorial development through inspiring social innovations.

Much alike the LEADER programme, such improvements could be achieved through participatory schemes and networks which bring together development actors from different islands — producers, manufacturers, public services, local authorities, associations, traders, tourism agencies and operators, etc. — in order to improve public awareness of agro-pastoral multiple benefits and its potentials in terms of local development. In this way, not only can the merits of local products be properly acknowledged (e.g. certifications and brands) and included in tourism routine operations (e.g. hotels and restaurants), but agro-pastoral activities should be integrally incorporated into the tourism industry through the provision of agro-tourism services and tailored packages offering tours and visits to the agro-pastoral areas in the interior. A performing, sustainable and inclusive agro-pastoral sector represents the best ticket to the future of most Mediterranean islands.

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