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This paper incorporates results from a 2012 collaborative study of mountain food products for the European Commission's Institute for Prospective Technological Studies (IPTS) led by ISARA-Lyon, with support from Euromontana and Perth College, University of Highlands and Islands. The authors are grateful to the European Commission for funding, and to all of the participants who contributed to the research process. The views expressed in this paper by Fabien Santini, Fatmir Guri and Sergio Gomez-y-Paloma are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

Introduction

1 This paper explores the roles of agriculture, food production and food marketing in the sustainable development of Europe's mountain regions. A key starting point for any such exploration is to define the term 'mountain'. Currently, the only legal definition of mountain areas at the scale of the entire European Union (EU) is that of Article 18 of the Less Favoured Areas (LFAs) legislation (Regulation (EC) No 1257/99). This definition accounts for over a quarter of all agricultural land in the EU and characterises mountains as areas exhibiting specific geographic characteristics (e.g. altitude and steep slopes, resulting in harsh climates and short growing seasons) which result in increased production costs (EC, 2009). However, according to a common topographic definition of mountains, many areas not included under Article 18 can also be considered as mountains. Such approaches characterise 29% of the EU as mountainous, providing a home to over 16.9% of the population; these proportions (of land area and population) increase to 41% and 25% when Turkey, Norway and Switzerland are included (ESPON et al., 2012; EEA, 2010). Furthermore, as much as 30% of mountain area defined under Article

18 is not topographically mountainous, due to an agreement made on the accession of Sweden and Finland that all areas north of 62°N would be classified under Article 18 (EEA, 2010). Despite these discrepancies between approaches, mountains clearly represent a significant component of Europe's land and society. Below, we evidence the disproportionate importance of agricultural and food production in these regions, in terms of socio-economic factors, the delivery of ecosystem services, and sustainable development. This is followed by a review of the role of food labelling and certification in distinguishing mountain foods in the marketplace, potentially strengthening food supply chains and contributing to the delivery of positive externalities.

The role of agriculture and food supply chains in progressing sustainable development in mountain regions

2 Agriculture and food supply chains occur at the crossroads of the three pillars of sustainable mountain development. Firstly, mountains are associated with multiple positive externalities, including acting as reservoirs of biodiversity, protection from natural hazards, supply of freshwater to lowland areas, carbon sequestration and provision of scenic landscapes and opportunities for high quality recreation, with associated health and well-being benefits (Robinson, 2009; EEA, 2010; Hopkins, 2009; Nordregio, 2004; Penati et al., 2011). Such externalities are not specific to mountains; however, the topographic and climatic constraints of mountain regions limit opportunities for intensification, dictating an emphasis on '*low input, low output*' extensive pastoral and permanent crop systems (EC, 2009; Robinson, 2009), implying a higher delivery of positive externalities than from lowland areas.

3 The extensive and diversified nature of mountain agriculture plays a key role in maintaining a range of highly valued species and habitats (Euromontana, 1997; EAA, 2004). These include examples of High Nature Value (HNV) grassland and alpine pastures, such as the grasslands of the White Carpathian Mountains and the Hauts Plateaux of the Vercors (Opperman et al., 2012; Veen et al., 2009); over 4 million hectares of pasture landscapes in Europe depend on the maintenance of transhumance systems (Herzog et al., 2006). HNV farming and Natura sites account for 32.8% and 14.6% of the European mountain area respectively, with 43% of the total area of Natura sites in the EU27 in mountain areas (EEA, 2010). Land abandonment and localised intensification in response to declining incomes represent potential threats to HNV habitats (Robinson, 2009; MacDonald et al., 2000). The neglect of both grazing and terrace maintenance (after land abandonment) can also impact on slope stability, increasing risks of landslides and avalanches (MacDonald et al., 2000). However, overgrazing can also reduce soil stability and quality, necessitating a balanced approach to grazing management (Euromontana, 1997). Land abandonment can also affect cultural landscapes, through loss of iconic landscape elements, such as terraces, permanent crops (e.g. grapevines and olives) and traditional farm buildings. Peyrache-Gadeau and Perron (2010) and Rainis *et al.* (2012), for example, provide examples of how small-scale food supply chains (for cheese and meat products) are instrumental in maintaining cultural landscapes.

4 Secondly, for Europe as a whole, primary sector employment is of comparatively greater importance in mountain areas than lowland areas (ESPON et al., 2012; Nordregio, 2004). Wider on- and off-farm activities are also important, with agricultural diversification and 'pluri-activity' more common in mountain areas (EC, 2009). The development of food

supply chains, in particular, has been recognised as offering potential for supporting socio-economic development through capitalising on emerging markets and adding value to raw materials close to their point of origin (Euromontana, 2004; EC, 2009). Caron et al. (2010) argue that such diversification represents a multifunctional dynamic, with farmers responding to '*socially constructed quality criteria (e.g. concern for the environment, local development) favouring new market niches that may compete with official food product quality signs*'.

5 Tourism and the recreational opportunities provided by mountain areas represent critical emerging drivers opportunities for sustainable development, stability and diversification and an important source of employment for mountain communities (Nordregio 2004; Iorio and Corsale 2010). Tourism also facilitates the survival and re-interpretation of traditional modes of production (e.g. through the development of organic products or eco-farming) associated with key positive externalities, through providing income-generating opportunities, including direct sales and accommodation provision (Meiberger and Weichbold 2010; Perrot et al. 2009).

6 The linkage of high-quality local products and identities also offers potential for expanding product markets and supporting regional development through simultaneously enhancing awareness of products and their regions (Jimenez 2008).

7 Finally, agriculture and food production represent powerful cultural elements which link mountain environments with their human populations through long-established practices, such as traditional cheese-making and transhumance, often associated with cultural landscapes, built heritage, songs, festivals and routes of travel (Macdonald 2012; Soliva et al., 2008; Euromontana, 2004). Maintaining these cultural identities, practices and traditions engenders the building of trust and reciprocity in otherwise challenging environments (Soliva et al., 2008; Holloway et al., 2006).

8 However, the future of mountain agriculture, in a time of policy transition, increasing emphasis on consumptive uses of rural areas (Hadjimichalis, 2003) and increasing land abandonment (MacDonald et al., 2000) is uncertain (Baldock et al., 1996). Despite an emphasis on developing rural businesses, eco-economic de-coupling and market liberalisation (e.g. the removal of milk quotas) under the Common Agricultural Policy (CAP) may result in further out-migration and economic decline (Tzanopoulos et al., 2011). Mc Morran and Price (2009) identified a number of specific challenges for mountain food producers, including:

- small scales of production in contrast to increased wider market consolidation (e.g. supermarket supply chains) creating difficulties for mountain producers in accessing larger supply chains and processing infrastructures;
- limited networking between producers and between producers and other supply chain actors, reducing potential economies of scale and cooperative development of processing infrastructure, marketing and transport sharing and;
- complex bureaucracy, particularly in relation to EU Hygiene Law, which fails to take account of small-scale producers and creates difficulties in establishing cost-effective slaughterhouses in remote regions. This is confirmed by recent studies which demonstrate the limited availability of slaughterhouses (Santini et al., 2013) and dairy industries (Reuillon et al., 2012; Groier et al., 2012) in EU mountain areas.

9 Collectively, these barriers limit the numbers of new entrants, with agricultural decline representing a considerable threat to both mountain communities and the positive

externalities associated with agricultural activities. Conventional agricultural models (and policies) often fail to account for the complex and interlinked challenges of small-scale mountain farming. Novel approaches, based in cooperation, resource sharing, flexibility in policy mechanisms and the development of high quality supply chains which capitalise on the strengths of mountain farming are therefore required to support the development of sustainable agricultural systems in mountain areas.

The role of labelling and certification in sustainable mountain development

10 Regional and mountain-related branding and certification may offer considerable potential for supporting the development of supply chains for mountain foods. The specific characteristics of mountain foods linked to the qualities of mountain environments and/or their modes of production gives them considerable currency as high-quality niche products (Euromontana, 2003, 2004). Consumers associate mountain products with positive attributes of purity, authenticity, and support for rural development, and are willing to pay a premium (Scholl *et al.*, 2012). However, many products not originating in mountain areas use the mountain term (or imagery) in their marketing, reducing potential market advantage for products that do originate from mountain areas (Santini *et al.*, 2013). Existing markets therefore fail to adequately recompense mountain producers for the additional costs they encounter, or the positive externalities they deliver. This requires clear and direct linkage between the territorial quality attributes of mountain foods and the products that consumers encounter (Kreziak *et al.*, 2010).

11 Such a process already occurs in Europe through the EU Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) schemes, which protect product identities (e.g. Comte cheese and Sudtiroler Speck) based on their defined regions of production (EC, 2008). PDO/PGI certifications include products originating in mountain areas (e.g. Abondance, Beaufort cheeses); however, PDO/PGI designations lack distinct mountain specificity. While the current extent to which mountain products have PDO/PGI designations is not fully understood, potential may exist for these schemes to distinguish the mountain origins of products more directly. Santini et al. (2013) estimate that the proportion of mountain products registered as PDO or PGI is significantly higher than for non-mountain products, particularly for dairy products and fruit: respectively, five and three times higher.

12 A more direct approach to protecting the positive mountain attribute has also begun at the national level, with legislation relating to the protection of the mountain term in Switzerland, France and Italy (Mc Morran and Price, 2009; Giorgi and Losavio, 2010). At the European level, a (non-legislative) Charter for Mountain Quality Food Products, which stipulates that production and processing of mountain foods occurs in defined (LFA Article 18) mountain regions, was established in 2005 (Euromontana 2005). This provides a basis for ensuring continued delivery of positive externalities through stipulating that the production of mountain foods ensures product traceability, the maintenance of environmental quality, biodiversity, cultural heritage and landscapes, and minimisation of erosion risks.

13 In late 2012, the European Parliament and Council introduced a new quality regulation[1] protecting ‘mountain product’ as a reserved term, to be used only for products where raw

materials and animal feedstuffs originate from mountain areas and processing occurs within mountain areas as defined by Article 18 of the LFA regulation. This represents the emergence of a framework to protect and distinguish mountain food products; however, there remains a requirement for specific implementing rules that clarify criteria for production, derogations and implementation processes.

14 In response to the issues described above, this research has three objectives:

i. to evaluate the current and future potential importance of existing national control and certification schemes for mountain foods;

ii. to assess the role of the EU PDO and PGI schemes in marketing mountain foods and;

iii. to investigate producer perspectives on certification and labelling schemes and wider issues relevant to mountain foods.

Methodology

The importance of existing EU and national certification schemes for mountain foods

15 Desk-based research and interviews with representatives (3 French, 4 Italian, 2 Swiss) from government and certification authorities were used to review i) control and certification schemes for mountain foods in the respective countries and ii) the role of the EU PDO/PGI schemes for marketing mountain products. To assess the extent to which PDO/PGI registered products originated from mountain regions, tabulated data on PDO/PGI registrations (including listings of all NUTS3[2] regions within which each PDO/PGI occurred) were provided by the European Commission's Directorate General for Agriculture and Rural Development and merged with a spatial dataset of European NUTS3 regions. The resulting spatial dataset, which identified the NUTS3 region or regions within which each PDO/PGI occurred, was combined with a spatial dataset of mountains (LFA Article 18) to identify PDO/PGI registrations which occurred:

i. only in NUTS3 regions which had their centres in mountain regions (Category 1);

ii. in NUTS3 regions which had their centres in mountain regions and 'peripheral' NUTS3 regions which were partly in mountain regions (Category 2) and;

iii. only in 'peripheral' NUTS3 regions (Category 3).

16 To account for data inaccuracies and incompleteness, and the fact that the analysis used the LFA Article 18 definition of mountains (excluding registrations in countries which have mountainous areas not included in the Article 18 dataset), key criteria for each category were developed (table 1). These were used in conjunction with expert input (11 national PDO/PGI experts) and review of the EU Database of Origin and Registration (DOOR) to categorise registrations on a case-by-case basis, leading to changes to many of the classifications deriving from the initial spatial analysis.

Table 1. Criteria used for placing PDO/PGI products into specific groupings

PDO/PGI Groupings	Criteria for placing PDO/PGIs into specific groupings

1. Predominantly mountain	Production and processing occurs fully or predominantly (70%+) in a mountain area.
2. Part-mountain	Registrations where the *designated geographic area of the denomination* occurs partly (between 10% and 80%) in a mountain area and partly outside a mountain area. Also includes registrations where production and/or processing occur partly inside and partly outside a mountain area (i.e. production occurs in a mountain area and processing occurs outside a mountain area or vice versa).
3. Marginal	PDO/PGIs where a marginal element of the denomination area (approximately > 10%) occurs within a mountain region
4. Non mountain	All PDO/PGIs not in the above groups.

The producer perspective

17 To assess the impacts of, and opinions on, national, EU and private/collaborative schemes relevant to mountain products, an online multi-language (English, French, German and Italian) survey of producers was developed and piloted on 20 respondents. A database of 624 producer email addresses was developed, including the mountain PDO/PGI producers identified previously; producers registered under the Swiss, French and Italian mountain schemes; and contacts for regional and private labelling schemes. These producers were sent a covering email containing a link to the survey (open from July 6th to August 22nd 2012); this email was also circulated across Europe through Euromontana and AREPO (Association des Régions Européennes des Produits d'Origine).

Results

Existing national certification and control schemes for mountain food products

18 Table 2 briefly compares the three national mountain food control/certification mechanisms, all established with the aim of increasing transparency for consumers through providing a guarantee of the mountain origins of food products.

Table 2. Comparison of national measures to protect the mountain term in France, Italy and Switzerland

Country	Switzerland	France	Italy

Legislation	Ordinances on use of mountain and alpage terms for agricultural products/foods (**ODMA**) 2006, 2011.	**Mountain Decree** (2000); **Rural Code** Articles L.641-14,18,32,43, R.671-3). Pork, dairy and beef regulations.	No specific directive, but three legal bases: i) **Legislative Decree 228** (2001); ii) **Law 97 (1994);** iii) **Article 85 National Law 289 (2002)**
Function	To protect use of Berg, Montagne, Montagna and Alpage/Alp **(alpine summer grazing areas)** terms. Geographic term 'Alps' protected for dairy/ meat products.	To protect use of 'montagne' term	**Decree 228** protects montagna and prodotto di montagna (PDM) terms. **Law 97** and **Article 85** a uthorised PDO/PGI products from mountain areas, to use PDM term.
Basis for mountain definition	Swiss Order on Agricultural Areas (1998) divides mountains into four zones with (lower limit) altitudes of 750m, 870m, 1040m and 1340m. Summer grazing (alpage) situated up to 2500m.	LFA (Article 18) legislation	LFA (Article 18) legislation
Criteria	Products produced and processed in a mountain area or 'adjoining municipalities'. If processed elsewhere, only mountain origins of ingredients from mountain area can be specified. "*Alpage*" is acceptable for agricultural products from summer grazing areas and processed products if raw materials are obtained and processed there.	Products produced (including raw materials) and processed (all stages) in mountain areas.	Products produced (including raw materials) and processed (all stages) in mountain areas.

Exemptions	Up to 10% of agricultural ingredients in processed products and 30% feedstuffs accepted from non-mountain areas where unavailable locally; slaughter elsewhere acceptable - animal must have spent a minimum of 2/3 of life in mountain areas; slaughter must occur within 2 months of leaving mountain area.	Use of non-mountain raw materials allowed where production is restricted locally; 70% of feed for dairy cows must originate from the mountains. For pork, all cereals and oilseeds can be sourced from lowland areas. Slaughtering /packaging acceptable in other areas when impossible locally.	No exemptions in principle.
Certification process	**Independent certification** by one of three bodies. Primary products controlled by inspection (every four years, costing 100-300 CHF (Swiss Francs); every twelve years for Alpage products). *Finished* products require a certificate, re-assessed every two years (400-1000 CHF).	**Regional administrative authorisation:** Producer requests use of term from regional department of agriculture.	Applications to register PDO/PGI products as mountain products can be made by producer consortiums; **Register of mountain PDO/GI products** established. (Law 97 and Article 85) No certification or authorization for other mountain products (Decree 228)
Government Logo	None; revised (2011) Order provides option of developing official label	None; existed prior to 2000 Decree, removed as incompatible with EU Law.	None
Private logo	Private/cooperative mountain brands conforming with legislation (e.g Pro-Montagna, and Alpinavera)	Altitude Logo established to market products authorised under Decree. *Porc de Montagne* also established.	Relevant cooperative/ regional brands.

19 In Switzerland, the primary legislation contains one set of criteria and derogations applicable to all products. In France, specific technical guidelines have been developed for different sectors (dairy, beef meat, pig meat), to set stringent principles complementing the basic legislation. In Italy, the general principle is that only a product fully originating from a mountain area can be labelled as such.

20 Derogations laid down by the Swiss and French schemes relate to, for example, the share of non-mountain feed accepted in animal production (e.g. up to 30% of feed for dairy cows can be sourced from outside mountain areas in both systems) or the localisation of

slaughter and butchery (e.g. this is allowed in lowland areas in Switzerland provided the animal has been in mountain areas for a certain time period).

21 None of the schemes currently has an official mountain foods logo, although cooperative/private brands which conform to the requirements of the control schemes have been established in France and Switzerland (table 2). The Swiss scheme is the most stringent, with a clear mechanism of independent control and certification. However, the costs associated with formal certification (table 2) represent a potential constraint, particularly for small-scale producers. In contrast, interviewees agreed that the protection afforded by the existing French system, based on a previous administrative authorisation and lacking specific certification, was relatively weak, and that the linked cooperative Altitude logo was under communicated and underutilised. Respondents stated that the benefits of the French legislation and Altitude logo remain concentrated in the middle and at the end of the supply chain, and benefits for producers do not yet compensate for the higher collection costs in mountain areas. Furthermore, while the Swiss legislation addresses existing trademarks using the mountain term in terms of compliance requirements, the French system does not.

22 In Italy, the legislative framework was recognised as providing meaningful protection (for the mountain term) only for PDO/PGI registered products from mountain areas, where this was specifically recognised in product specifications. An application to change product specifications is required - if not specified in the original application - to register a PDO/PGI product as a mountain product, potentially limiting greater uptake of the prodotto di montagna term, particularly as normal PDO/PGI registration was often viewed as sufficient. Thus, non-PDO/PGI mountain products fail to benefit from any protection of the mountain term in Italy, despite scope for achieving this within the legislative framework. In contrast, the French Produit de Montagne term cannot be used for PDO/PGI products, except where: i) the producer consortium requests this; and ii) the entire geographic area of the registration occurs within a mountain area. Critically, national-level schemes cannot account for misuse of the mountain term in relation to products produced outside of the country in question. In addition, despite an emphasis on ‘quality’ and positive environmental externalities in discussions around mountain food, none of these schemes contained explicit measures relating to these factors.

23 Efforts to define mountain products are also underway at regional and cross-border levels, with Austria leading a working group within the framework of the Alpine Convention to develop criteria for mountain foods and a pan-Alpine label. In Spain, competency for developing legislation for mountain products has been transferred to regions. For example, in Galicia, regional authorities developed Law 2/2005, which defines and protects: i) ‘home-made products’; and ii) ‘mountain-made products’. Numerous regional brands, which base their identities on specific mountain regions, also exist, such as the Quality South Tyrol brand, which has been developed for eight product groups and guarantees product quality and origins.

Mountain food products and the EU PDO and PGI schemes

24 In total, over 15% (171) of all PDO/PGI registrations were classified as mountain, rising to 34% (367) when part-mountain rankings were included (table 3).

Table 3. Mountain, part-mountain and peripheral PDO/PGIs following expert input and further analysis (Current registrations only and not fully up to date for some countries) [Developed from methodology described in Section 2.1]

Country	Total	Mountain	Part-Mountain	Peripheral	Non-Mountain
Italy	244	38	46	49	111
Greece	96	26	40	1	29
Portugal	116	41	24	9	42
Spain	154	30	33	26	65
France	191	14	41	23	113
Austria	14	8	1	2	3
Germany	84	3	3	2	76
Slovakia	7	5	0	0	2
Poland	25	2	2	0	21
Slovenia	11	3	0	0	8
Czech Republic	28	0	3	3	22
United Kingdom	41	0	2	5	34
Ireland	4	1	0	0	3
Belgium	8	0	1	0	7
Others	53	0	0	0	53
Total EU27	1076	171	196	120	589

25 Overall, there is a slightly higher concentration of PDO/PGI registrations in mountain areas than in lowland areas, although this varies between Member States (Table 3 and Figure 1). Certain product types (e.g. cheese and honey) were particularly strongly represented within the mountain/part-mountain categories (Figure 2).

Figure 1. Number of PDO/PGI products and their classification following expert input and further analysis

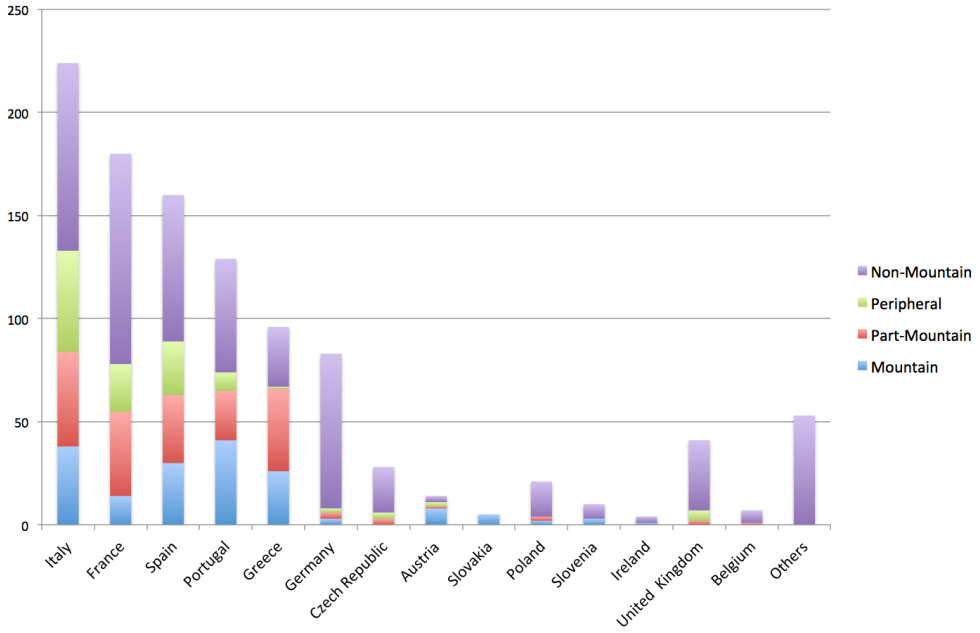
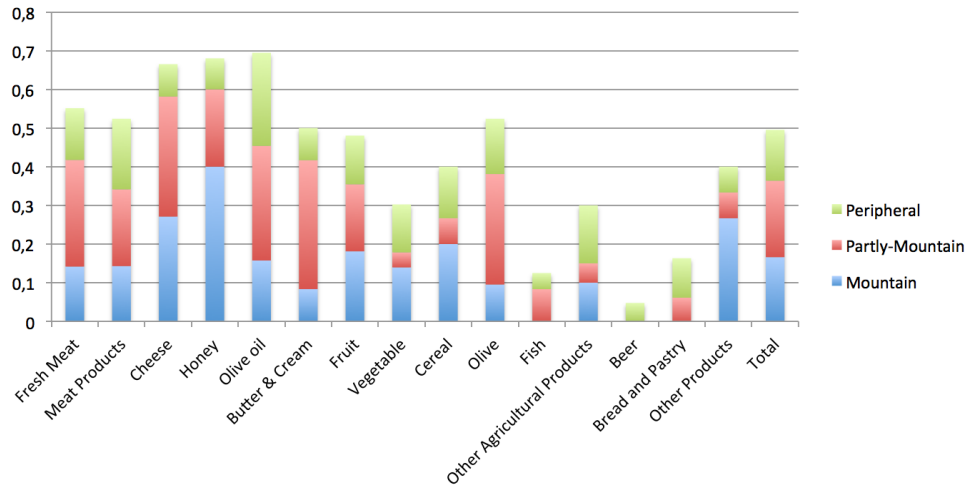


Figure 2. Comparison of percentages of PDO and PGI products by sector/product type and classification



26 Expert interviews highlighted a number of key points, including:

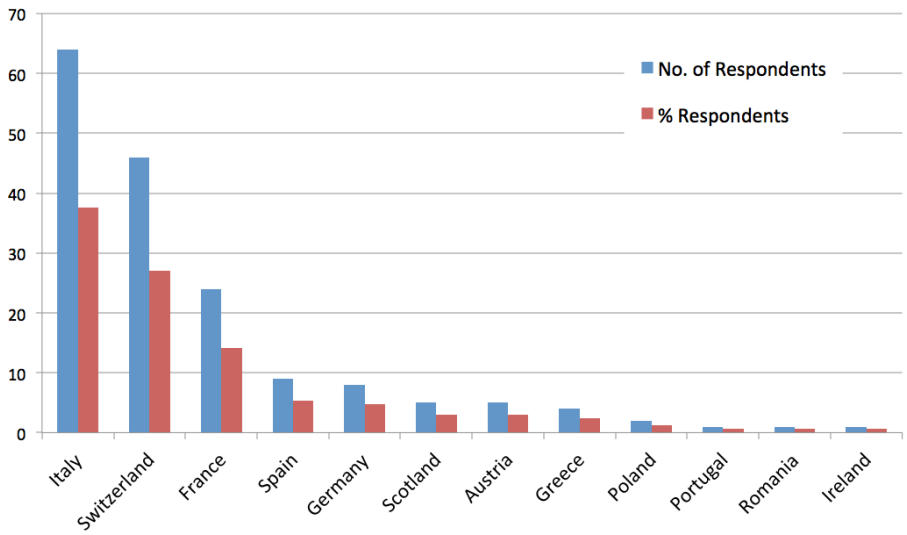
- These schemes are suited to marketing large volumes of distinctive high-quality products and less suited (due to complexity and costs) to marketing i) products produced at smaller scales and ii) large volumes of commodity products (e.g. mountain milk);
- Many PDO/PGI registrations relate to products produced in both mountain and non-mountain areas (e.g. Comte); this creates difficulties for directly linking the PDO/PGI schemes with a mountain products scheme or logo;
- A mountain segmentation within PDO/PGI could be beneficial for products completely or predominantly from mountain areas, although such an approach may be divisive;

- Due to the overall *approach* of the PDO/PGI systems, those involved emphasize regional identity and product associations, as opposed to the generic concept of 'mountain'.

Mountain food products – the producer perspective

27 In total, 210 responses were received, with 171 respondents indicating they produced mountain foods; these 171 responses constitute the useable dataset. Respondents originated from 12 countries, representing 65 different regions; some countries (Italy, Switzerland) are more strongly represented than others, due to their emphasis on mountain food products (Figure 3). France, Spain and Portugal are all under-represented due to the composition of the original contacts database (with limited contact data available for these countries) and the lack of Portuguese and Spanish versions of the survey. The responses refer to various types of products, with cheese (42%) the most common, followed by fresh meat products (24%), oils and fats (20%), other dairy products (e.g. yoghurt) (18%), fruits, vegetables and cereals (18%), cured meats (17%), and other animal products (14%).

Figure 3. Number of respondents and percentage of total responses by country (n=171)



28 An analysis of the location of the supply chain stages for respondents' products (Table 4) demonstrates the dominance of mountain areas in all stages of the supply chain (except marketing); producers relied on lowland areas to some extent for raw materials and slaughtering of animals, due to the absence of slaughterhouses in certain mountain areas.

Table 4. Respondents' (No. of respondents and % of total) indications regarding each stage of the supply chain for the products they produce

Stage of the Supply Chain	Mountain area	Mountain area (%)	Part mountain/ lowland	Part mountain/ Lowland (%)	Lowland area	Lowland area (%)

Sourcing of raw materials (n=150)	106	71%	36	24%	8	5%
Production (n=163)	136	83%	19	12%	8	5%
Slaughter of livestock (n=74)	41	55%	19	26%	14	19%
Processing (n-149)	113	76%	26	17%	10	7%
Marketing (n=177)	58	33%	87	49%	32	18%

29 Over half of the respondents (n=152) were registered with the EU PDO/PGI schemes (55%); 31% were registered with the Swiss, French or Italian national mountain schemes, and 24% used 37 various private/cooperative schemes. These figures partly reflect the composition of the original producer contacts database. Respondents participated in these schemes for a variety of reasons (Table 5), particularly obtaining a marketing advantage (70%). Reasons listed within the 'other' category included protecting product identity and linking products with ethical and environmentally-friendly modes of production. Table 6 illustrates that mountain food products are widely distributed at a variety of scales, including at the EU level (34%) and even more widely.

Table 5. Reasons for registration with labelling and/or control schemes indicated by respondents (n=140, in some cases single respondents ticked multiple choices)

Reasons for registering with labelling/control scheme	**% Total Responses**	**No. Total Responses**
To obtain a marketing advantage	70%	98
To increase product quality	41%	58
To access larger markets and increase production	35%	49
Legal obligation	23%	33
To increase price	19%	26
To facilitate collaboration with other producers	17%	24
Other	13%	18

Table 6. Scale at which respondents distribute products (n=134, respondents ticked multiple boxes)

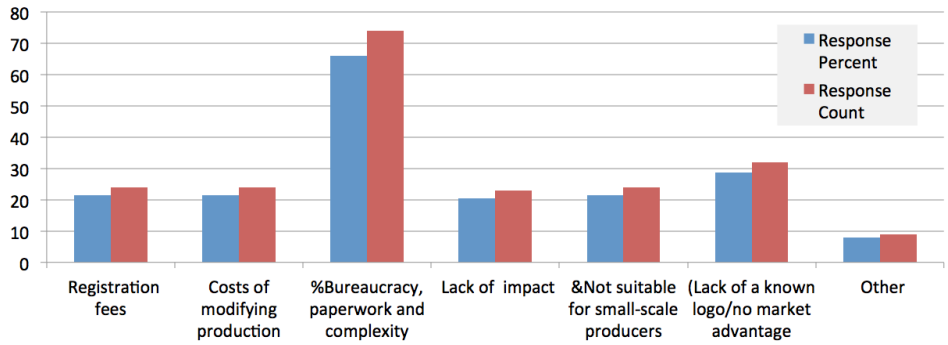
Scale of product distribution	% Total Responses	No. Total Responses
Local (direct marketing)	61%	82
Regional	55%	73
National	65%	87
European Union	34%	46
Wider Europe/Globally	16%	21

30 Respondents perceived a range of benefits from participating in labelling and certification schemes (Table 7), with the strengthening of product identity most commonly identified (82%). Table 7 also illustrates that registration under PDO/PGI is of proportionally greater importance, compared to other schemes, with regard to impacts on product price and access to larger-scale markets. Respondents also identified the main constraints related to participating in labelling and certification schemes: the bureaucracy and paperwork associated with such schemes was by far most frequently identified (66%) (Figure 4).

Table 7. Benefits of participation in labelling and certification schemes (n=118) broken down by PDO/PGI and non PDO/PGI products (respondents were able to select multiple choices)

Benefits	Total No.	Percentage	Non PDO/ PGI	PDO/ PGI
Strengthening of product identity	97	82%	39	58
Increased long-term market security	46	39%	24	22
Increase in sales prices	37	31%	13	24
Increased production/sales volumes	37	31%	18	19
Facilitating access to larger scale markets	36	31%	13	23
Cooperation with other producers and processors	29	27%	12	17
Other	8	7%	2	6

Figure 4. Constraints associated with participation in labelling and certification schemes identified by respondents (Number of respondent and percentage total response) (n=112)



Discussion

31 Though mountain food producers face diverse constraints, existing policy frameworks, with their emphasis on the development of new businesses and skillsets, in combination with emergent 'eco-economic activities' (Marsden 2011), such as ecotourism and local food, present considerable opportunities. The strengthening of local food supply chains, supported by EU Regional Policy and bottom-up approaches such as the LEADER Programme, offers particular potential for peripheral regions to develop sustainable trajectories which merge place, emergent markets (e.g. internet sales and food tourism), and renewed visions of agricultural practices (Marsden 2003). In combination with such approaches, the protection of the 'mountain product' term offers a potentially complementary approach to existing LFA support, by providing a mechanism for returning the benefits of mountain production to the producers, through linking territorial quality associations and product branding, potentially decreasing farmers' reliance on subsidies (Euromontana 2010). Through the promulgation of a quality regulation to protect the 'mountain product' term, the European Union has laid the first foundation stone in support of the European Charter for Quality Mountain Foods. This begins to address the lack of protection of the mountain term outside France, Switzerland and Italy, an important factor given that mountain foods are distributed across multiple scales.

32 The future development of this process raises a number of questions, including how to control the use of the mountain term. Experience shows that the French mountain scheme is relatively simplistic, with unexacting enforcement and no protection of associated terms; implementation is consequently straightforward. The Swiss system is more complex, providing greater protection across multiple terms and an independent control and certification process. This provides a stronger guarantee of origin; however, it also results in costs to the producer. There are therefore trade-offs to consider between ensuring that future EU or national schemes are accessible to small-scale producers, while being sufficiently comprehensive and independent to provide a meaningful consumer guarantee. An overly accessible approach may, for example, potentially conflict with existing or future national schemes with more exacting requirements.

33 The very basis of the EU reserved term is also open to question, with recent studies (EEA, 2010) having identified considerable mountain areas outside of LFA Article 18 zones; under the new regulation, products from these areas would not be eligible to use this term. Delimitation of mountain areas under LFA Article 18 by Member States with mountain areas, but not currently using this Article (e.g. the UK), could address this issue. Alternatively, measures could be developed to allow these Member States to define mountain areas specifically for the purposes of using the mountain term. The producer survey confirms that most elements of the supply chain for mountain foods occur predominantly within mountain areas; however, this is less so with respect to slaughter and sourcing of raw materials. Critically, some mountain regions entirely lack slaughterhouses, and the cultivation of certain feedstuffs (e.g. protein crops and cereals) is often limited in mountain areas due to climatic constraints and a lack of arable land (Santini et al. 2013). As a consequence, very few livestock farms would be eligible for such a scheme should there be no derogation on the sourcing of raw materials (Santini et al. 2013). These specific elements, as well as the importance of alpine pastures and potential allowances for processing in neighbouring 'mountain municipalities' require careful consideration in relation to future elaboration of the EU mountain product regulation, to ensure its suitability for livestock farmers and its applicability across all Member States.

34 The PDO and PGI schemes represent important mechanisms for marketing mountain foods. However, significant proportions of mountain products not covered by a PDO or PGI could potentially be labelled as mountain products: for example, only a third of the mountain milk produced and processed in French mountain areas is processed into PDO or PGI cheese, another third is processed in lowland areas, and the final third is produced and processed in mountain areas but not marketed as PDO or PGI (Reuillon et al., 2012). Furthermore, stakeholders question the suitability of these schemes for smaller-scale producers or the marketing of unprocessed bulk products (e.g. milk). The inclusion of mountain and non-mountain areas within the geographic areas of many PDO/PGI registrations also complicates any direct linkage of these schemes with the mountain term.

35 Critically, while the new EU reserved 'mountain product' term provides the basis for future national and regional schemes, it does not represent a promotional mechanism for mountain foods equivalent to a EU quality scheme such as the Organic Label. The development of such an EU labelling scheme represents an opportunity for communicating the meaning of the mountain term to consumers and providing (depending on criteria) a more accessible scheme for smaller producers, potentially facilitating greater access to wider markets.

36 One question for the future development of any potential EU or national mountain product schemes is the potential for inclusion of environmental and/or sustainability criteria. The European Mountain Foods Charter specifies that production considers biodiversity, heritage and sustainable development concerns (Euromontana 2005); the existing EU regulation does not account for these. Once again, a potential trade-off is evident: increasingly complex criteria create a more meaningful guarantee for consumers, while potentially excluding greater numbers of producers due to costs, stringency and lack of applicability – with survey respondents noting complexity as *the* major constraint with respect to labelling schemes. Linking acceptance of any future scheme to existing control mechanisms may offer a potential compromise, should this be necessary to reinforce the meaning of the mountain term, for example by including

criteria for livestock densities, pasture management and fertiliser usage in eligibility measures for LFA payments.

Conclusion

37 The EU reserved term and existing national mountain product schemes also lack an explicit guarantee of product quality, beyond *territorial* quality associations. Nevertheless, this work and other studies validate the creation of a reserved term for mountain products based on a requirement for clear definitions across the EU and the potential to support the provision of positive externalities, add value to mountain products, and control misuse of the mountain term. A mountain scheme or label alone is likely to be insufficient to deliver sustainable outcomes; however, as one element within a wider suite of tools aimed at embedding food and agriculture into regional development, including actor networks and diversified marketing, such schemes, where supported by adequate promotional efforts, offer considerable potential to contribute to the resilience of mountain agriculture and food supply chains and contribute to wider goals of sustainable mountain development.

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NOTES

1. Regulation (EU) No 1151/2012 of the European Parliament and of the Council of 21 November 2012 on quality schemes for agricultural products and foodstuffs

2. Nomenclature of Territorial Units for Statistics - geocode standard for referencing the subdivisions of EU Countries for statistical purposes, linked specifically with the delivery of the EU Structural Funds.

ABSTRACTS

Recent research has demonstrated significant demand for foods from Europe's mountain areas; the production of these foods delivers significant positive externalities, despite producers facing greater constraints than their lowland equivalents. Existing markets often fail to account for these factors due to a lack of clear definition of mountain products. This research investigated the current and potential future role of food labelling and certification to support mountain food supply chains and sustainable mountain development, using expert/stakeholder interviews, spatial analysis, and email survey. Results demonstrate that existing EU Geographical Indication schemes are important for marketing mountain foods; however, they are less suitable for small-scale producers. National schemes for certifying mountain products have limited effectiveness, although considerable scope for enhancement exists. Recent EU legislation defining mountain products represents a considerable opportunity; however, challenges and potential trade-offs remain regarding the development of criteria on the location of supply chain stages and environmental factors, certification and control methods, and definition of mountain areas.

Des recherches récentes ont mis en valeur l'existence d'une demande significative en denrées alimentaires originaires des montagnes européennes. La production de ces aliments va de pair avec des externalités positives, bien que leurs producteurs soient confrontés à de plus grandes contraintes que leurs homologues des plaines. Les marchés sont souvent défaillants pour compenser ces contraintes du fait de l'absence de définition claire des produits de montagne. Le présent article examine en quoi la labellisation et la certification des produits alimentaires joue et peut jouer à terme un rôle de soutien aux circuits de commercialisation des produits alimentaires de montagne et au développement durable des zones montagneuses. L'étude à été menée à partir d'entretiens avec des experts et des acteurs, d'une analyse spatiale et d'une enquête par courriel. Les résultats démontrent que les indications géographiques existantes sont importantes pour la commercialisation des produits alimentaires de montagne ; elles sont cependant peu adaptées pour les petits producteurs. Les systèmes nationaux de certification des produits de montagne ont une efficacité limitée bien qu'ils possèdent un potentiel considérable

d'amélioration. Les récentes règles UE définissant les produits de montagne représentent une opportunité essentielle ; il reste cependant des défis à relever et des arbitrages à rendre en ce qui concerne le développement des critères sur la localisation des circuits de commercialisation, les conditions environnementales, les méthodes de contrôle et de certification, ainsi que sur la définition des zones de montagne.

INDEX

Keywords: mountain foods; sustainable development; food labelling; certification
Mots-clés: produits alimentaires de montagne ; labellisation alimentaire ; certification

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