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# PASTINNOVA - Innovative models for sustainable future of Mediterranean pastoral systems

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**Abstract.** PASTINNOVA project focuses on the sustainability of Mediterranean pastoralism and aspires to deliver innovations and business models that pertain to the particularities of pastoral systems in the Mediterranean, accounting for a broad range of socio-cultural, economic, environmental and policy aspects. This paper presents how the project will utilize a co-creation approach, based on the theory of Living Laboratories, in order to upscale existing innovations and have a positive impact on the livelihoods of pastoral areas and people (especially vulnerable ones), while increasing the marketability of pastoral food products and favouring multifunctionality.

**Keywords.** Pastoralism – Living Laboratories – Innovations – Business models

**PASTINNOVA - Des modèles innovants pour un avenir durable des systèmes pastoraux méditerranéens**

**Résumé.** PASTINNOVA est un projet qui se concentre sur la durabilité du pastoralisme méditerranéen et aspire à fournir des innovations et des modèles d' affaires qui se rapportent aux particularités des systèmes pastoraux méditerranéens, en tenant compte d'un large éventail d'aspects socioculturels, économiques, environnementaux et politiques. Cet article présente comment le projet utilisera une approche de co-création, basée sur la théorie des Laboratoires Vivants, afin de mettre à l'échelle les innovations existantes et d'avoir un impact positif sur la subsistance des zones et des personnes pastorales (en particulier les plus vulnérables), tout en augmentant la commercialisation des produits alimentaires pastoraux et favorisant la multifonctionnalité.

**Mots-clés.** Pastoralisme – Laboratoires Vivants – Innovations - Modèles d'affaires

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## I – Introduction

A pastoral system is a complex structure emerging from interactions of raising livestock and utilizing natural resources, in which breeders share production purposes, traditions and cultural values (Caballero et al., 2011). Pastoralism is a land-based productive activity, where extensive grazing is substantial but includes (a) a gradient of intensification even within particular systems in the use of rangelands (e.g., permanent natural and semi-natural grasslands, shrublands) and cultivated pastures, (b) diverse species (e.g. cattle, sheep, goats, camels, pigs, horses) and local breeds, (c) livestock movements (sedentary, transhumance) (López-i-Gelats et al., 2016), (d) use of salaried labour and fixed/variable capital at different degrees.

Pastoral systems provide a wide range of ecosystem services (ES) and play multiple roles towards sustainable and inclusive development. Their socio-economic role relates to protecting livelihoods in mountain/marginal/island areas for centuries and is still an important source of income and employment, even combined with other activities (Ragkos et al., 2020). Environmental roles stem from being tailored to local conditions, thus making efficient use of natural resources. Good grazing practices in pastoral systems play an essential role in the management of grazing land; biodiversity; landscape structure; and mitigating climate change effects (Caballero et al., 2011; Vagnoni and Franca, 2018) The cultural heritage of pastoralism characterizes territories: Traditional ecological knowledge, farm and land management; customs, traditions and norms; processing. Transhumance is inscribed in the Representative List of the Intangible Cultural Heritage of Humanity (Greece, Italy, Austria). Last but not least, pastoral food has many of the characteristics that the EU Circular Economy Action Plan calls for (high-quality, functional, safe, efficient and affordable) (Budimir et al., 2018).

In recent years, pastoral farms are increasingly facing challenges regarding their sustainability. Pastoral areas are often faced with social challenges: limited employment opportunities; high rates of abandonment and difficult access to land; poverty and limited access to basic services; generational renewal problems (rural youth is often emigrating) (Ragkos and Nori, 2016). Pastoralists are threatened by intensive/industrial production, while several problems reduce their socio-economic performance, access to markets and bargaining positions: Small farm sizes; inefficient practices, lower yields and productivity; low profitability and dependence on subsidies; asymmetric information; lack of effective governance or involvement in organizations which do not share their specific pursuits. Traditional land-livestock-labour configurations are being altered due to intensification while 'pastoral identities' are threatened by bad sanitary conditions and excessive use of external resources – including crossbreeding with imported breeds and less feed autonomy. Labour is shifting from family to salaried forms, though mechanisms to integrate the immigrant workforce in the sector are limited (Nori and Farinella, 2020). Family labour is considered a “free” input – although it can be more productive – and its costs are not taken into account, thus decreasing its perceived importance. As the agrarian world evolves towards multifunctionality, women are assuming more strategic roles in farm entrepreneurship, with a specific focus on processing, marketing and household duties and secondary positions in decision making

Under these conditions, there is a lack of innovations that pertain to the philosophy of the system, while pastoralists have limited opportunities to co-create innovations and business models (IBM). PASTINNOVA is an Innovation Project that comes to address these challenges with an overall aim to deliver IBM for sustainable, profitable and resilient pastoral farms and value chains with a view to increase smallholders' potentials for market access and value adding, contributing to revitalizing mountain and marginal areas and fulfilling social expectations. The project examines pastoral systems, which are able to provide a broad array of ES along with high-quality products (e.g. dairy, meat, wool and processed) in a variety of agro-ecological and socio-economic Mediterranean settings which share three features: agro-ecological constraints; traditional socio-cultural roles; potential to foster sustainable entrepreneurship. PASTINNOVA encompasses this rich variety of pastoral systems in the Mediterranean, acknowledges that there exist farms with different pastoral components and focuses on smallholders maintaining 'pastoral identities' by making sustainable use of local resources at risk of abandonment (i.e. grazing resources and ecological knowledge) and providing examples of circular economy for centuries and an alternative to dominant intensive livestock. Therefore, PASTINNOVA lies in the core of sustainable rural development.

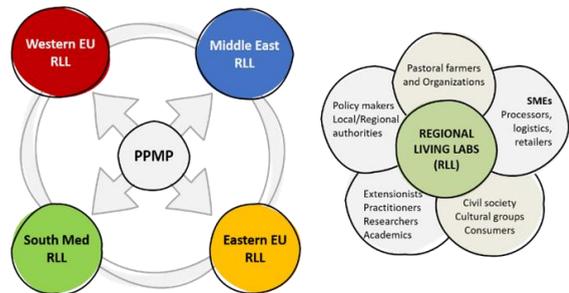
## **II – Materials and methods**

PASTINNOVA proposes a holistic interdisciplinary approach, which brings together a partnership of 20 of the most important pastoral Organizations – representing 12 countries -

from various backgrounds (research, education, Cooperatives, policy, SMEs) and with different expertise. The methodological framework will combine participatory approaches, assessments and real-life applications, where four elements interact (1) Diagnosis (listing of innovative project, practices and initiatives); (2) Testing of selected innovations under different contexts; (3) Small-scale pilot implementation, sustainability assessment; (4) Policy and market uptake.

Based on the theory of ‘Living Laboratories’ (D’Ottavio et al., 2018), a common network on “Pastoral actors and Value Chains of Pastoral products (VCP)” will be established to co-create innovative solutions for farmer organizations, farm management and VCP through the integration of needs, capacities and experiences of actors (e.g. farmers, entrepreneurs, manufacturers, retailers, policy makers, researchers, consumers). The common network on “Pastoral actors and VCP” will be articulated in a “*Participatory Platform for Mediterranean Pastoralism*” (PPMP) and four Regional LLs (RLLs) (Figure 1), grouping countries from Regions with common economic, socio-political, cultural and environmental challenges and geo-climatic affinities in their pastoral systems. The PPMP will *coordinate the pooling* of existing knowledge and other pastoral resources; serve as a *nexus among RLLs* ensuring inter-connection, communication, co-learning and information flows and; *monitor the advancement* of the RLL activities. The RLLs will undertake the *co-creation approach, co-designing implementing, assessing and characterizing innovative solutions*, while also contributing to the validation of results, outputs and strategies. Selected solutions will be tested and implemented in small-scale real-life applications and assessed for their sustainability (economic, social, environmental) Particular focus will be set on the inclusion of vulnerable groups (e.g. women, young farmers and migrant workers).

**Figure 1. Common network on Pastoral actors and VCP**



### III – Results and discussion

PASTINNOVA will consolidate what makes the identities of pastoral farms and the different faces of their performances, survival strategies over time and future trajectories under climate change and unexpected market conditions. It will deliver IBM targeted on pastoralism and its products to upscale performances of pastoral farms and Organizations and to rediscover ‘pastoral identities’ - for those who have chosen other pathways or altered their pastoral profile. For this reason, PASTINNOVA is pooling a significant amount of existing pastoral resources, knowledge, experience, project outputs, networks). Even from the early stages of project preparation, the PASTINNOVA partnership has identified a large number of IBM: 13 Technological/Production IBM; 6 Organizational – Managerial Farm level IBM; 10 Value chain – Market – Logistics IBM; 7 Cooperatives - Associations – Farmer organization - Governance IBM. However, the PASTINNOVA network (PPMP and RLLs) will foster a broad range of other best-practices, ideas and visions. The concept is to motivate and involve farmers and other actors in the co-creation of the innovations they require.

The 3-year workplan of PASTINNOVA comprises multiple inter-related common activities – in the centre of which there will be the Common Network for Pastoral Actors and VCP. Key activities include characterization and examination of IBM and their VCP; implementation, assessment, validation and upscaling of selected IBM with higher potential; sustainability assessments for pastoral scenarios (including assessments of ES provision, Life Cycle Assessments and estimations of GHG emissions, as well as socioeconomic impact);

development of an ICT platform to disseminate scientific knowledge, induce networking and promote e-sales for Mediterranean pastoral products; inclusion of vulnerable pastoralists in activities across the VCP; participatory policy analysis and contribution to the design of effective pastoral policies; analysis of needs and synthesis to support pastoral actors and Organizations.

The key outputs of PASTINNOVA research, innovation and co-creation activities include at least 12-15 IBM tested and assessed; at least 4 '*Modular baskets*' of ecosystem services; scenarios increasing employment in pastoralism by at least 5%; at least 20 Mediterranean pastoral producers in the PASTINNOVA ICT platform; policy contributions: One "White paper", 12 fact-sheets, guidelines for an eco-scheme; At least 100 *women and young people in innovation activities*; 6-8 business plans for pastoral farmers and their Organizations, 6 of which receiving additional support

## IV – Conclusions

The impact of PASTINNOVA relates to the fulfilment of the true potential of pastoral systems with relevant benefits for smallholder pastoralists. Co-creation within LLs is a key measure demonstrating the effectiveness of the project approach to ensure maximum impact. The expected impact of PASTINNOVA includes a significant increase of marketability of pastoral products – with higher market transparency and a better positioning of smallholders, who are usually the weakest links. PASTINNOVA envisages a more extrovert pastoral sector, more receptive to innovation and with horizontal and vertical links to other profitable activities and value chains, in order to promote multifunctionality in pastoral areas and promote territorial development. The holistic approach of PASTINNOVA will also have positive effects on the inclusion of vulnerable groups – especially women and young people. At the environmental level, multiple benefits are expected in the fields of resource-use efficiency in Mediterranean livestock production, less GHG emissions and better focus on biodiversity.

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