A thematic network on High Value Farming
Learning, INnovation & Knowledge

LEARNING AREA « Thessalia »
(Greece)

A BASELINE ASSESSMENT

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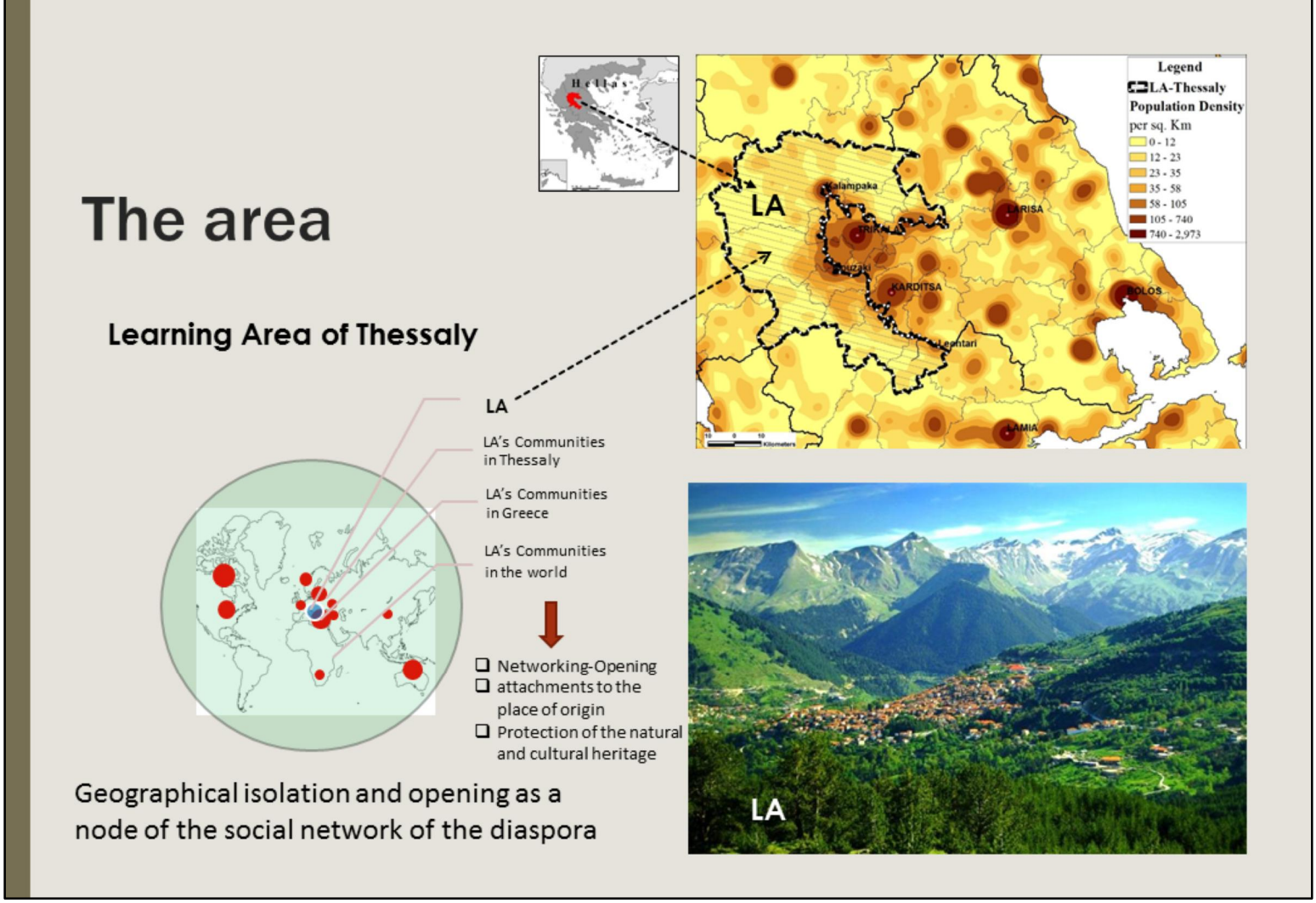


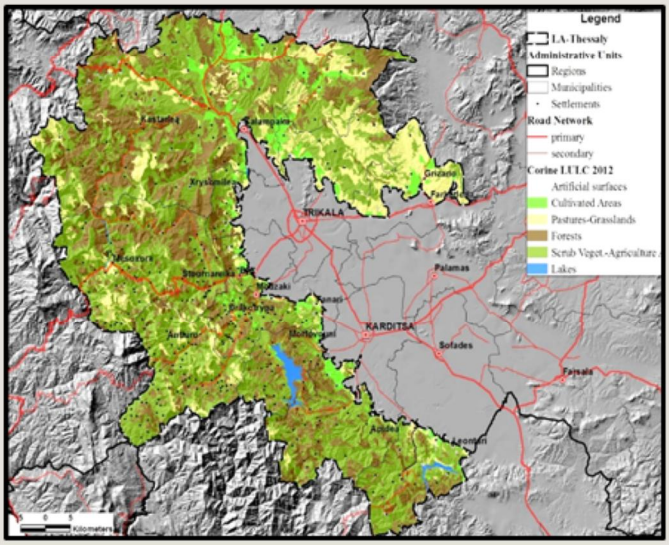
The LA is a historical and symbolic mountainous geographical unity (refuge of the resistance against the conquerors). Its landscapes strongly depict the ability of its communities to manage over time the human-animal-nature relationship in a mountain with difficult terrain but rich biodiversity. A Center of population concentration and economic activity around pastoral livestock until the 1960's, LA witnessed its workforce, labour potential being transferred within few decades in the neighboring plain, urban centers (mainly Athens, the capital and Thessaloniki) and abroad. Today, its geomorphological features, the natural resources and landscapes, its rich pastoral heritage but also its common difficulties, possibilities and prospects, reinforce LA's unity and consistency.

The simultaneous attachment at the territory and the extroversion have historically given to LA's communities the ability and flexibility to continuously adjust. Nowadays a new reterritorialisation and recovery dynamic of the LA is unfolding. The installation of new farmers is based mainly at: a) the value that society attributes to the LA as an HNV area and the recognition of its agricultural systems' multifunctional role and b) activating socio-cultural (cultural associations) and economical (control of the dairy chain) ties that LA keeps with its Diaspora.

At the same time, an innovative and integrated initiative is being developed that by valorizing a potential of actors intervenes in the relationships between LA's agricultural holdings and the value chain in which they belong. This initiative considers that recognition of the multifunctional role of agriculture in the area by consumers and the society at large, is a prerequisite for the sustainability of the HNV system. The developed participatory guarantee system integrates into the final product all those elements that, above all, guarantee the pastoral households' contribution in managing biodiversity and the landscapes.

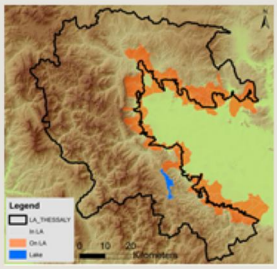
The PGS is simultaneously a tool for the control of specifications related to the maintenance of HNV production systems and a tool for the promotion-guarantee of these characteristics towards consumers. The objective of the PGS is thus auditing, informative and educational, opening a communication channel between HNV producers and producers more or less aware/not aware. Therefore it is not marketing that conserves biodiversity but consumers' actual recognition of this value through the preference of the products. This is a bottom-up initiative that contributes to the producers' understanding of the value of the HNV production systems.

Limits and key characteristics

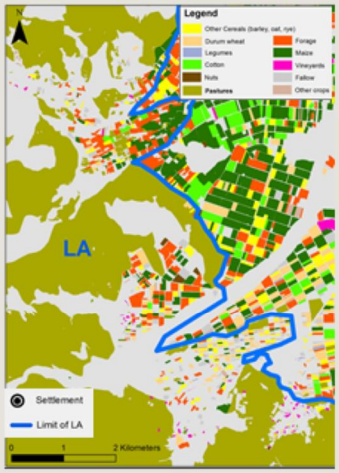


LA's limits

Intermediate zone (IZ) between LA and plain



Borderline between LA and plain



Mouzaki, a small town at the entrance of the natural transit route towards the mountainous region of Argithea

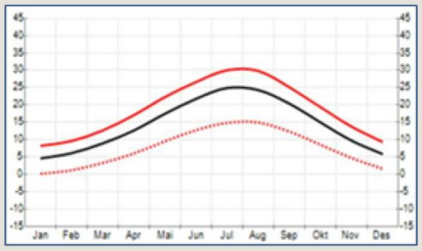
LA is defined by the ridges on the west of central Pindus and the ridges on the north of Chasia/Antichasia mountain (administrative limits with the Regions of Epirus, Central Greece and Western Macedonia respectively). LA surrounds the plain of west Thessaly and the separation line with it, forms LA's eastern boundaries. LA, a closed area with no internal openings-basins is characterized by natural passages leading to Thessaly's plain. At the entrance of these passages there are small cities. It covers 4200 Km². The altitude ranges from 250 m to 2,400 m. The main land cover is wood vegetation (shrubs and trees with some openings and arable plots). The area is characterised by a persistently dicreasing population, small-extensive livestock farming and small-scale agriculture.

The 145 LA's communities (296 settlements) are entirely outside the plain. On the contrary, the 48 communities whose surface is intersected by the LA's delimitation line and whose agricultural land is in the plain are a separate "Intermediate Zone (IZ)". This zone maintains close links with the LA, being a place of permanent or winter installation for the LA's herds and a forage production area for mountain livestock breeding.

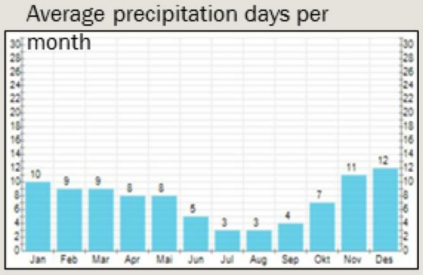
Despite the LA's administrative division–between two regional units (Trikala and Karditsa) and among 7 municipalities two features reveal a perception of community, through the awareness of common problems, new perspectives and the need for joint action: the drafting by the 7 municipalities of a common plan for sustainable development (2016) as well as their joint decision to create a support center for the HNV farming systems (2017 within the HNV-Link project)

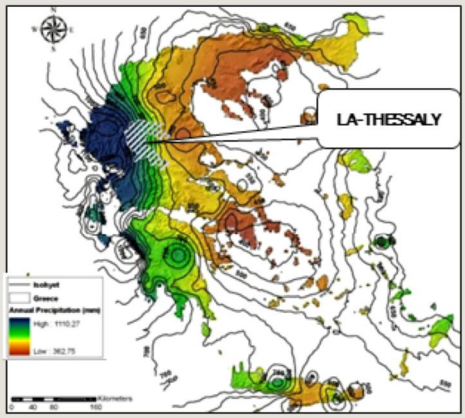
Climate and vegetation

Average temperature per month



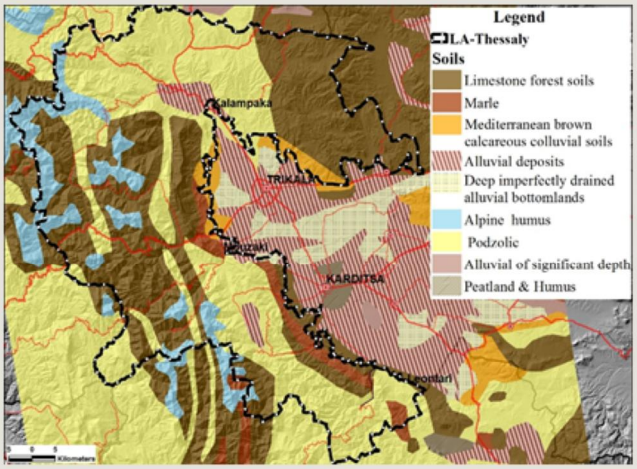
Average precipitation days per month



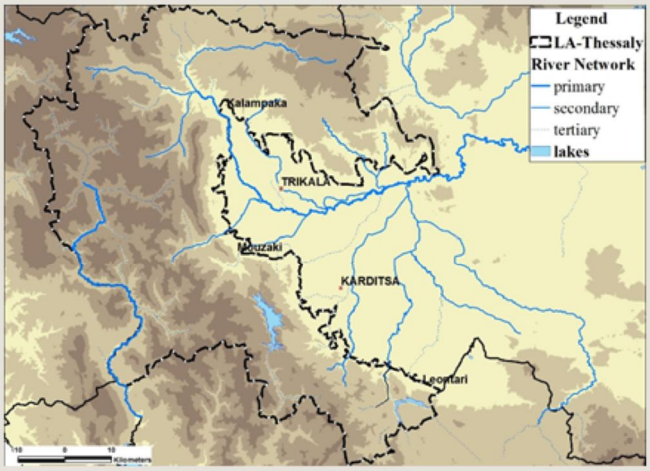


Annual precipitations (mm), 2013

Main types of Soils



River network & Lakes



From a geological point of view, LA is characterized by two types of rock material: a/ At the plain's edge a mass of Oligocene marly (limestone) sandstone leans on the first slopes of the flysch which form a first line of 900 to 1,000 m hills. b/ To the west the mild slopes formed on the flysch give their place to much steeper slopes, formed by limestones, until the summits. Pedologicaly, acidic soils rich in organic matter (coming from forests) and clay (podzolic soils) dominate the area. Moreover, soils with greater content of fertile substance (humus) are present at a lower rate. Most soils are gravelly or red (terra rosa), rarely deep, characterised as superficial formations.

LA is covered by two slightly different climatic zones. The first spreads over the LA's foothills. In a strip about 20 km wide from the foot of the mountain, rainfall is much higher (>800 mm) than the plain. Early autumn rains shorten the drought period. The second zone concerns the LA's inland and is characterized by a mountainous Mediterranean climate with a significant drop in the average annual temperatures. There are plenty of snowfalls and rainfalls (annual precipitation height over 1,000 mm). There is a dense network of watercourses, plenty of groundwater resources and many springs. In the westernmost part of the, LA major rivers like Achelous and Pineios, originate. The LA is the sole water provider (irrigation and drinking water supply) for the Thessaly plain.

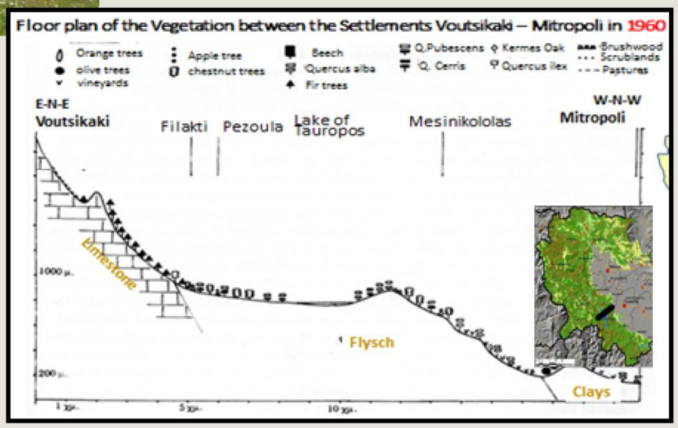
Geomorphology and vegetation II

The vegetation type of the LA is a mosaic of dense forests, openings, permanent pastures and mixed herbaceous/ agricultural areas

Plane trees, alder trees

Land Cover/Land Use	Area (ha)
Mixed Herbaceous vegetation/ agricultural areas	194500
Forests	142000
Pastures-Grasslands	57400
Cultivated Areas	21000
Lakes	3000
Artificial surfaces	2100

Data and Categories of Land Use according to Corine 2012

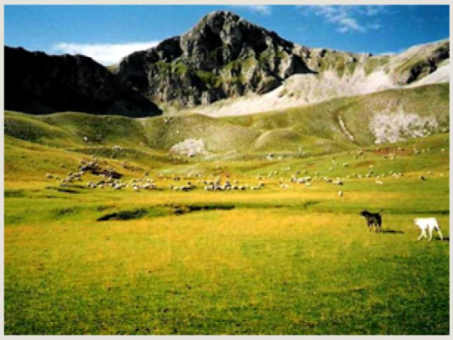


At LA's medium elevations evergreens and broadleaved vegetation i.e. Mediterranean elements, prevail. Then a zone of oaks follows and at higher elevations Coniferous trees are dominant, with most characteristic the black pine (*Pinus nigra)*. At the same time even higher trees of beech and white pine appear. Between 1,400 m and 2,600 m *Pinus Leukodermis* emerges. Land cover at this height becomes sparse. The treeless and steppe-like pastures appear higher in altitudes.

The area, due to the existence of several types of plants and certain combinations, could be thought as the border between a mid-European and a Mediterranean environment. The distribution of the temperatures and rain falls do not create particular problems in vegetation. As a result of grazing, new plant formations are appearing (fern, kermes oak, phrygana...). There is intense vegetation along the watercourses (plane trees, alder trees). Finally, the limestone soils (Koziakas zone) is the area where kermes oak *(Quercus coccifera)* grows, always accompanied by *Phillyrea media*, and gives a shrub vegetation or a formation of micro-shrubs from non-edible species (*Poterium spinosum, Phlomis fruticosa* etc).

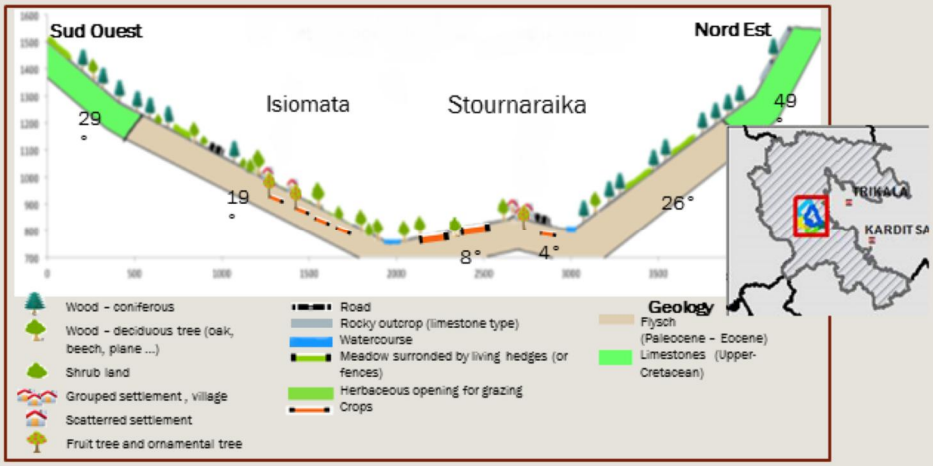
Landscape and transect

Alpine pasture

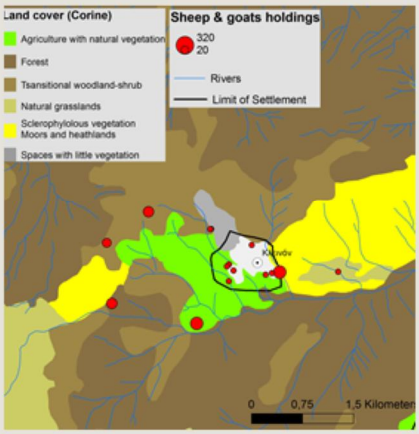


NE LA: land clearing and enlargement of parcelles

Dispersed habitat and agrarian structures



Livestock holdings localisation



The characteristic agricultural landscape is formed on the slope of small valleys on top of which the settlement is established (concentrated or scattered). Cultivated land usually extends after the settlement, including any arable surface in the two sides of the small river that flows down the valley.

Depending on the population reduction the cultivated parcels are scattered, while the rest are abandoned, fallow land or used for grazing (grass or not).

In higher altitudes non-irrigated crops are located while irrigated land follows the river. Small orchards surround the village while, in many cases, livestock farms are scattered within this agricultural land, the small herds within the limits of the settlement. The evolution of this selective abandonment explains the forest and kermes oak invasion and the impacts at the neighboring habitats (densification of the riverside plane forest, abandoned pastures).

Pastures are located in higher altitudes, circumferentially and relatively far from the village where flysch prevails and in mush higher points, when the territory is limestone. Between the village and the pastures, forest is inserted. These pastures are used mainly by transhumant and big permanent herds. Gathering the herds in nearby or high-altitude, but easily accessible pastures where infrastructure exists, creates over-grazing phenomena.

HNV 1: All pastoral holdings, with some small exceptions at the south part of central and northeastern LA. Holdings with smaller herds use the pastures next to the village and larger ones use the most remote (600-800 m altitude) and higher (alpine) pastures.

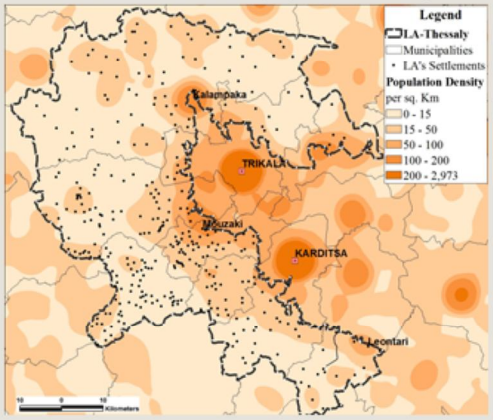
HNVF 2: Every crop and mixed agricultural holding of W and E LA and the mountainous part of NE LA. They currently manage the zones of agricultural land that are either in a state of less or more advanced abandonment (W LA, small villages) or in preservation (big villages of E LA). The farmland with lower percentage of semi-natural vegetation create in a complex mosaic landscape with arable and/or perennial crops

HNVF 3: The relief in north-central and south northeastern LA offers more grazing and arable land especially towards the plain. Land clearings there, are more significant. However, the cultivated crops are rather oriented towards the support of a very significant sheep/goat and cow breeding holdings which nonetheless flirts with intensification.

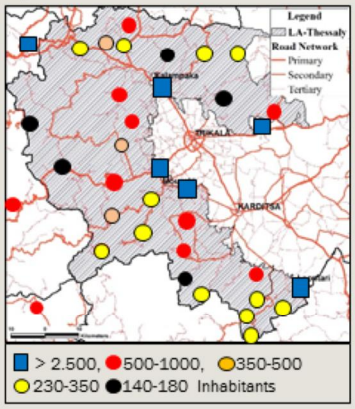
Human geography

Population of LA (2011)	33.028

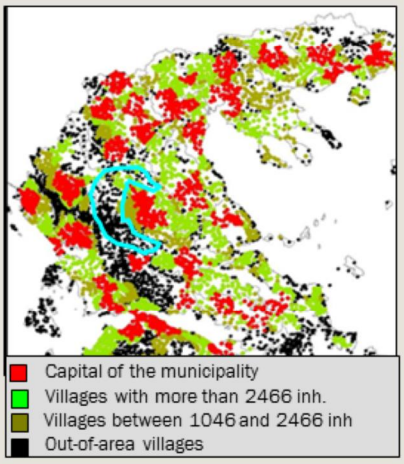
LA's settlements and population density



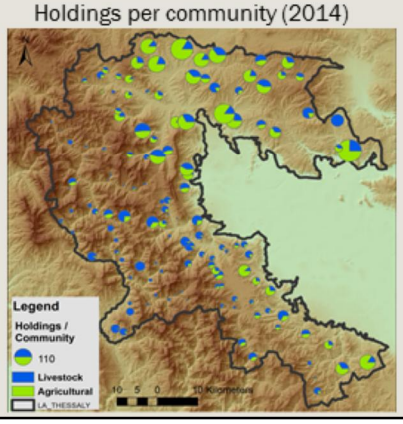
Road network & Larger Villages within LA (2011)



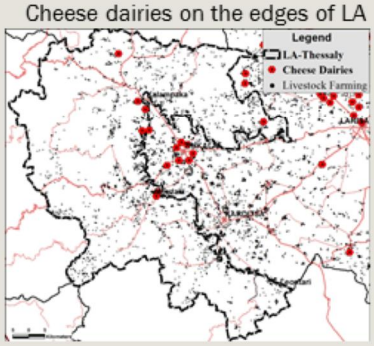
LA relating to 4 proximity zones from the urban centers (distance-time 20 mn)

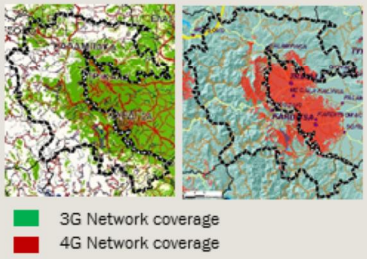


Holdings per community (2014)



Cheese dairies on the edges of LA





Population- cities- transportation

- 33.028 inhabitants distributed in 297 villages. Disturbed residential network (9 settlements have nowadays, an aged and aging population between 500-1000 inhabitants). The population is served in towns located at the LA's limits and the cities of Karditsa and Trikala (80.000 and 60.000 inhabitants respectively). Its' road network addresses to the needs of livestock breeding, tourism and Diaspora's movements but the relationship time-distance/services still remains problematic. During summer, the population in villages is multiplied, due to the arrival of transhumant farmers and Diasporas' return in their homeland. West LA is more sparsely populated and with less permanent activity (it is dominated by transhumant farmers).

Economy:

Based on pastoral farming, small-scale agriculture and on agri-tourism. In the total active population (30%) the primary sector is estimated to represent approximately 60% (4,084 farmers of which 800>65 years old). Agricultural products oriented towards feedstuff and self-consumption. The milk is processed at cheese dairies in the plain that belong to entrepreneurs originating from the LA. Local products' like flour, aromatic plants, desserts, trout, honey, etc as well as services (restaurants, accommodation, laundries and alternative forms of tourism) are offered to both Diaspora members and tourists). Limited logging activity.

Institutional:

Spatial and Development planning should be viewed in the context of a national institutional framework oriented towards a decentralisation process as well as of E.U's policy measures on environmental protection, sustainable development and participatory planning. The latest administrative reform (2010) resulted in the consolidation of the LA's settlements in 7 extended municipalities, at the expense of participation: the old, demographic weakened, communities remain oriented towards the Diaspora communities failing to integrate into the new governance forms. Livestock farmers less willing to participate in cooperatives. Instead, individual farmers establish informal professional relations with cheese makers. At the same time, cultural associations of the Diaspora organized in federations as well as the appearance of novel co-operation initiatives could be perceived as indications of a social capital formation process.

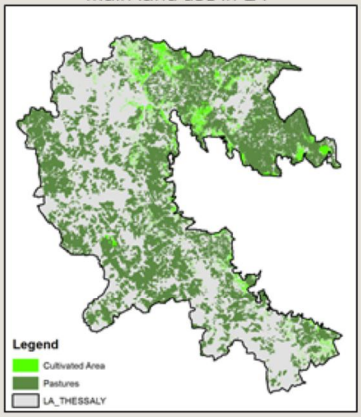
Users:

Permanent, settled and transhumant producers and "providers" of touristic services. Diaspora's associations active in the protection of natural and cultural heritage and the diaspora members individually as land and house owners. Local public administration and the municipalities increasingly become actively involved in natural resources management. The role of the two (2) development agencies (LAGs) is also important for the operational planning and successful implementation of European rural and regional development projects locally.

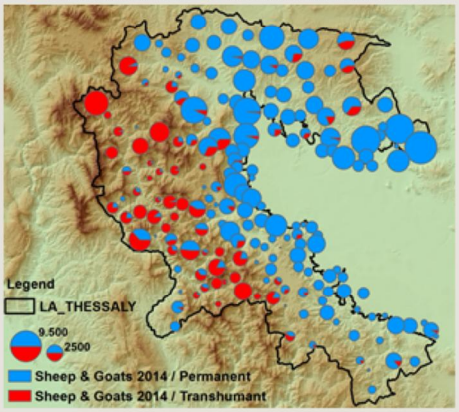
The farming systems in the LA did not escape the impact of the prevailing intensive production model, adopted by the national agrifood policy complex since the late 1950s (research and consultation oriented towards intensive production systems, degradation of local varieties and breeds, competition with similar products of lower quality. The fact that this model was applicable only to the lowland areas, limited the CAP's role to a mere economic relief of mountainous LA's Farmlands.

Agriculture: key facts

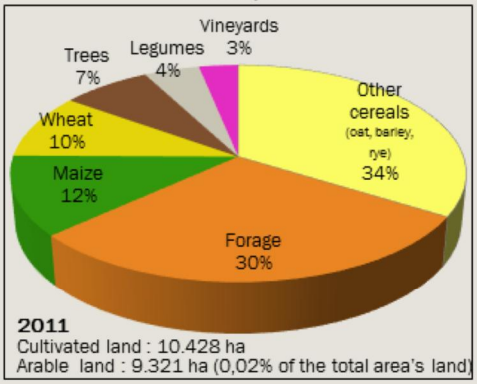
Main land use in LA



Permanent and transhumant animals



Main crops in LA

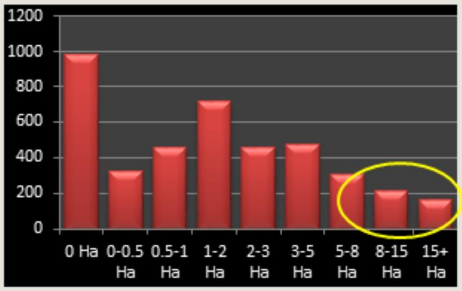


animal species	animals (Nb)	Holdings (Nb)
Cattle	24,596	589
Sheep & Goats	297,220	2,538

Farming system

- Small cropping holdings
- Small mixed cropping holdings
- Pastoral systems
- Transhumance

Distribution of farms based on the size of their cultivated land



Pastoral sheet & goats' holdings in LA

	(2011) permanent settlement	transhumant (summer staying)) (2012)	%
Herds	2012	333	16.5
Animals	297,220	108,023	36.3
Average	177	324.4	

LA's agricultural holdings (4.084) remain attached to managing low-intensity HNV systems which is positive for managing the biodiversity landscapes. Only in some cases (NE LA) while HNV farmlands' ecological habitats, like semi-natural pastures, are still a functional part of the holdings, some of them are trying to intensify agricultural farming scattered within the community in the framework of mixed system or by choosing land concentration instead of livestock farming. Only a few abandon livestock farming and focus exclusively on agricultural activity, gathering the scattered abandoned parcels and addressing the needs of other small farmers for mechanical tasks and the needs of local livestock farmers for forage (green fodder, legume, wheat hay).

Pastures are mainly public and communal. Agricultural land is limited to the natural passages' valleys. Extensive and transhumant livestock is dominant utilizing local animal breeds and pastures of the area. Free-range cattle's breeding is oriented towards meat production. Crop production remains to traditional products (forage, vineyards, legumes, trees etc.). The important position that mixed holdings possess, based on their number and contribution, in agricultural land and biodiversity management, is not attributed since they are evaluated and are funded based on the value of their production. The important position that mixed holdings possess, based on their number and contribution to the agricultural land and biodiversity management, is not attributed as they are registered (and strengthened) based on the value of production and the economic efficiency of the holding (economic size methodology). Intense decrease of permanent holdings mostly in west LA. Transhumant farmers are covering this gap with their herds (333) whose average animal number (324.4) is twice that of non-transhumant (177 animals). Choosing the pastures and organizing the grazing follow traditional distribution rules (family tradition, size of the herd). Abandonment of remote pastures and over-grazing of nearby pastures and parcels is observed, even in a small radius around the settlement, part of which is included at the livestock holding's grazing system.

The holdings' large decline resulted mainly from the large accumulated number, between 1960-1970, of senior head farmers who paused their activities. It also conceals internal structural changes caused by the creation of new holdings (new farmers and pensioners). Lately, there has been a shift towards sheep breeding, cattle and mixed holdings and partially towards new dynamic cultivations by the new entrants. On the contrary the number of arable holdings continues to decline.

Agriculture: key facts

Number of holdings per category of economic size and productive direction (IOMS*/2011)

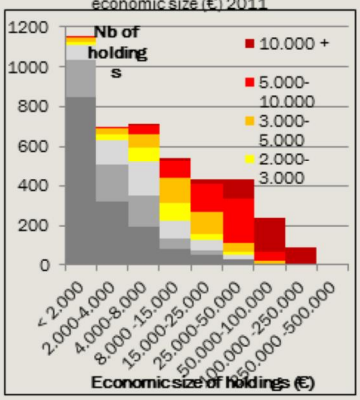
Economic size classes	Arable	Dynamics agricultural	Livestock holdings except cattles	Cattles	Mixed	Unclassified	Total
< 2.000	537	303	136	0	9	363	**1348**
2.000-4.000	257	165	208	4	32	6	**672**
4.000-8.000	159	142	243	7	40	4	**595**
8.000 -15.000	87	91	301	6	32	0	**517**
15.000-25.000	33	45	206	19	38	0	**341**
25.000-50.000	36	27	179	66	32	1	**341**
50.000-100.000	6	0	45	126	4	0	**181**
100.000 -250.000	1	2	14	65	1	0	**83**
250.000 -500.000	0	0	3	3	0	0	**6**
Total	1116	775	1335	296	188	374	**4084**

* IOMS: Integrated Operating Management System

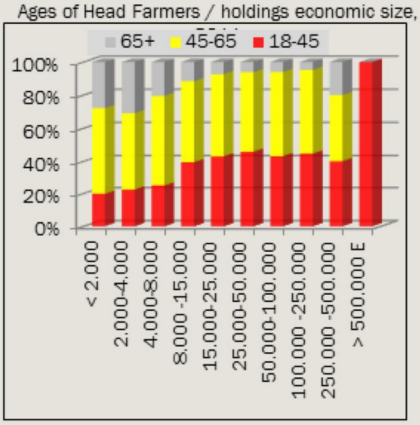
Specialised perennial crops per category of holding economic size 2011

Economic size classes (€)	Olive trees	Wines	Vegetables & flowers	Other permanent crops	Polyculture	Total
< 2.000	122	18	1	47	108	296
2.000 -4.000	24	16	1	57	58	156
4.000 - 8.000	4	9	1	78	46	138
8.000 - 15.000	0	3	0	57	25	85
15.000 - 25.000	1	0	0	26	16	43
25.000 - 50.000	1	0	1	18	7	27
50.000 - 100.000	0	0	0	0	0	0
100.000 - 250.000	0	0	1	0	1	2
total	152	46	5	283	261	747

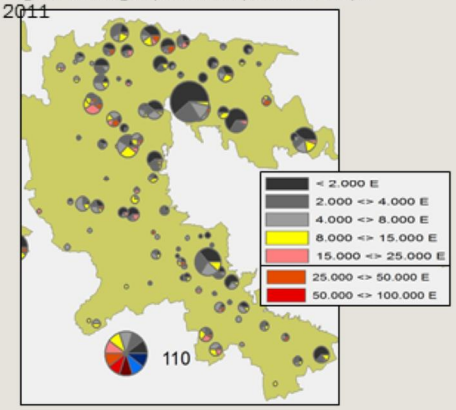
Allocation of subsidies (CAP) per holding economic size (€) 2011



Ages of Head Farmers / holdings economic size, 2011



Vegetal holdings specialised perennial crops 2011



38% of LA's holdings have an economic size <2,000 € and remotely benefit from Community aid. However, part of this percentage results from the division of the herds between members of the household. On pure agricultural holdings this percentage is even bigger (72%) (Division for taxation purposes).

A promising element: 20% of head farmers is <45 years old, a percentage that is successively largely increasing in bigger categories of economic size revealing a significant renewal.

The pure and mixed livestock holdings are the most dynamic (50% >8,000€) and even more so the free-range cattle holdings (66.5% > 40,000€). That is why they enjoy the greatest aid from CAP.

50% of vegetable holdings with specialised perennial crops are characterized by small size (<4,000€). The more dynamic holdings are occupied with arboriculture, vineyards and polyculture. Those categories attract new farmers due to demand for their products by the market.

Low productivity in sheep milk against high fat yield. The local breed (Boutsiko) gives approximately 100-120 lt annually and the crossed local (Chiotiko, Karagouniko) from 160-220 with 7.6% and 6.5-7% fat respectively. Milking machines are not widespread. The 4,084 LA's holdings have just 250 tractors (1.5 tractor/settlement).

In terms of products, cultivated forage, various cereals and maize are absorbed by local livestock farming or by local forage merchants. Milk is mainly collected by the 17 cheese factories of the Thessalian plain. Part of the produced milk is made cheese at the village and is sold at the farmer's close family and friends representing an average of 15 to 20%. Low meat value (very low prices and non-inclusion in PDO status).

Landscape and transect

Agro-ecological units

Agro-ecological units - Description

C : Flat zone of cultivation protected by the low mountain relief

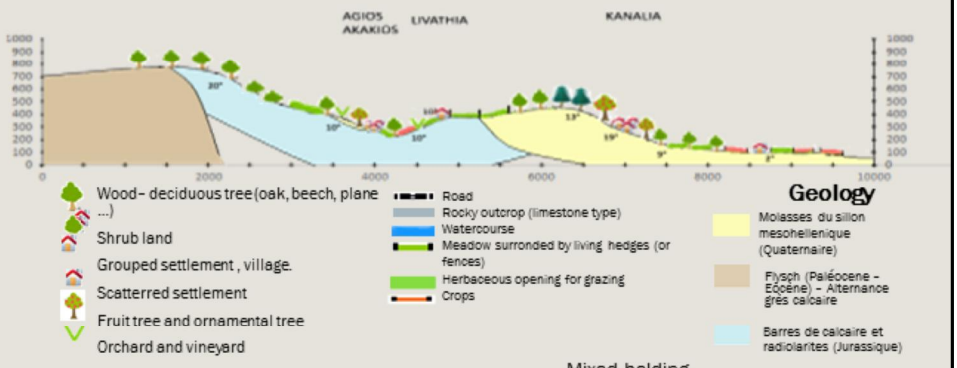
CP : Collective pasture on the side of the mountain directly facing the the plain

P&C: Pasture and culture in small parcels, divided by living hedge or small woods with

W&R: Wood and rocky outcrop on the top of the mountain, stip sides and abandoned parcels

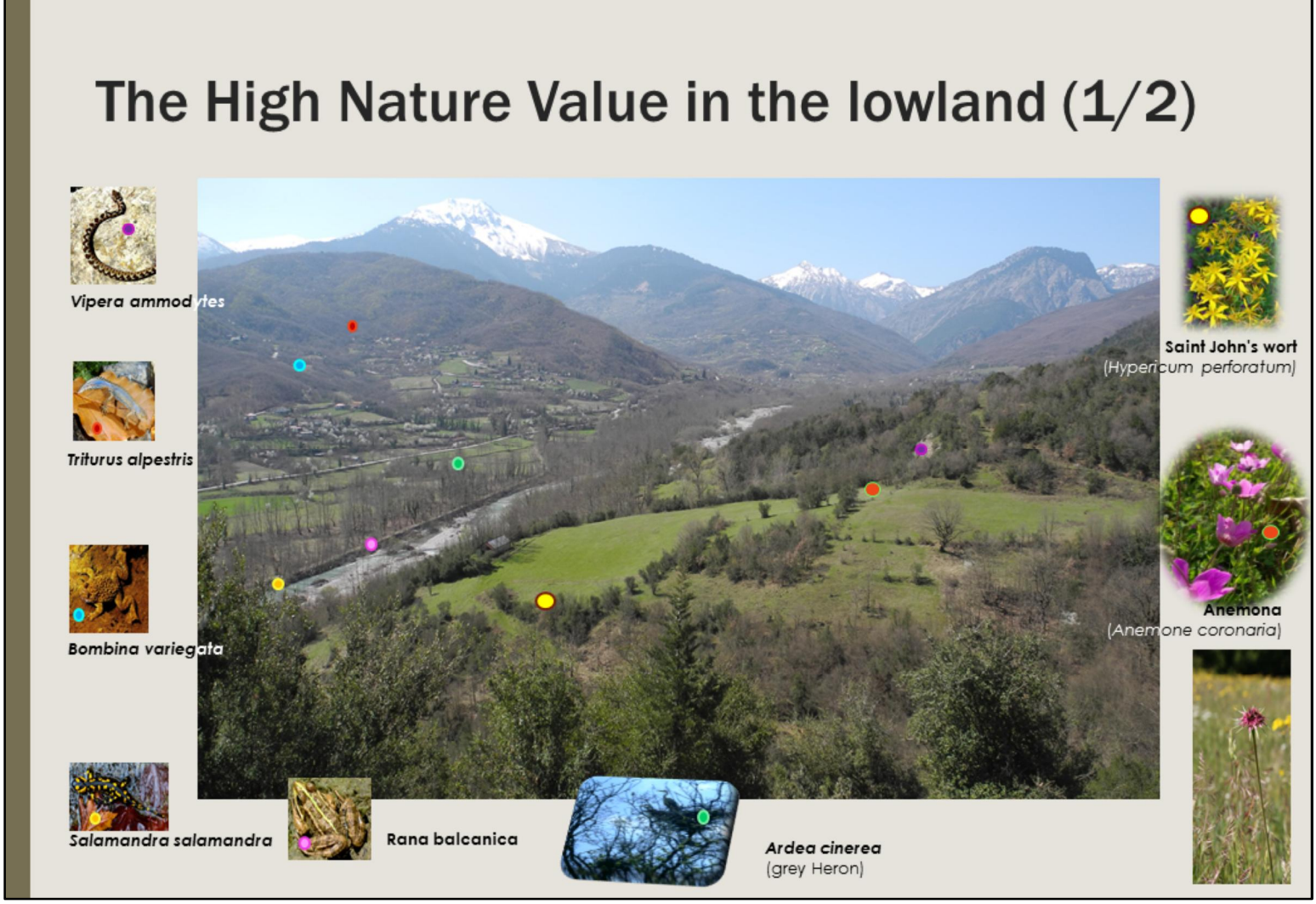
C&W: Culture and wood on the flat banks of the lake

Transect area P & C



Mixed holding

The landscape functions have already presented in slide No 5.



There was no causal link between biodiversity and production system during the definition of HNV areas in our country. This relationship should be studied. In other words, for every plant and animal species (bird, wild animal, reptile, plant…) we should locate the agricultural infrastructures, practices and techniques that should remain and be developed in order to preserve and strengthen their population. The existence of pastoral farming combined with the small extent of hunting contribute to the existence of natural elements (flora and fauna)

Three are the main linkages of the rich biodiversity existing in the LA and farming.

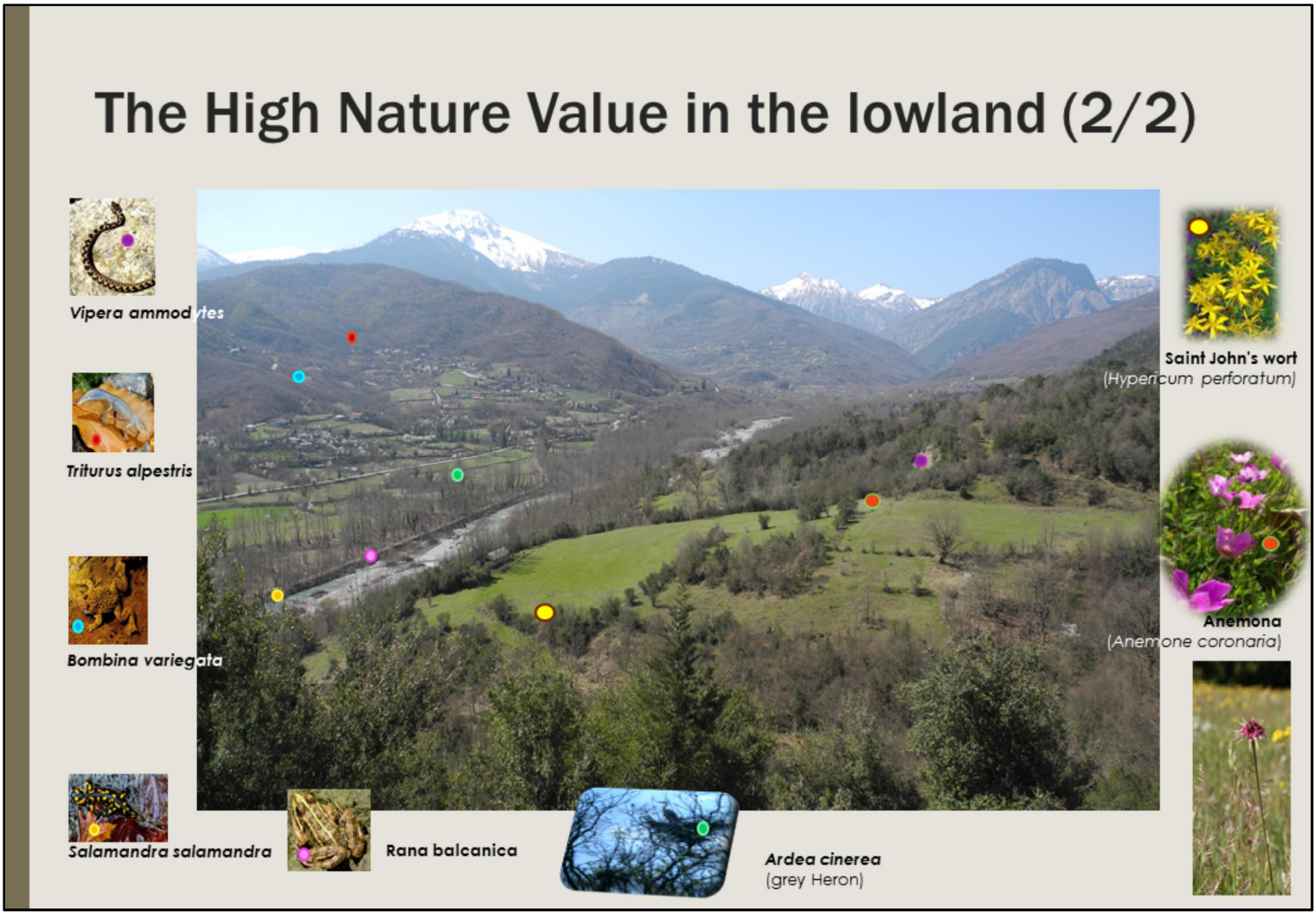
a. The pastoral management of flocks in the case of sheep and goats. The movement and the longtime of outdoors permanence of flocks, is an enhancing factor for predators and carrion eating animals.

b. The interface points and ecological routes (e.g. intermediate zone between pasture and agricultural land) of the subsystems are very extensive and scattered in the area. Those are the richest in biodiversity. The mosaic landscape with the mixture of land uses and management practices applied, includes features like hedgerows, tree fences, terraces, streams as well as small ponds, single trees and bushes, clumps etc. creating thus a network very valuable for biodiversity.

c. The small size and the disperse character of individual plots has as a result a very high complexity and an increased length of the transitional areas within the mosaic.

The LA hosts a high faunal diversity, includes many important Bird Areas as well as threatened species. At least 67 bird species have been recorded. The Plastiras mountain lake is the habitat of an amazing bird fauna. The Greece European flora, with 850 plant species recorded only in its territory, could make the territory one of the best botanical places of the world. LA's flora also includes a great variety of medicinal and aromatic herbs.

As far as LA's flora is concerned the endemism rate can exceed 35%. The area comprises more than 650 species and subspecies.



Significant flora species in low and medium altitudes

Saint John's wort (*Hypericum perforatum*): Medicinal herb from which the famous therapeutic balsam oil (valsamelaio), is produced. It grows in pastures of low and medium altitude, as well as in abandoned

Anemona (*Anemone coronaria*): typical wild flower that grows in the pastures, ~~we~~ it can be found ~~it~~ in low and medium altitude (200-800m). It blossoms during May-April.

Important fauna species in low and medium altitudes

Grey Heron (*Ardea cinerea*): It is found in flooded meadows, rivers or fields of the area. The presence of the water coming from the Plastiras lake favored significantly the increase of its population. It exploits the lake and the rivers of the area in order to feed itself (fish, amphibians, invertebrates) while it nests (small colonies) in high trees at the banks of the lake.

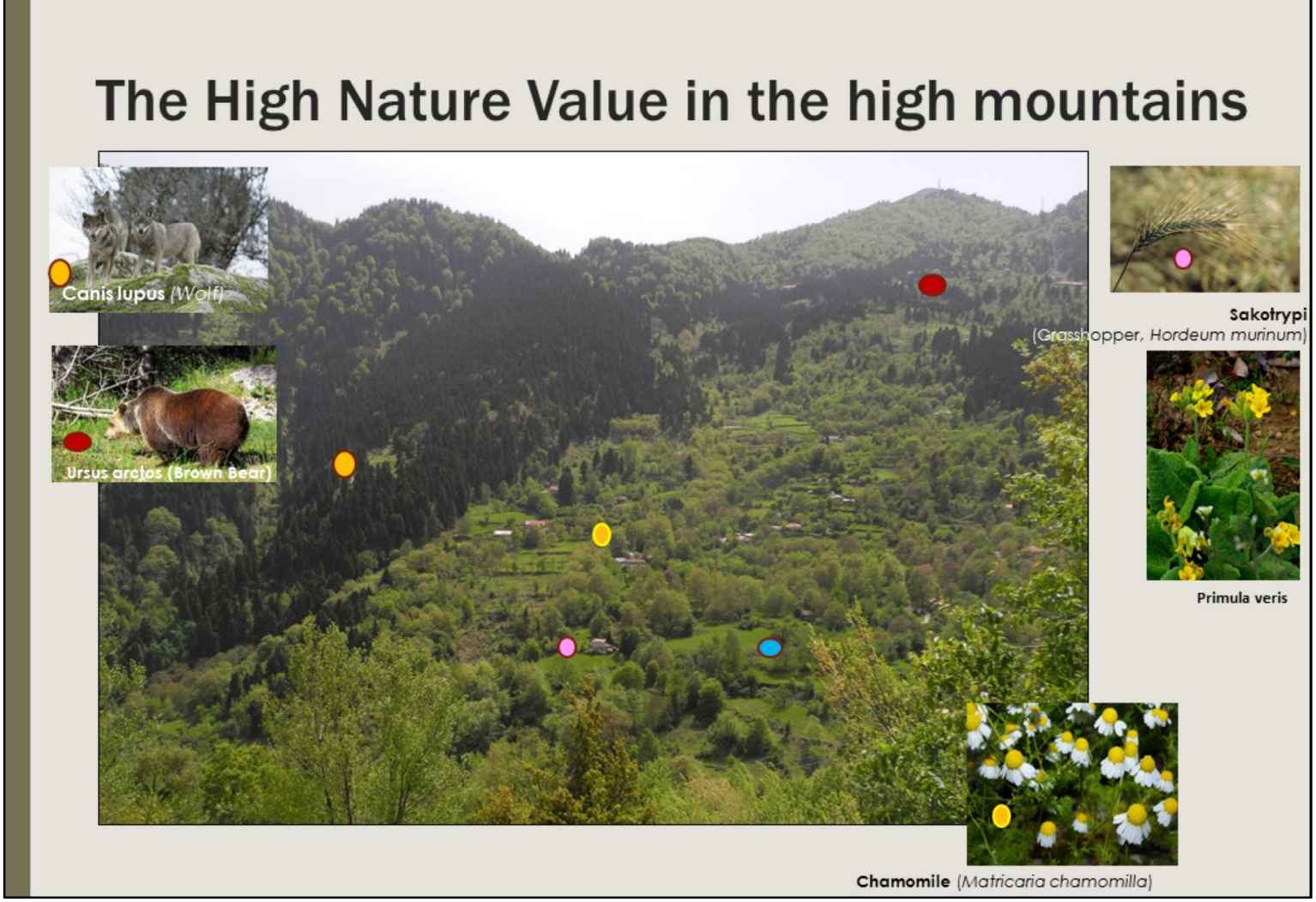
Vipera ammodytes *:* It is found in low and medium altitudes, often in rocky places

Triturus alpestris *:* It is found in high-altitude water collections

Bombina variegata *:* It is found in small, mountain water collections

Salamandra salamandra **:** It is found in middle and low altitudes, close to water or shady forests.

Rana balcanica : It is found in almost every water collection of middle or high altitude



Important fauna species in high altitudes

Canis lupus (Wolf): It is found in areas with satisfactory coverage of trees and shrubs and food sufficiency. It avoids high altitudes. It goes higher than the forest boundary only when it travels. It feeds on a variety of preys (roe deers, wild boars, hares, sheep and goats, small mammals, reptiles or even invertebrates and also on dead animals or plants. It usually forms small packs that mainly move within the zone with the oak forests of the area.

Ursus arctos (Brown Bear): It lives in deciduous forests (oak, beech) or coniferous forests (black pine, fir) of the mountainous and semi-mountainous zone at altitudes from 800-2000 m. As an omnivore, it feeds with a variety of foods that finds in the forests of the area (all kinds of fruits, bulbs, honey, roots, stems, grass, small and big mammals, amphibians, reptiles, insects etc.). A lonely animal, that constantly keeps moving in between the above ecosystems

Ardea cinerea (grey Heron): It is found in flooded meadows, rivers or fields of the area. The presence of the water coming from the Plastiras lake favored significantly the increase of its population. It exploits the lake and the rivers of the area in order to feed itself (fishes, amphibians, invertebrates) while it nests (small colonies) in high trees at the banks of the lake.

Important flaura species in high altitudes

Sakotrypi (Grasshopper, *Hordeum murinum*): Typical grass that participates in the composition of species of the grazing grassland flora of the area. Its population is favored by the conservation of pastures due to extensive livestock.

Anemone (*Anemone coronaria*): typical wild flower that grows in the pastures, we can find it in low and medium altitude (200-800m). It blossoms during May-April.

Chamomile (*Matricaria chamomilla*): Aromatic herb with smoothening properties. It grows in lowland, semi-mountainous and mountainous pastures. Its ecological requirements are favored by extensive livestock.

Primula veris: It is found in medium to high altitudes

Lifting motivation for the extermination of wolves and the creation of a body (Arcturos-NGO) for the protection of the bear resulted in the increase of their population. The existence of a significant sheep/goat and free range cattle livestock in the area attracts these animals for food search.

The time line

Explaining the present with the past

An overall view of the time line

up to 1960's
Traditional productive system

1960-1980's: attraction of the plain

1980-2010: Entrance to the E.U. (1981)

2010 +: The crisis: an opportunity for the LA?

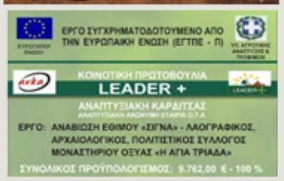












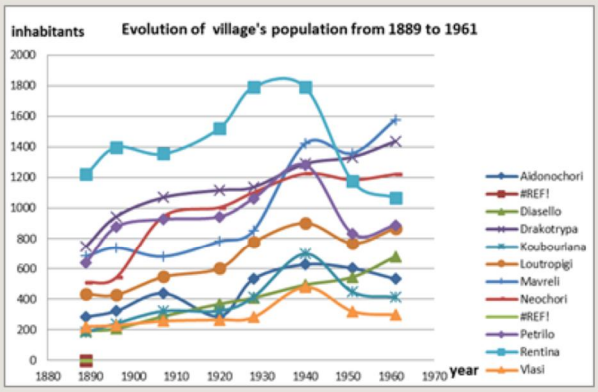
Heritage from the past

The pre-modern legacy

Up to 60's : Knowledge inherited by managing sustainably the system humans-nature-animal on the mountains

Importance of transhumance and complementarity of resources

The rural society
Villages, road, economy



Distrela : Woolen carpet laundry

Stonemasons

Transhumance route

Traditional dairy (Kasseria) in the village

Animal caravan

A mountainous society with significant specific cultural characteristics, materially and morally supported by 19th's century immigrants. At the beginning of the 20th century education rate for both sexes, was much higher than that of the plain.

Continuous population growth between 1880 and 1960 with the exception of the 1940s when LA, due to the resistance to foreign occupation forces, suffered major disasters by German occupation (1941-44) forces (burning down of all its main villages) as well as during the Greek civil war (1946-49). During the 1960's, the area regains the 1930's population reaching 114,000 inhabitants. The settlement pattern includes a central village at the North of the LA while at the central and the south, a lot of small settlements around the central big settlement (average distance 3-5 km). However, only 16 of those main villages (145) had more than 1,000 inhabitants.

Local economy was based on pastoral livestock farming (big and transhumant herds) and mixed agricultural holdings which provide for local cheese, textile, wool and leather processing artisanal industries. Milk was collected by local cheese makers in their in situ facilities. There was important activity around cottage and artisanal industries (flokati (woolen blanket), clothing, flour mills, dristelles (traditional washing of woolen articles). Difficulties in transporting timber limited logging to the mere fulfillment of household needs. Household economy was supported by diversifying activities towards traditional crafts (construction, wood processing, coal, rock). Transportations of personnel and goods were taking place with animal caravans through an extended road and path network with bridges for the movement of herds. The area of north Pindus supplied Central Europe with cheese and woven textiles i.e. capes and blankets.

The competent ministries considered that the mountain did not offer any potential for development hence it should not be considered as a habitable space. They simply suggested abandonment by its inhabitants and reforestation of the land (1955-1980 Sivignon M).

Farming

Men and Women, Farms, Products, Markets

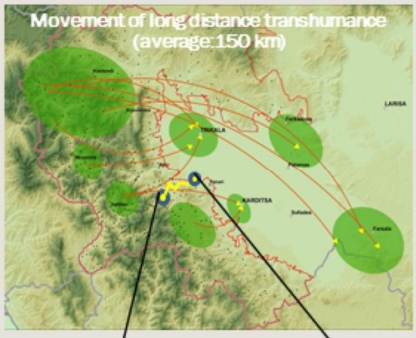
1)Small mixed cropping family holdings (polyculture and livestock)

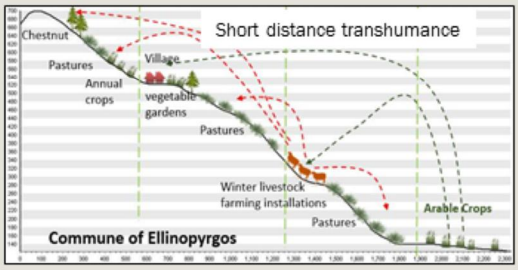
2)Pastoral livestock of large, medium, small transhumance

Animals	1911	1961
	Nb	
Cattle	17.175	20.993
Sheep	162.062	262.877
Pigs	9.257	7.076
Goats	104.280	133.727
Arable land	18.416	26.865

Big transhumant herds

Small sheep herd embedded at the agricultural family holding



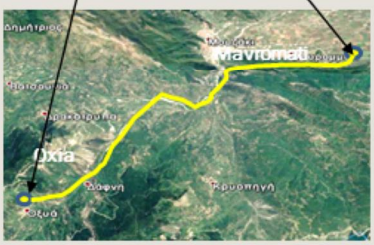


LA 1911 and 1961: Basic Crops

1911	Ha
Maize	7457
Wheat	7121
Vineyard	1849
Rye	833
Tabacco	794
Oat	667
Legumes	444
Sesame	388
lucerne	370
vetches	132
Trees	129
Barley	117
Onion	93

1961	
Nb of holdings	16.745
Trees (ha)	307
Vineyard (ha)	1.150
Arable (ha)	26.865
Meadows (ha)	2.132
pastures (private) (ha)	11.213

Ex: medium distance transhumance (25 km)



Eastern LA: mixed agricultural holdings and small /medium sized herds are dominant. The western LA was characterized by the presence of big herds (most of them transhumant) due to the abundance of pastures. Cultivation practices e.g. irrigation methods have not changed, since centuries. The production of the mixed agricultural holding was oriented towards the herd's needs and to ensure the familiy's self-sufficiency (potatoes, beans, lentils, chickpeas, barley, corn, chestnuts, apples, vegetables, forage etc.). Livestock holdings were supplying local textile as well as wool and leather processing crafts. Cheese-making was made mainly within the family and only part of the milk was collected by local cheese makers who, nevertheless, had their settlements in-situ.

The herds' movement was distinguished in large, medium, short transhumance (approximately 200,000 moving sheep and goats). The herds of large transhumance were organized in "Tseligato" (cooperation of many families in groups of 3,500-5,000 animals). Tseligato's weakening and dissolution coincide mainly with the important and rapid reduction of winter pastures due to land clearing that resulted from the radical agrarian reform (1925). At the same time, bureaucracy's indifference (or even hostility) for transhumant farmers and the mountain's pastures has been more than obvious. According to the Ottoman system of the "tsifliki", the community kept on its limits large areas of pastures located in less fertile parcels/surfaces or where the soil was swampy. The reform (1925) significantly reduced these surfaces by allocating them for agricultural use at farming families. The end on the use of these surfaces as pastures was imposed not only by the ownership segmentation but also by their cultivation with winter cereals.

When comparing 1911 and 1961, an important increase in livestock is revealed, especially in sheep breeding. In semi-mountainous areas winter pastures remain and after the reform (1925) while land clearings start in the 1960's. There was much lesser increase in goat breeding due to the restrictive measures already imposed by the state. This evolution largely explains the big increase in annual crops. On the contrary, permanent crops like trees and vineyards were reduced. Studies at the beginning of 1960 already indicate the impact of these changes e.g. degradation of pasture, increase of soil erosion phenomena etc.

The reform, land clearings and conversion of pastures into agricultural land took place only in the plain and not in the mountain. What is more, livestock farmers (transhumant) started getting (after their settlement in the plain) involved with agriculture and other professions as well in the plain, a fact that contributed to the reduction of herds. The demand for products concerned the 4 basic products: meat, milk, wool, leather. Concerning meat, the Greek diet was mainly based on sheep and goat meat because the consumption of beef grew massively in Greece after the 1970's. That is why for the following decades Greece has been characterized by a 70/30 proportion on crop and animal production. These are annual crops big part of which is intended for feedingstuff

Farming

Men and Women, Farms, Products, Markets

The woman's position at the agricultural holding

Tillage at a small parcel

Construction of an artificial dam in the river to divert water towards the fields

Hay transfer from mountainous pastures for the feeding of animals during winter

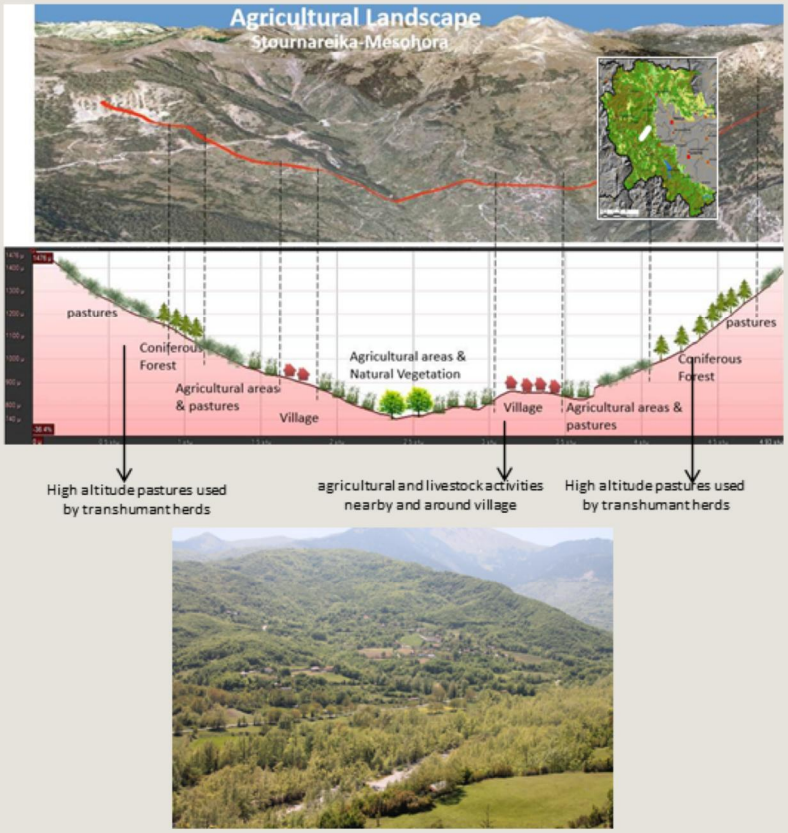
Wool valorisation by family's women

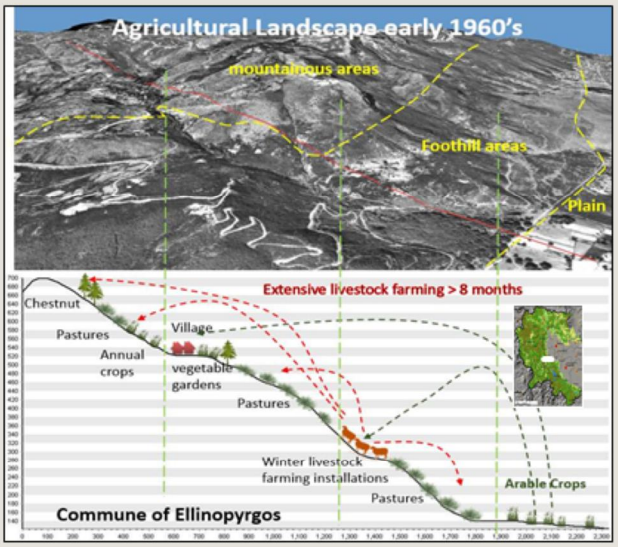
Dairy production in pastures

Selling products on the weekly market in nearest town

Women are specialized in milk and wool processing in the household, while men specialized in livestock breeding, logging, transportations and as craftsmen. In the multi- active communities and families when movement outside the LA was necessary (e.g. craftsmen), agricultural activities were undertaken by women: hay transfer, creation of small dams in order to irrigate etc. Women also moved to the plain of Thessaly for seasonal hired employment as agricultural labourers (cotton, fruit, olive collection, hoe etc).

Landscapes and environmental value





The main landscapes formed in the LA are the pastures (very high-alpine and medium altitude) and the zone of the small-mixed cropping family holdings around the village. The adjustment of farming systems by local societies to the quality of the soil and the relief was linked to the historical specialization of their communities and has a direct impact on the way of organizing the agricultural economy and on the landscape.

In NW LA (Aspropotamos area) the village is built in a clearing, surrounded by forest, while the pastures are in the ridges. There is no cultivation, the houses didn't have orchards, only some fruit trees (for cultural reasons and due to transhumance since it mainly concerns the semi-nomads Vlachs). The villages' arrangement followed the ridge in order to better exploit the pastures.

On the contrary, in the center (Mesochora area) and the south (Agrafa area) the slopes are formed on terraces that define the limits of very small fields. Every flat surface was cultivated. An irrigation channel system contributed to the creation of a domesticated Mediterranean landscape (clover and maize). Their houses are scattered in small settlements in order to accommodate the spatially and temporally fragmented cropping pattern. Pastoral activities were complementary to cultivation. Finally, in Chasia's area the villages are built in high altitude, on the slope, near irrigable gardens utilising the pastures between the village and the forest. This is the case of Greek-speaking population who follows a moving pattern without the family that remained in the village in order to work with agriculture. The demographic increase between 1950-1960 had an impact on land use, due to an increase in the number of animals. There was over-grazing in some communities, but, in general, collective management systems of the common resources ensured a balance in the distribution of agricultural activities among the various landscapes (alpine and medium altitude pastures, cultivated area) and in the preservation of natural resources (no deforestation, no serious landscape and ecosystem degradation). Observation of a rich biodiversity at the end of the 1960s attests the great value of the observed ecosystems.

Period 1

Changes from 1960 to 1980 : The attraction of the plain: cities and intensive agriculture

Changes in the rural and social context

Attractiveness of the city and the plain : a massive exodus in a 20-year period

- Decrease in the number of agricultural holdings and acceleration on the reduction agricultural activities
- Settlement of the semi-nomads in the semi-mountainous and lowland western Thessaly. Some continue transhumance

Population / Villages	1961		1981
	Legal*	Real	Real
30 big villages	37,406	28,473	18,158
7 small town	18,893	19,620	20,003
Total	56,299	48,093	38,161

* The legal population includes the transhumant families and the immigrants

first roads, first buses in LA

Improvement of cheese-making infrastructure and equipment

Dorms for the students from the mountainous villages of the LA

Migration to urban centers (Thessaly, Athens, Thessaloniki, abroad):

§ Local economy remains agro-pastoral while artisanal products were marginalized. Many holdings' income was enough just for subsistence.

§ Mechanization of agriculture in the plains resulted to a massive descent in the demand for farm labour, subtracting thus an additional source of income for the pastoral households

§ Attractiveness of modern way of living in the plain especially when compared with the harsh conditions of mountain agriculture and transhumance (residence, movement, living).

Women participated in outmigration. By sending remittances to the family, they ensured household survival and children's education. In parallel, another exodus was taken place by the permanent installation of transhumant farmers in winter settlements (chimadia) where the community's bases were transferred. This extended community network three nodes: village of origin, Diaspora, permanently established farmers. The next generations originating from LA villages grew up in this network context connecting the LA and the outside world. Outmigration mainly concerns villages and families that are not at all or partially involved with transhumance. They have mixed production system and after the end of the civil war outmigration were the most important and direct means of supplementing the family income and securing the family survival. In the second case the permanent settlement of transhumant farmers in the plain is mainly related to the radical advances achieved in the plain concerning infrastructure, education, working conditions etc.

Between 1961-1981, a 64% decrease in population of the villages was observed (with small settlements especially affected). Agricultural towns located in the foothills presented an increase by 3%, now the only "nearby" LA's “service towns” while the increase for the urban centers reached a 15-35%. Population from very small settlements started gathering in neighboring large villages. Young people focused towards pursuing secondary and tertiary education. At that time, dorms have been constructed at Mouzaki (small town localized at the foothill of the LA in a place that is the natural entrance to the LA) for students from remote villages of the LA.

Public intervention: provision of infrastructure i.e. electrification, water supply, transportation network extension (favored transhumant by facilitating the movement of sheep and goats by trucks). Nevertheless, milk (and cheese) transportation from pastures was still done with mules. Milk processing was taking place in makeshift facilities either

by small local businessmen or/and at home. Dairies acquire permanent facilities only in the late 1970s'. The trend towards intensive agriculture model affected LA's mountain economy only marginally.

Agricultural development in the period

Transfer of the socio-economic networks of the settled or transhumant breeders in the plain

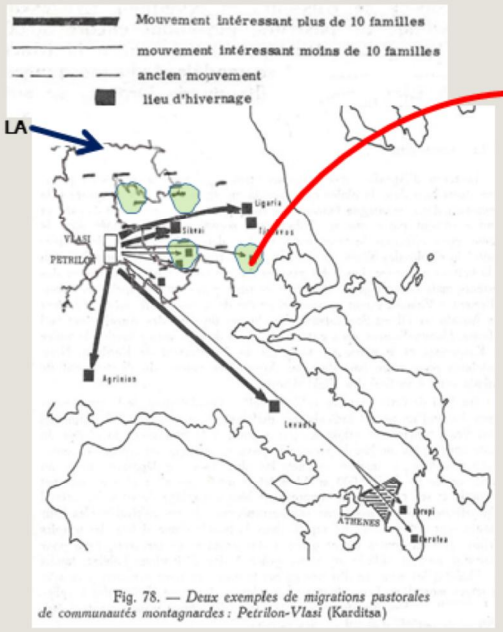
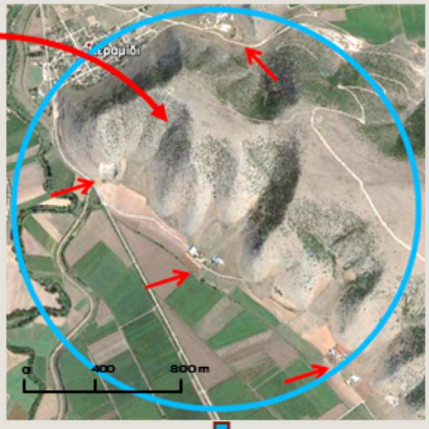


Fig. 78. — *Deux exemples de migrations pastorales de communautés montagnardes : Petrilon-Vlasi* (Karditsa)

Positions of breeders' winter or permanent establishments from the LA to the plain



Area of informal cooperation between small cheese-maker and breeders originating from LA

Herd transport modernization

The 1960-1980s have been characterized by the prevalence of the intensive model in the plains. Agricultural modernization obscured the picture of mountain agriculture that remained in the traditional production structures and practices. In addition to that, there was no specific policy measures designed for mountainous agriculture. The main incentives for mountain producers this period are: a) economic aid for animal transhumance, b) small loans for forage purchases and c) advance payments by cheesemakers for the milk. They are supportive measures that contribute to the liquidity of the holding and the family but don't address productivity issues (improvement of breeds, consultation etc). On the other hand, a series of problems and counter-incentives existed, mainly linked to the forest's protection against sheep and goats (especially the latter): i.e. introduction of afforestation plans by the Forest Service, grazing management plans imposing 5-year exclusion of the herds as well as premium for the slaughtering of goats.

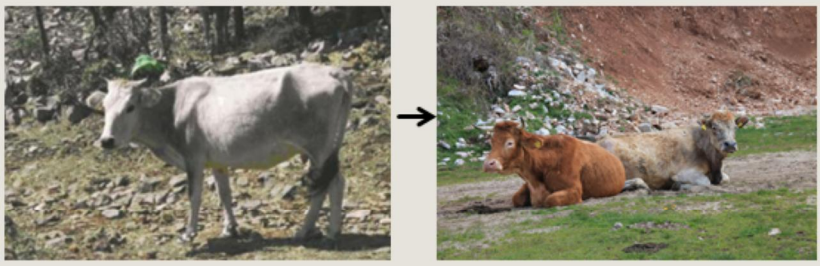
However, the reduction in the number of sheep and goats observed has been slower than that of the the number of holdings in the area. Hence, an increase of the average herd was observed. The reduction in the number of goats was more pronounced, due to public policy priority to protect the forest. The basic organization forms of pastoral family sheep and goat breeding still remained intact and in particular that of the transhumance since it received subsidies for transportation.

They moved to summer (mountain) pastures on ~~with~~ trucks and to ~~in~~ the *chimadia* (winter settlements in the plains) on foot (duration 3-6 days) using the grazing areas along the route (animal gestation period). E.g. the route from the mountainous Gardiki to Grammatiko in the plain (130 km) takes 4-5 days with three stops.

During the winter, cheese-making was transferred to the plain around the *chimadia*, integrating transhumant and permanently settled herds. Cheese-maker comes from the same mountainous community as the farmers. The mountainous community continued to be connected in the plain by the same solidarity and reciprocity socio-cultural bonds and commercial relations. In this relation context, dairies paid in advance farmers, part of the expected production value in prices slightly higher than those of indigenous farmers.

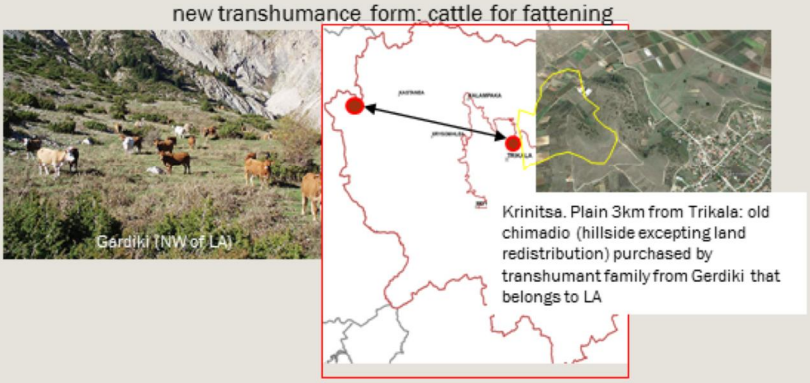
Agricultural development in the period

Replace the local breed with short horned



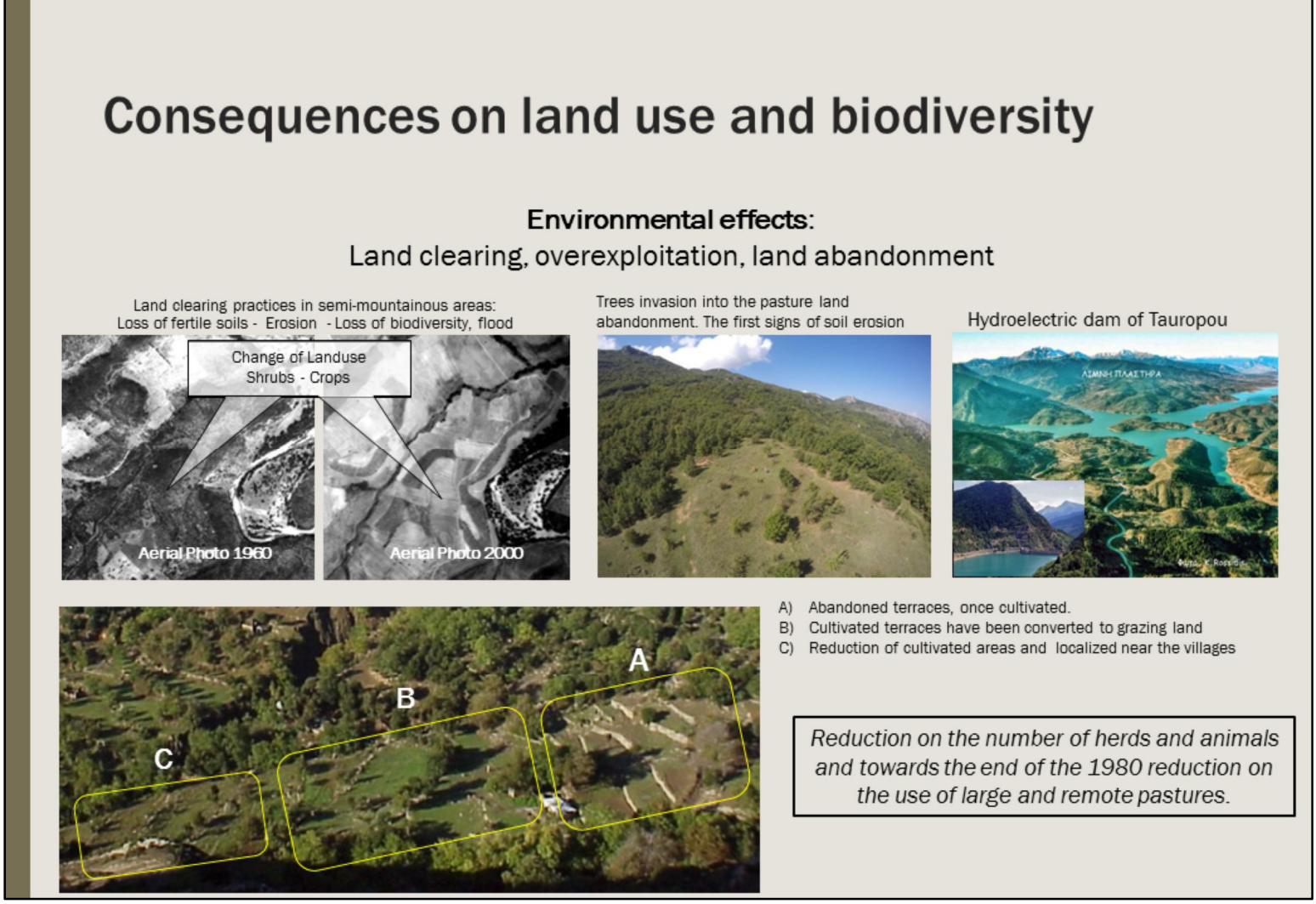
Mechanization effort

new transhumance form: cattle for fattening



The national Policy for livestock has been limited to target mainly import substitution (beef, pork, poultry) through supporting the creation of meat producing livestock farms with low-interest loans. In parallel, since late 1960s governments tried to keep sheep and goats' meat and milk at low prices through imports. At the same time, the markets are overwhelmed by the more competitive dairy and agricultural products from the plain, forcing out mountain products (Reduction on the prices of basic foodstuffs for the consumers of the city).

The only changes observed in mountain livestock concerned crossbreeding with improved local or foreign breeds. The local breed of shorthorn cow (robust, abstemious, long-lived, highly reproductive and suitable for work) was replaced by crossed, more productive but energy intensive cows that were, moreover, difficult to move on the slopes. Also, some sporadic efforts for mechanization by few producers have been observed, with small machinery adapted to the conditions of mountain agriculture. Cultivation of forage, support of employment in livestock farming, transformation of some farmers into small entrepreneurs that provide mechanization services to other farmers.



Pastures' and agricultural land abandonment

Changes in the agro-ecological management within the LA, the boundaries of the community and the settlement:

1. LA's level: Interventions of Forest Service to protect (expand) the forest against the sheep and goats through regulating grazing, without any farmers' involvement (i.e. disregarding indigenous knowledge, excluding their practices and experiences from the Forest Service Improvement Plans). At the same time, land clearing of pastures in LA's semi-mountainous communities and change of their use into agricultural was not uncommon.

Another important intervention at the LA level has been the creation of the hydroelectric dam and Tauropos' lake (24km^2) in eastern-central LA and the total inundation of 6 communities' and their agricultural land whose inhabitants were transferred to the plain for permanent installation.

2. Community's level: a) Abandonment of small settlements around the villages and remote pastures, began coinciding with simultaneous over-grazing of the nearby ones (late 1970s), b) abandonment of the remote agricultural zone where dry farming was practiced (winter cereals: wheat, barley, rye) and limitation of the cultivated areas on ~~in~~ ~~the~~ irrigated zones around the village (maize, clover, legumes) and c) gradual abandonment of higher terraces (A) available for wheat (import from plain) and simultaneous usage of some abandoned parcels for grazing. Medium height terraces (B) are used as grassland and the lower (C) as vegetable gardens for family consumption.

First signs of changes in landscape and biodiversity. From the biodiversity point of view the main changes are:

- Extinction of Balkan lynx (*Lynx lynx martinoi*).
- Population decline of specific species such as brown bear and wolf.
- Population decline of predatory birds since 1970's.

The degraded kermes oak ecosystems in lower altitudes tended to characterize the area. There are also signs of mismanagement in the broadleaf oak ecosystems.

The main causes of the above-mentioned consequences on species/habitat and the ecosystems seem to have been:

- Excessive logging during the 1960s and 70s and significant increase in hunting, due to the expansion of the rural

and forest road network

- Over-grazing in accessible zones where infrastructures was provided.

Period 2

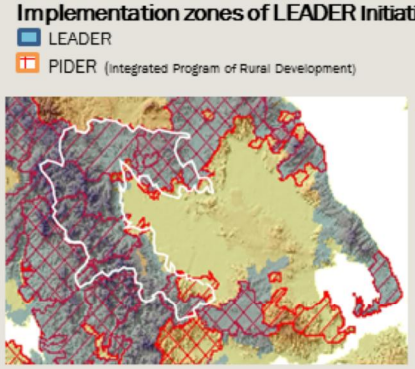
Further Changes from 1980 to 2010 : Entrance to the E.U. (1981)

Changes in the rural and social context

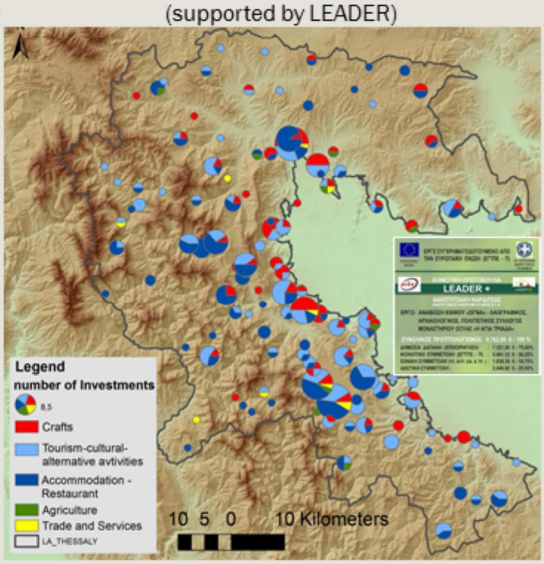
1981: Entrance to the European Community, Common Agricultural Policy

- **1981: CAP**
  - ✓ implementation for mountainous areas (agricultural subsidies, delimitation of disadvantaged/ mountainous areas) and compensatory payments
- ***Rural: infrastucture and new development instruments***
  - ✓ **1986-1993**: Integrated Mediterranean Programs: Infrastructures in mountainous areas on holdings and agrotourism
  - ✓ **1989 +** : Leader initiatives, Pider, Interreg, Envireg, Local Action Groups, Development Agencies

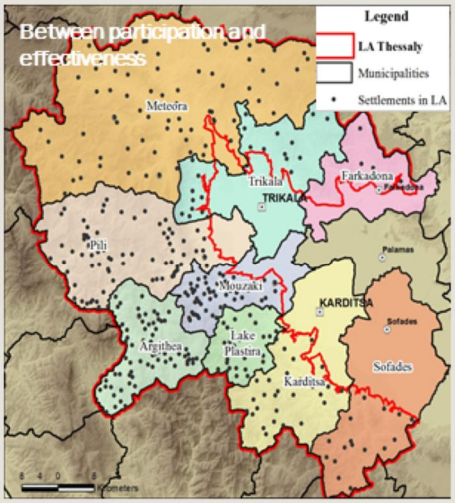
Implementation zones of LEADER Initiative



LA's private and public investments since 1992
(supported by LEADER)



Administrative reform: from the small community to the historical geographical unit



Development policy measures targeting rural areas: The Integrated Mediterranean Programs (1986-92) have been the precursors of the Community Support Frameworks in the area as in all Southern Europe. They provided mainly for infrastructure construction. Later new development instruments were deployed both within European Community programs and initiatives (Leader initiatives, Pider, Interreg, Envireg).

Two have been the main elements of the consecutive years of implementation. First the provision of infrastructures in mountainous areas to support farming and rural tourism. During that time, financing for hostels, hotels, restaurants, etc. began, scattered within the LA, based on the attractive landscape, easy access and relatively short travel time. The second was the creation of the conditions for a integrated management of the countryside, investing on the potential revealed by the appreciation of the multiple functions of rural areas, with the Local Action Groups and Development Agencies (establishment in 1990s) as the main facilitator.

This latter could be thought as the third major outcome of the implementation of EU policy measures, since the principles of the participatory, democratic planning in the framework of the above programs were introduced and new forms of consultation have been adopted and established. A great part of the investors come from expatriate communities (diaspora). Individual investments combined with collective schemes for the production, promotion and marketing of local produce (pasta, confectionery, textile products, aromatic herbs, beeswax candles, liqueurs, etc) incorporating endogenous knowledge and know-how (e.g. 6 womens' cooperatives).

Administrative reforms towards decentralization aiming at the optimal elementary administrative unit level. They give the opportunity and the tools to rural areas to plan for their future

1997: First administrative reform (less municipalities, elected NUTS III authorities), law for spatial local planning (land use),

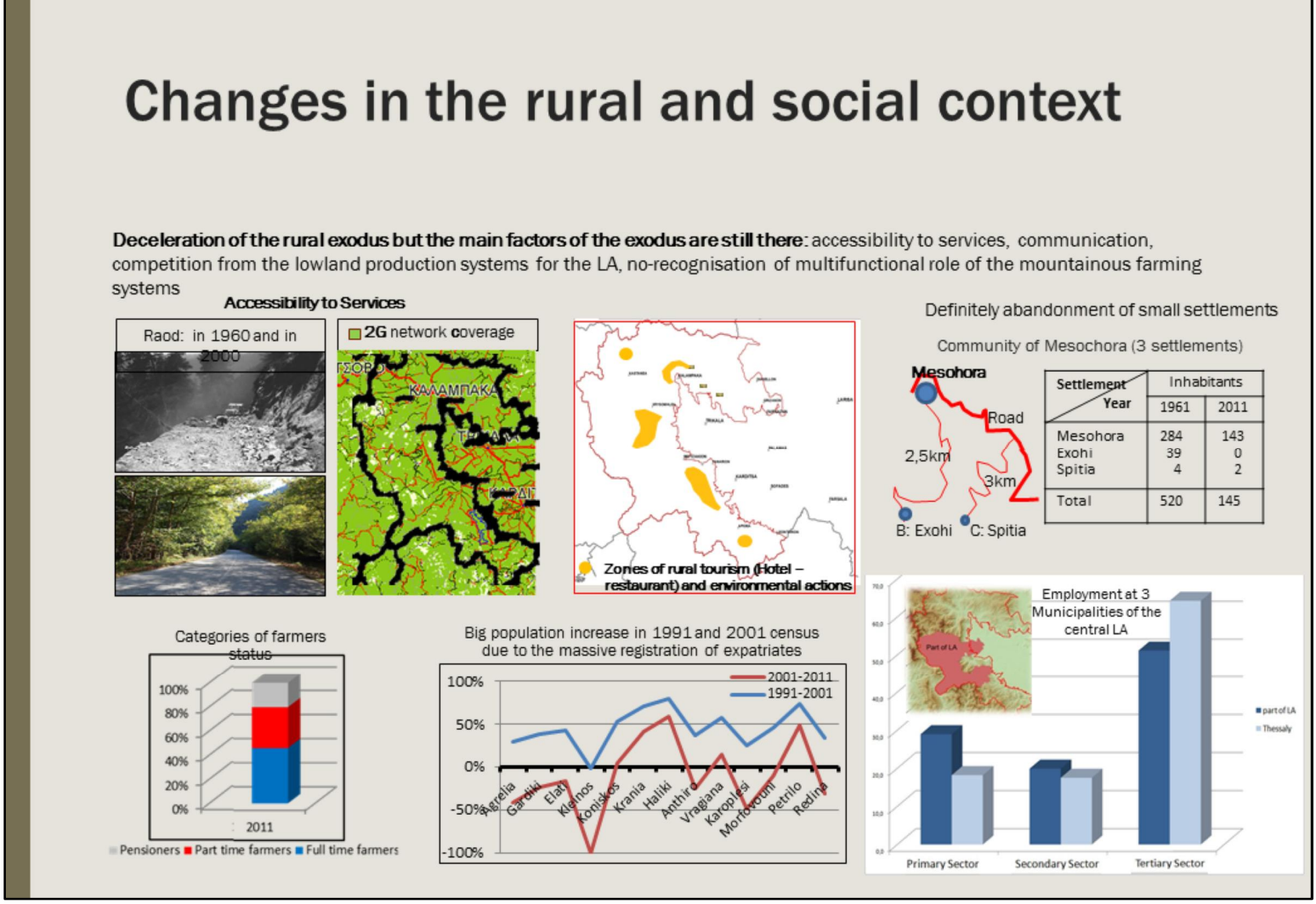
2006: The first law for the operational planning at Municipality level (elected authority), LAU 2,

2010: Second Administrative reform (less and stronger Municipalities LAU2, elected NUTS III)

The enlargement of the new administrative units creates issues of citizen and community participation.

The new reform, in pursuit of efficiency, creates larger administrative units that cause malfunctions for two reasons: a) they marginalize the community and b) they incorporate into the new limits the towns located on the plain making

them the new administrative centers of the new municipalities. Despite the fact that the historic regions of the LA (Aspropotamos, Messoxora, Argithea, Hassia, Agrafa etc) are not split, their communities did not receive well the transfer of the administration to the plain.



The LA acquires better accessibility due to the improvement of the road network, but access to the Internet is still difficult. Many LA's villages in the winter, especially the most remote ones, remain empty, under a guard's supervision. The abandonment of small villages is completed. In 1991 and 2000, the expatriates (diaspora) participated massively in the respective official population censuses in all LA's villages, to express their solidarity and interest (holiday residence, protection of heritage, etc.), to their origin communities.

Fundings' bigger part is oriented towards hostels and small hotels and even more in restaurants and taverns. The tourism development in LA is identified mainly inside:

a. villages revived by the seasonal presence of the expatriates (diaspora), having been converted into holiday residence villages, and the arrival of 333 transhumant herds (western LA). This is more the case of internal tourism powered by the friends of the Diaspora members that counts thousands of members and lately by the development of agri-tourism (nature lovers, participation in the numerous and big festivals in the LA). This particular economic model of tourism has almost nothing to do with tourism in Meteora.

At the same time, hostels/hotels are created in most of them, financed by LEADER programs and the contribution of the associations of the expatriates.

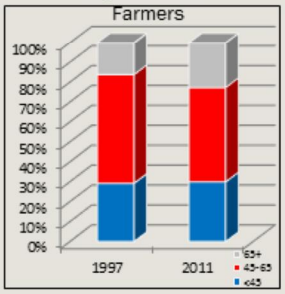
b. dispersed tourism zones (Pertouli and Plastiras Lake). There is a significant diversification in the employment of the local population in these areas.

Inside the LA, the multi-employed heads farmers now represent a significant part of all heads farmers.

Agricultural development in the period

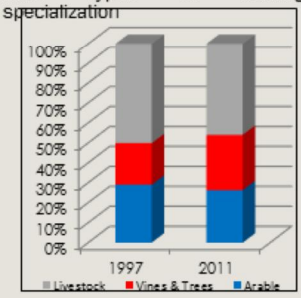
- **1990s**: CAP payments' restrictions, Rural Development Programs, Organic farming, Protected Denomination of Origin-Protected Geographical Indication
- **2000s**: CAP review, single farm payments, organic livestock, delineation of HNV areas, environmental awareness in CAP and RDP, cross compliance

Ages of Head Farmers



Ages classes	1997 Nb	2011 Nb	1997 %	2011 %
<45	1413	1286	29%	30%
45-65	2641	2032	55%	47%
65+	783	976	16%	23%
Total	4837	4294	100%	100%

Main types of holdings specialization

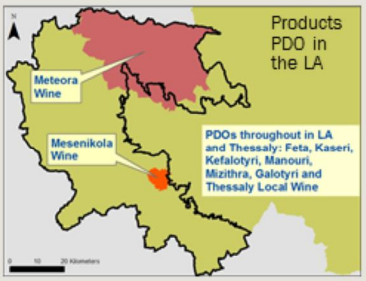


Holdings specialisation	1997 Nb	2011 Nb	1997 %	2011 %
Arable	1388	1073	20,5	17,6
Vines & Trees	995	1129	14,7	18,5
Livestock	2393	1874	35,3	30,8
Total	6773	6087	100	100

Evolution of holdings

	1961	2011
In LA	16826	4299
IZ *	11235	7229

* IZ: Intermediate zone



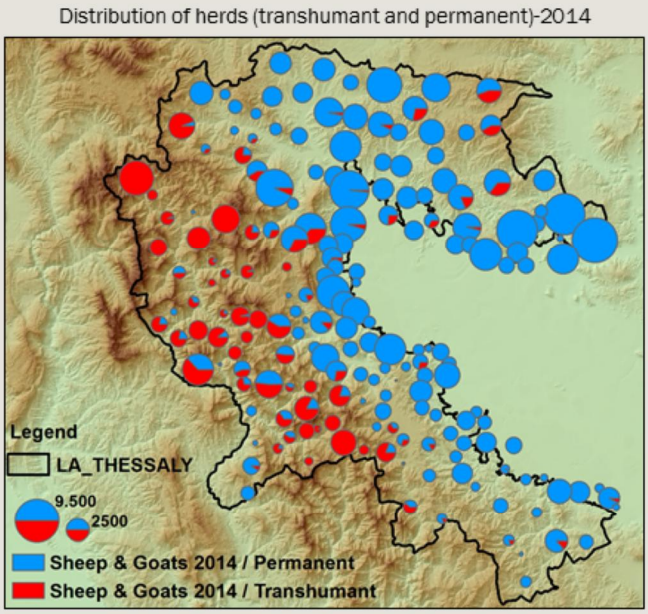
In the LA, the main productive activity continued to be pastural livestock breeding, transhumance and small-scale low intensity agriculture (cereals, forage, vines, potatoes, legumes and trees). CAP Implementation after 1981 contributed to the stabilization of the rural income through subsidies and thus seems to have decelerated reduction in the number of holdings). In the period 1997-2011, the number of farmers is reduced by 11%. -This decrease was not equally distributed across farms. Taking as a classification criterion the age of the head, a large decrease was observed in the age category of "45-65 year", an increase in the category of ">65 year", and relative stability in the category of "<45 year".

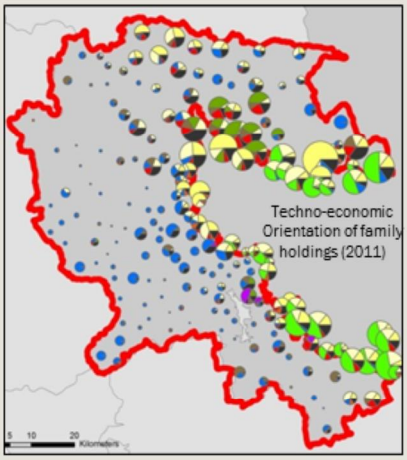
In parallel and especially after the entrance to Eurozone, the Greek market was flooded with agricultural products imports from Europe, Canada, United States and Latin America. For example, beans, which are a national food produced by LA's mountainous areas and are famous for their quality, are pushed aside due to the mass imports, mainly from Canada. The imports of cereals and animal feed by lowland farmers, contribute to the abandonment of the corresponding crops in the LA and the remote agricultural land.

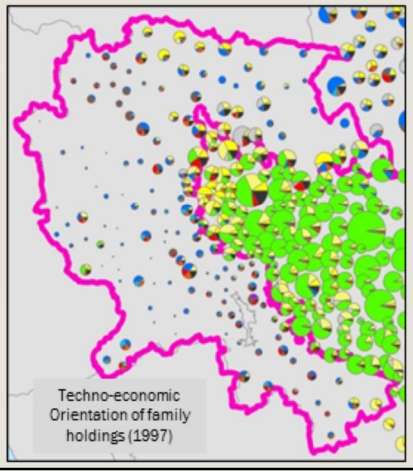
Despite support by the CAP through compensatory payments and other financing tools (Program of Rural Development - PRD), there is no program targeted to support mountainous livestock and agriculture. There are of course compensatory allowances and the infrastructures created by the Integrated Mediterranean Programmes, but there is not an integrated programme (pasture improvement, genetic improvement of breeds, adapted feed etc) with an equivalent effective advisory system. The turn towards higher value products is reinforced after the CAP reform in 2003-2005 (decoupling) and the recognition of feta cheese as a PDO product. Decoupling played a role due to the small size of the holdings, pushing thus towards the search of agricultural products with higher value. This research was also guided by the parallel value that was gradually given to mainly mountainous products starting from wine, honey, cheese products, forest fruits etc. In 2010, the area also obtained the PDO for other dairy products (Kasseri, Manouri, Kefalotyri, Mizithra, Galotyri and Agrafa Graviera cheeses) and PDO wines (Messenikola and Meteora). However, this effort for the recognition of PDO products failed to highlight the ties of mountainous farming systems with their territory, its natural resources and the relevant rich intangible heritage. However, the PDO has failed to effectively function (as a governance structure) in order to highlight the links of the products with their place of origin and tackle the cheap but generic products coming from the plain. By looking at the distribution of the RDP funds in

the area, the main bulk of the financing (Leader, PIDER etc) was directed towards small hotel units and even more to restaurants/taverns and not in PDO related activities.

Agricultural development in the period







Based on the techno-economic Orientation of family holdings (1997) the main features of development in the LA's farming systems during the same period are the tendency to abandon crops and the orientation of family holdings towards livestock (increase of herd size in sheep/goat farming, creation of new cattle units).

Remaining transhumance livestock covers the traditional semi-nomadic communities of Aspropotamos and all LA's west areas. According to the above map, 333 transhumant herds' distribution in the LA, they seem to cover higher large-pasture areas while the local population, crop production and sheep/goat farming have significantly decreased. A small positive trend is observed in transhumance livestock farming, particularly cattle, due to the increase in feed's cost, as well as the apparently growing demand for products from low intensity farming systems. Feeding expenses per female animal correspond (70.2 euros/female) to less than half of that in intensive farming systems. Productivity is lower but they try to increase it by importing foreign breeds. However, even for local cattle breeds with much lower productivity the demand by the market is increasing offering higher prices that balance this disadvantage, especially when the conservation of such herds is strengthened by the CAP.

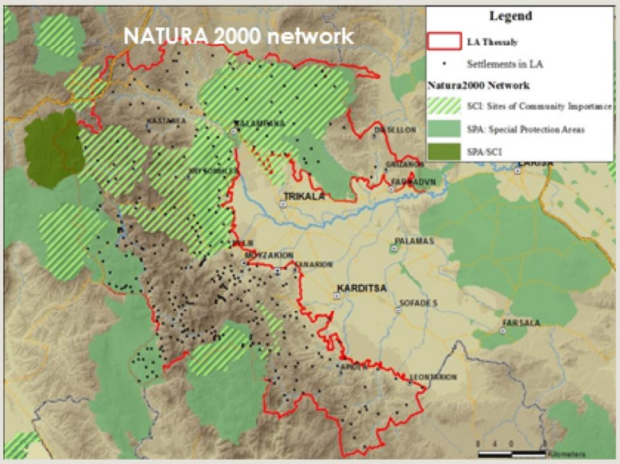
In transhumance the problems identified were:

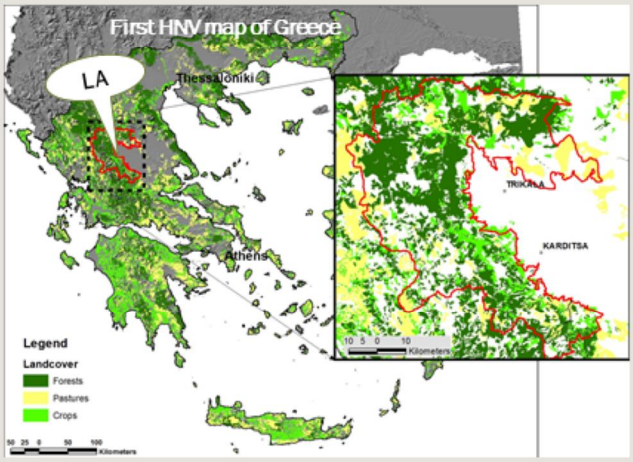
- deficient framework for the designation of land uses, unclear pastures' ownership status and especially mountainous ones,
- competition with transhumant cattle and sheep
- installation of wind farms in areas used by herds,
- lack of an integrated system for the mountainous pastures' grazing management,
- lack of management authorities and environmental management plans in Protected areas, complex legal framework for environmentally sensitive areas, archaeological sites, forest areas.

Consequences on land use and biodiversity

Environnement

1986: the first National law on Environmental Protection (1650/86), EU LIFE programs
1990s: NATURA 2000 network
2000s: First appearance of HNV in Greek RDP HNV acquires more importance, appearance in the public discourse





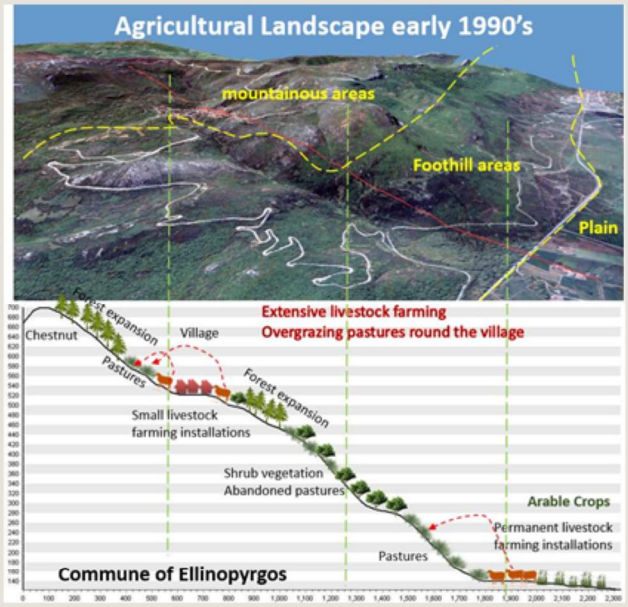
Implementing the European biodiversity protection legislation, protected environmental zones have been established, under the Natura 2000 network, in the LA. However, the implementation of management plans in these areas has progressed only in very few cases in the whole of Greece, leading to rising of conflicts. However, a host of collective actions have been launched to promote and protect the ecosystem *(forest village, botanical garden, environmental centers)* under environmental protection programs.

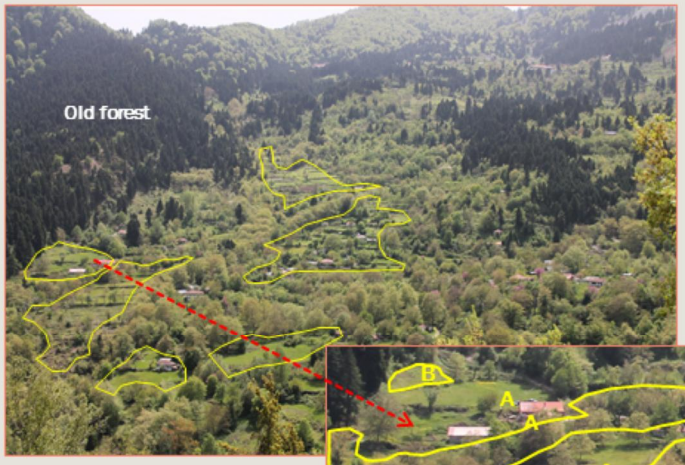
The main changes in land use management are identified in:

- LA level: agricultural land has nearly been abandoned in the western part and only permanent holdings (livestock, crops) remain in the eastern part. Balanced distribution of transhumant and permanent herds in LA, but overgrazing and abandonment phenomena in state and community remote pastures (high altitude), due to lack of grazing management plans in the scale of agro-ecological unit and community. The exodus at this particular period is still taking place but with less intensity and is linked to the abandonment of remote cultivated land and grazing zones.
- Community level: in the LA's eastern part, grazing and agriculture have been limited to land surrounding the village and nearby pastures that suffer from overgrazing. Small gardens and orchards still remain next to the residences. Highlands previously cultivated in terraces are definitively abandoned. Across the entire LA an accelerating invasion by scrub and trees on the collapsed terrace structure as well as the remote abandoned fields and pastures has been observed.

The progressive fragmentation and disruption of old uninterrupted habitats, due to landscapes change, due to the abandonment of cultivated land and pastures, as well as other interventions (i.e. roads and dams' construction, tourism facilities) was observed. The progress is, nevertheless, controllable, particularly thanks to the importance of pastural livestock. The only activity that dynamically still intervenes, due to its weight, in the management of the landscape, is eventually pastoral livestock.

Consequences on land use and biodiversity





Visit by a bear in an abandoned village within the LA

Trees and shrubs invasion

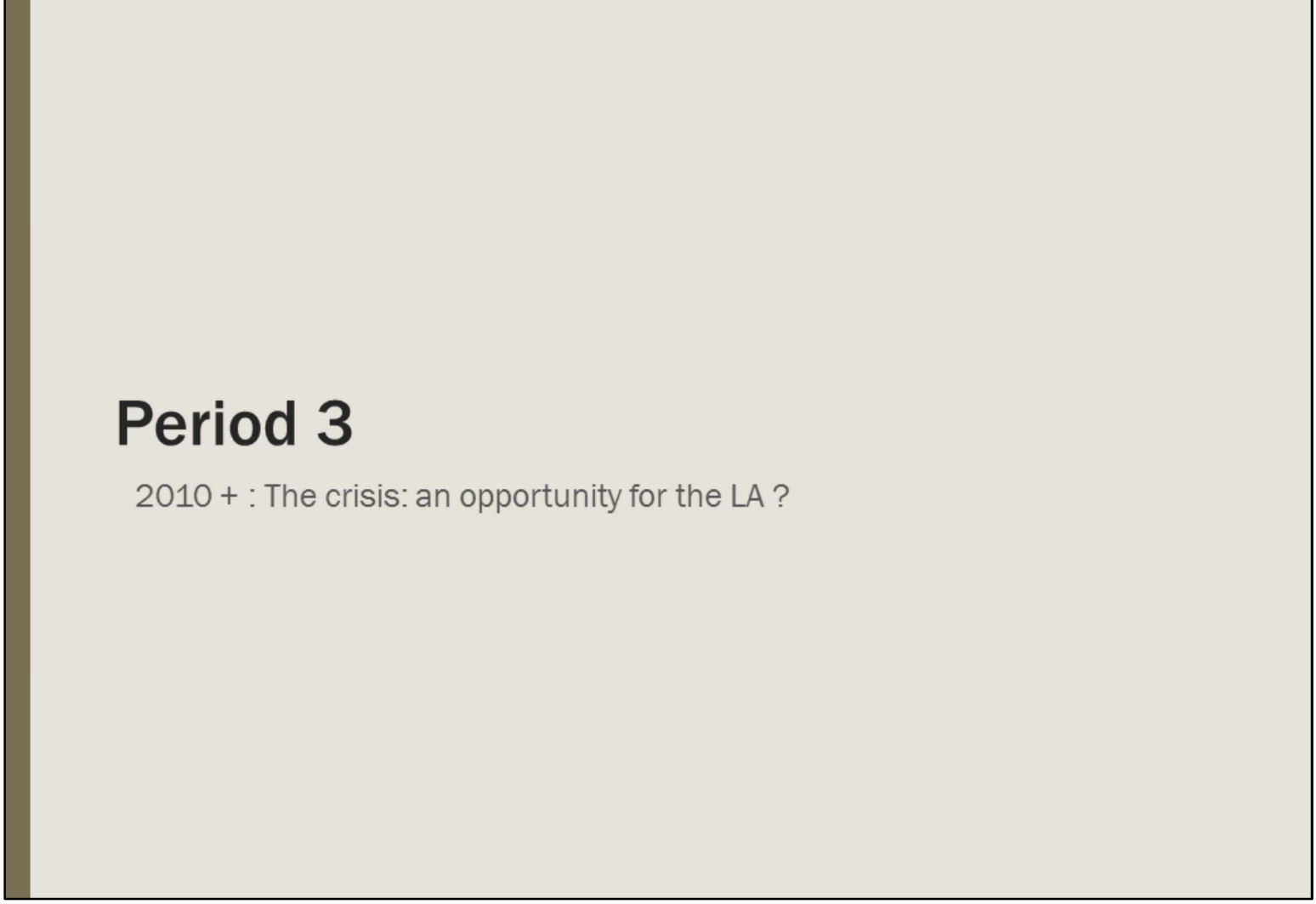
A: Cultivated parcel
B: Grazed parcel
C: Forest invasion

The reduction of pastures, their covering by woody plants and the *densification of enclosed spaces*, degrade biodiversity, and have a permanent negative impact on fauna habitats hence on the conservation of the fauna (permanent/seasonal) and therefore the conservation of the flora and soils' productivity .

The flora continues to deteriorate (Hungarian Oak habitats, herbaceous plant flora, Riparian forests of Oriental Plane Trees (*Platanus orientalis*) and "vegetation's islands" (*Prunus sp*., C*rataegus sp, Rubus sp*, etc.) due to absence of any management scheme and consequently ecological mismanagement e.g. overgrazing caused by uncontrolled grazing.

Fauna: further reduction of populations of rare wild animal species (*Felis silvestris, Ursus arctos* (nearly extinct), *Lutra lutra* and *Canis lupus*) and predatory birds. Populations of small mammals (hare, wild rabbit, porcupine, blind mole, ferret, etc.) which depend, as regards game, on hunting pressure, are in a good state.

Satisfactory biodiversity state for invertebrates (soil fauna or entomofauna) despite all the pressures from human activity (overexploitation, improvement of streams, road building, creation of lakes etc). The creation of an actor (Arcturos-NGO) for the protection of the bear resulted in the increase of its population



Approaching the crisis as an opportunity for the LA is associated first of all with the changes at the external environment (unemployment at cities, but also a shift towards external markets where demand for local products is more intense) which directly affect the holding (excessive increase of influx and taxation, lack of liquidity etc.). This framework leads firstly to the countryside's emergence as an alternative employment area for city's unemployed originating from the countryside and the LA and secondly to the mobilization of two important institutions: family and Diaspora. LA attracts for the first time after the exodus of its population an important part of its human and social asset in productive actions that take place inside the LA.

The general negative framework of the crisis is presented in the previous slide. It makes sense that the more marginalized part of the country has suffered less consequence compared to more developed areas. What also moderates the impact of the crisis is the funding from the CAP and also an inexplicable turn of Greek consumers towards Greek products. The problem of the higher price of local products seems to mitigate because the consumers are apparently adopting the view "less quantity and better quality". Finally, this effort to focus on local products is searching, with relevant success, for an alternative in foreign markets. In this slide we focus on direct and indirect positive consequences of the crisis (mobilization for partnerships, structural changes in the institutional framework for flexible cooperation forms etc).
As far as the Diaspora is concerned it is certain that its role in the mountainous and island areas is traditionally strong.

Changes in the rural and social context

Inversion of rural exodus?, Emerging new type of HNV farms (herbs, beekeeping), Changes in consumption patterns, New forms of partnerships and co-operation (Clusters, Social entities), Rural urban relationships under a new light

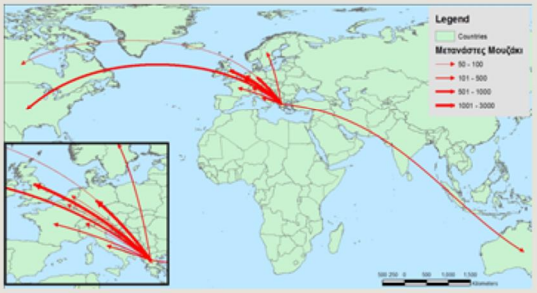
New Actors /Governance: Diaspora's support on sustainable valorization of the local resources of mountainous areas

Establishing a territorial Governance in mountainous community of Ellinopyrgos (LA), 2012

Participants Farmers, local authorities, 5 Cultural associations (diaspora), Development Agency, University

Supporting new farmers

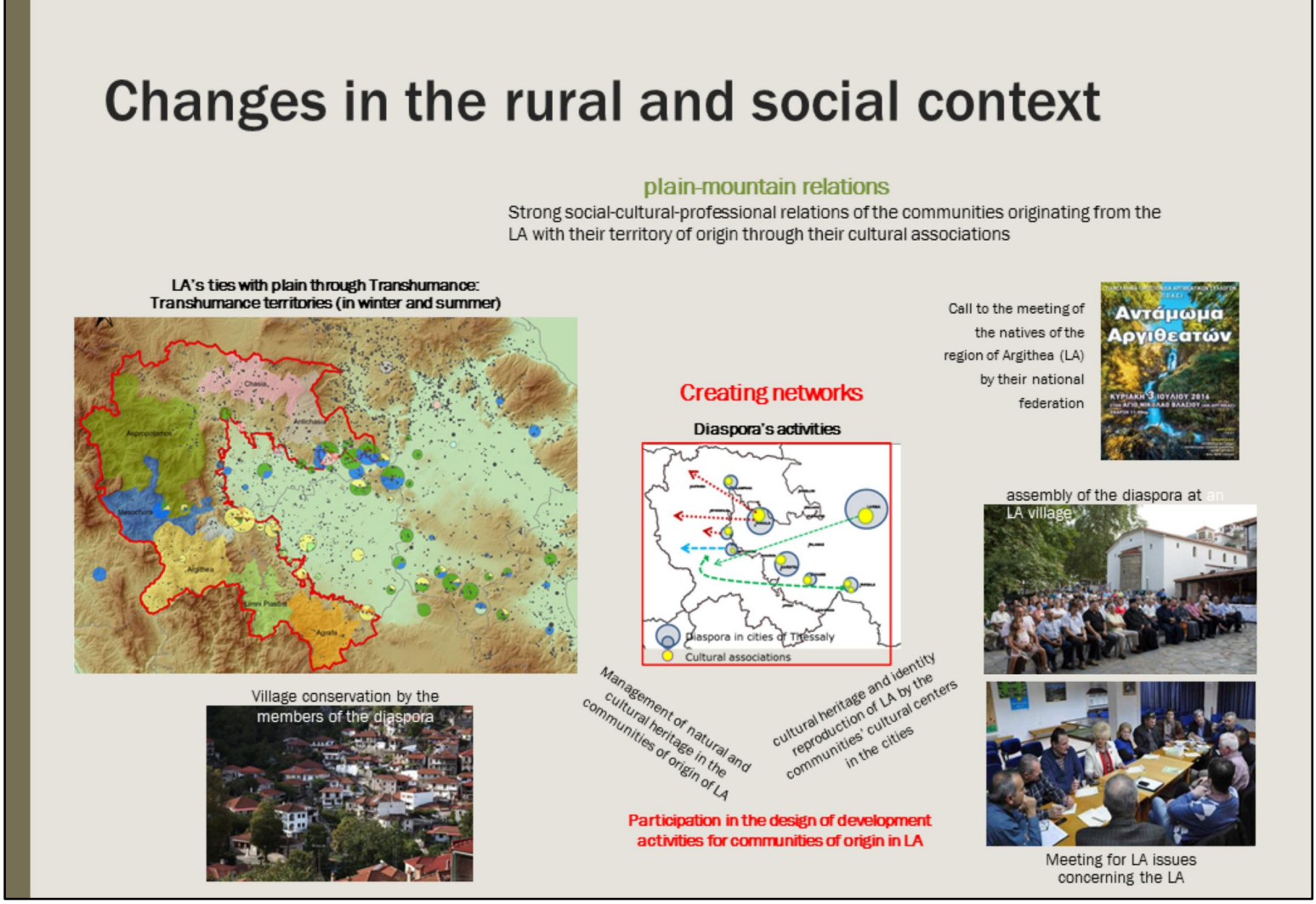
General assembly of Diaspora's associations



TERRA THESSALIA
COOPERATION OF SMALL DAIRY TERRITORIES OF THESSALY

The new context shaped for the LA with the appearance of the crisis is defined by: a) the effort to revisit old producers' groups and change of the Law on Cooperatives/Cluster and establish new flexible co-operation forms like Social Co-operative Enterprises (SCEs), b) reinforcing the demand of local products of high quality and c) highlighting the community of origin as a place of residence and employment for some families or young members of the Diaspora's communities. The first censuses after the crisis (2010) show a first stabilization of the exodus and especially the establishment of new/young farmers. This tendency comes to meet the establishment of pensioners to their communities of origin after 2000.

New initiatives and co-operation forms are being built with the mobilization of research institutes (e.g. University Laboratories), local Development Agencies and other bodies aiming at the mobilization of specific territorial resources. Many of these initiatives incorporate or have as leader the communities of the diaspora, especially when their objectives include protection of the natural and cultural heritage. *E.g. The Terra Thessalia territorial cluster aims mainly to the support of pastoral holdings that preserved their pastoral system*



The evolution of the relations between the Diaspora communities and their places of origin were determined in the period 1980-2010 by

- the apparent intensification of Diaspora's actions to preserve natural and cultural heritage as part of their collective memory,
- choosing the settlement of origin as a second residence
- their participation in tourist investments in LA and
- continuation of close relations between transhumant and livestock breeders (and cheese-makers) permanently installed in the plains since all of them originate from the LA.

Shortly before the crisis (CAP's change in 2003 played a decisive role-decoupling) and more strongly after the eruption of the 2010 crisis, the relations of Diaspora with the community of origin are also expanding in the utilisation of local natural resources and production factors and the valorisation of local agro-food products. This expansion is favored by the fact that natural and cultural heritage are two aspects for whose preservation the Diaspora's associations fought for decades and succeeded in transferring it to 2nd and 3rd generation immigrants. At the same time, both aspects constitute crucial elements of the specificity of the territorial products and services. Migrants, usually better informed than local people, understand and use at the operational level, the higher status heritage enjoys induced by its new linkages with economy (terroir products, identity, practices, know-how etc.) opening thus new options for them in their place of origin.

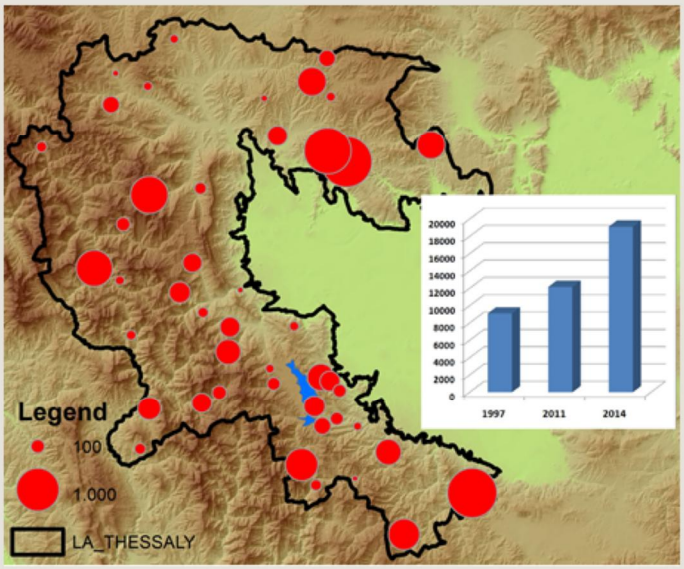
Those changes lead to the integration of the Diaspora communities as a social network into novel forms of local governance.

Reference is made here to the part of the Diaspora members that lives in Greece and pays frequent visits to the places of origin. The Diaspora that lives abroad is organized, maintains close relations but in a more symbolic level (organization of conferences, visits at the communities of origin, donations etc)

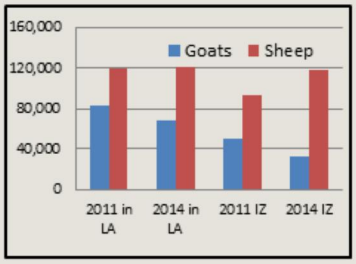
Agricultural development in the period

New types of HNV farms (aromatic herbs, beekeeping) are emerging, young people turning into farming and HNV systems, bottom-up initiatives for new cooperation forms

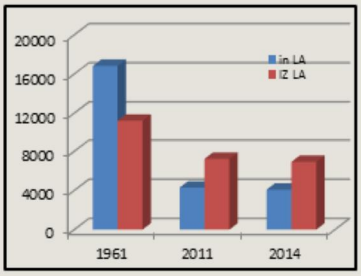
Distribution and evolution of beehives breeding



Evolution of sheep and goats



Evolution of holdings



Re-territorialization of agriculture (terroir products)

- Aromatic/medicinal plants, legumes/pulses, beekeeping
- Sheep and goat breeding
- Free-range cattle breeding

Crisis leads to the creation of holdings by new farmers in the communities of origin. This choice is reinforced by smaller dependence of the LA's holdings from influxes, CAP subsidies and demand by the market of mountainous products. The new farmer's installation in the village is favorised by the fact that his family preserved in it, their house and land.

The holding's organization and their effort for adaptation of new crops is decelerated because:

a) the recent decentralization process (2010) has not resulted in an effective cooperation between the departments of the various administrative levels.
b) public administration is rather skeptical towards this new and unexpected installation phenomenon and unprepared to support it
   - licensing procedure by Services like Forestry, Archeological, Electricity supply Authorities, are time consuming,
c) agricultural advices system (public and private) oriented towards the intensive agricultural production model contributes remotely to the support of HNVf systems (terroir, local seeds, etc) and the combination of traditional techniques with new scientific knowledge,
d) lack of cooperative tradition.

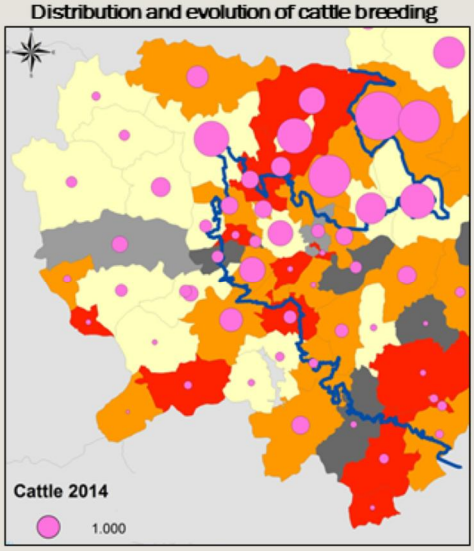
These obstacles explain the domination of individual initiatives for crop restructuring. The role of new farmer reception is assumed by the family.

The recognition effort of the products' value by the consumers in spite of the Diaspora's support, meets difficulties because these products concern new markets (short-supply chains, direct sale, etc). Such products are: honey, potatoes, vegetables, aromatic plants, legumes, diaries and meat from sheep, goats and free-range cattle (including livestock holdings of rare breeds). Finally more and more holdings are entering in the 1st processing sector.

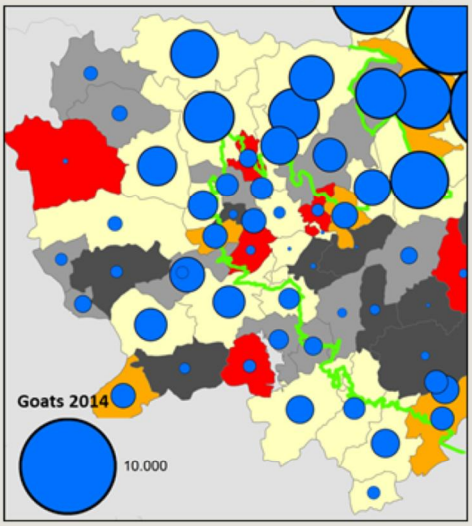
Agricultural development in the period

Evolution 2010-2014

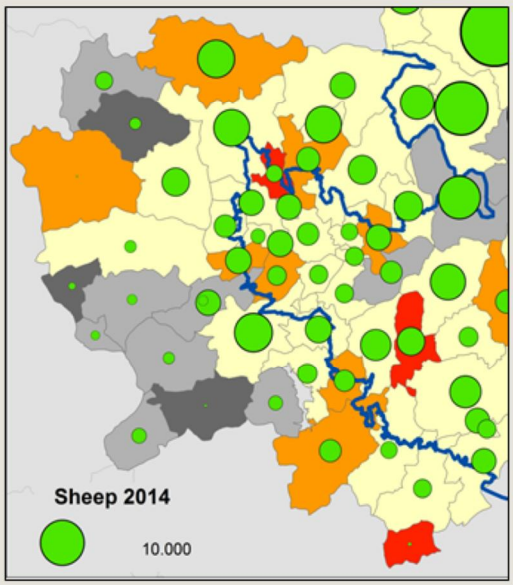
Distribution and evolution of cattle breeding

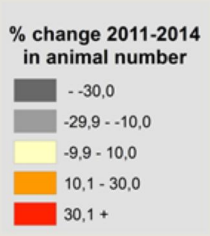


Distribution and evolution of goats breeding



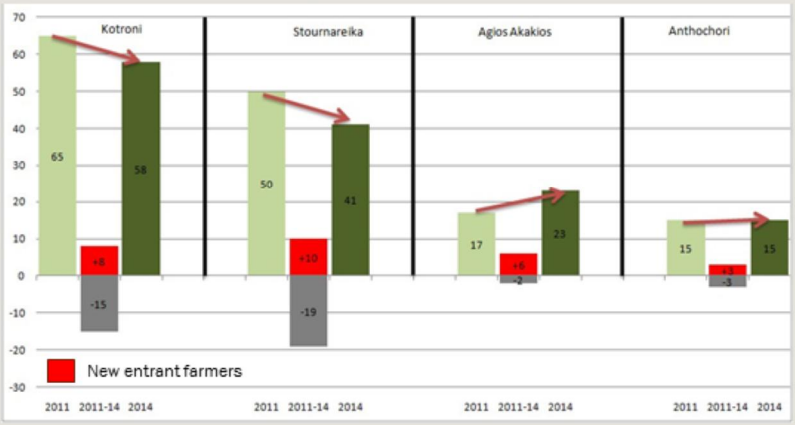
Distribution and evolution of sheep breeding





Agricultural development in the period

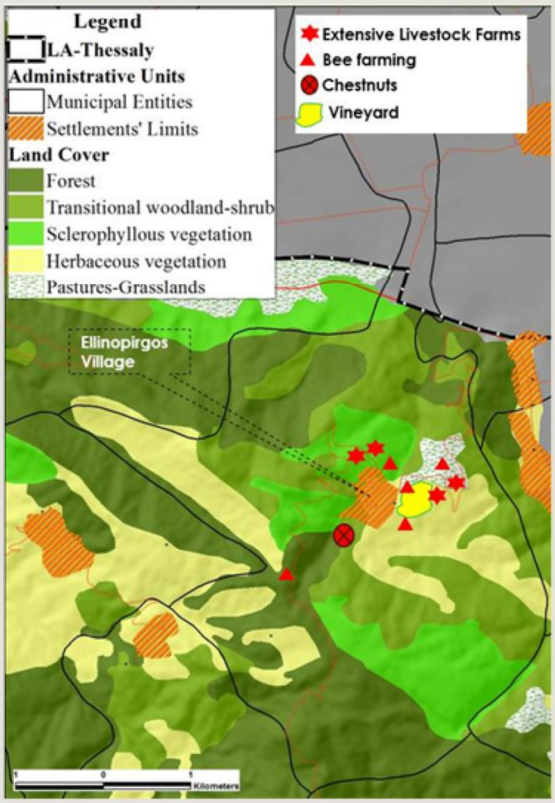
An example of farming holdings and new farmers' evolution in 4 representative villages in LA (2011-2014)



New farmers Installations (2011-2014)

2011-2014	Agios Akakios		Stournareika		Kotroni		Anthohori	
	Nb	%	Nb	%	Nb	%	Nb	%
New Installations	6	26	10	23	8	33	3	17
From whom< 45 years old	4	67	2	20	5	62	2	67

Localization of news farms nearby the village



During the 2010-2014 period, return to LA seemed to concern young people (often university graduates) and young pensioners (58 -62 years old), originating from the villages where they finally settled. Those who were not eligible for the measure for "installation of young farmer's" chooses to gradually develop the holding with family support (financial, transfer of Knowledge and know-how).

There are significant qualitative changes of the new head of farms for the first time after 1960 (see above graph). Withdrawals outweigh the number of new entrants, due to the large number of elderly farmers that dominated the community. The results provided by the payment authority (OPEKEPE, 2011 and 2014) show a slight renewal tendency of head of farms (1 exit against 4 entries of young people): the category of <45 years old is reinforced in the villages of east LA located in small-medium distance by the rural towns. This renewal is also found in transhumance. The installation of new agricultural population attributes adds a new symbolic attribute to the return of farmers after 60 years of continuous exodus.
The new holdings are small in size and adopt farming systems well integrated into agrarian structures of the mountainous regions (pastoral farming, polyculture).
The map above presents the locations of the new holdings in Ellinopyrgos, a village with 887 inhabitants and 120 holdings in 1961, was limited in 2011 to about 100 elderly inhabitants and 4 holdings. After 2012 6 new farmers have settled with varying orientations: cattle breeding (1), sheep and goat breeding (1), vineyard (1), vineyard and bee-keeping (1), bee-keeping (1) and chestnut trees (1). The location of their holdings is on average 500 m. from the settlement but within the respective existing land uses (vineyard, pasture).

Consequences on land use and biodiversity

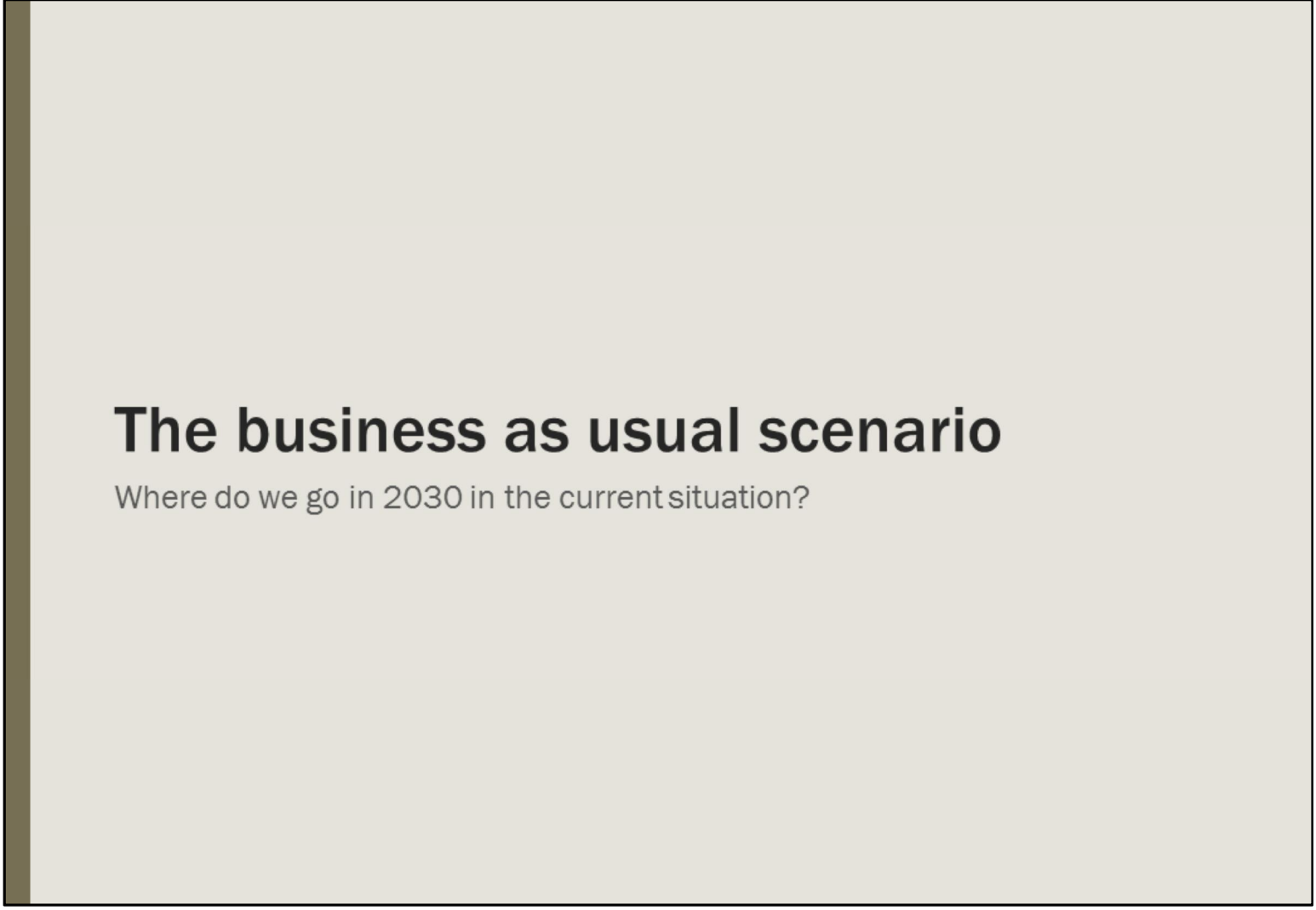
New installation

Pasture recovery after 40 years

Local goat race from Skopelos

A very important issue has been proved to be managing community's and LA's most remote and abandoned pastures and parcels.
If the installation of new holdings continue following the existing pattern, i.e. mainly near the settlement, this will create a zone intensively used land (close to the settlement and along the rivers). In contrast, the more remote abandoned zone of cultivated land (mostly non irrigable) is chosen for new dynamic crops (vineyards, trees). This is a dynamic reconquest of this zone that requires an integrated management plan (small size infrastructures, use of adapted agri-environmental measures). In these zones the parcels are bigger and there is the possibility of transferring water from reservoirs. The reconquest of this zone appears the need for an integrated management plan (small infrastructures, valorization of agro-environmental measures).

The new farmers' installation with pastoral holdings or new dynamic crops, integrated however into the existing traditional agrarian structures, raises the issue of reactivating the local conventions for land use and management of the commons at the level of community boundaries but in the context of new governance forms. That is to say, the revisiting of the management system of commons existing in the community and a new co-ordination with public authorities of all levels.
Reclaiming even a small proportion of arable and grazing land (mountainous agriculture) on the part of small farms bearing HNVf characteristics is the first step of for the reversion of the abandonment of marginal lands and desertification, both in human and physical terms, and a significant contribution to an improved management of biodiversity and the landscapes



The business as usual scenario takes into account two main trends identified within the LA:

- the evolution in the number of holdings obesrved, as a combined result of cessation of agricultural activity, potential succession and installations of new farmers. In 2030, about 45% of head of farm will have stepped down, being over 75 years old. This evolution is determined by the renewal rate through succession (rather small, if we consider that the age of today's several leaders is >70 years old) and new installations. For the 2011-2014 period data give 26% renewal rate of head of farms of which young farmers (<45 years old) represented 47%. However, the question is whether this renewal will continue and at what pace.
- continuation of pastures and crop land reconquest at least for ~~in~~ the most accessible villages. With varying grades of farming intensity from the most intensive use (crops, markets) in land around the settlements to abandonment in the most distant ones Without the introduction and implementation of land use management plans, especially when the installation of new farmers is concerned, there is a risk that the identified trend of forest expansion to pastures, decline of endemic plants and parallel loss of cultivated land and pastures through abandonment, could continue.

Both the above trends, do not address directly the issue of vulnerability/viability of farming household active in HNVf1 and HNVf2 areas. The resilience of these systems highly depends on the existence and effectiveness of policy measures focused on the support on HNVf systems. Without such measures the evolution in the LA will be determined by reinforced current trends: pastoral herds' spread without plan, with a parallel reduction of their number, especially of the small ones and enlargement of the herd size for the remaining ones.

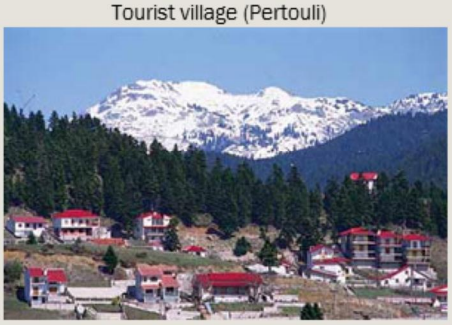
The rural development and social driving forces

Further infrastructures and economic activities (secondary and tertiary sector)

LA and roads (2000-2015)

Ski resort (central LA)

Tourist village (Pertouli)



Traditional tourist accommodation

Wind farms. Mouzaki (under construction)

Tourist development of areas and settlements with good access was based on the combination of Leader και Pider programs, Diaspora's businessmen and 2 local development agencies (Ltd companies with the participation of both local administration and social sector actors) active in the LA. In the rest of the villages, tourist development was limited to the arrival, during summer, of the Diaspora members and the creation of small community or private hostels. Progress would hardly, extend beyond the already developed villages and micro-areas: for those, growth of tourist infrastructures and activities was based on investments that have already taken place, resulting to increased tourist use of the landscape and other natural resources (rivers, trails, demonstration fields etc.). In addition, LA will be the inland of visitors of the established nearby tourist destinations of Plastiras lake, Meteora (1,500,000 visitors per year) and Metsovo would gradually discover.

Based on current trend one could suggest a probable increase of in farm processing units. However, if no new co-operation forms and small value chains are formed, it would be difficult to overcome the impersonal small distribution networks. Finally, increase on bottled water consumption in urban centers, due to the degradation of the water resources in the plain's favors the further valorization of water resources within the LA.

The collectivities of The Diaspora, mainly cultural and environmental associations as well as women's cooperatives, remain the main social force, while new farmers and businessmen who either settle or expand their business activities in LA should be considered an important emerging social group. The territorial equity dimension of development will depend on the ability of cultural associations and the new forms of social economy to contribute more actively to the utilisation and valorisation emergence of local specific resources.

The economic driving forces
Food chains and market

Small and medium sized cheese factories in Thessaly

Farmers
- Collective (coop or community)
- Individual

Processors (small and medium)

New comers – Young farmers/entrepreneurs
- Coming from the diaspora (mainly)

Cooperative Banks of Thessaly and Karditsa

Cooperative of consumers without intermediaries

Local market

Agricultural economy is based on large pastoral herds and agricultural holdings that will continue focusing towards dynamic local crops with a relatively younger albeit reduced population. They receive the largest subsidies while 64% of holdings (with economic size <8.000€) receive less than 2,000 euros of subsidies each.

Processing businesses- retail chains based in the plains, will continue to hold disproportional market power and offer them the same prices as the ones enjoyed by intensive producers of the plains (milk and meat production) as long as the quality characteristics of the products and the HNV character of mountainous farming systems are not highlighted and/or guaranteed. On the other hand, the possibility of on farm first processing and trading, is limited by compulsory milk pasteurization. (Responded to transparency No31)

Further obstacles in the effort to increase the added value of products and services:

- The inexistent willingness of holdings to co-operate, affects negatively the proportion of their produce traded in the existing short supply chains consisting mainly of local and supra-local social networks of household (Diaspora, visitors, consumers' cooperatives). The same problem, lack of co-operative spirit, act as a constraint for the exploitation of two other marketing channels with increased interest on quality and identity products, namely supermarket chain and specialty food shops. Cooperation forms like women's cooperative and/or Social Cooperative Enterprise could have better prospects due to *their* flexible institutional framework.
- Developing Cluster-type cooperation forms, supports the organization of small artisanal units, valorisation and promotion of products produced by HNVf systems. However, preserving or increasing the holdings for which the cluster could guarantee the HNV character depends also largely on the general policy and organized intervention for their support. Therefore, the implementation degree of this policy defines the development limits of the cluster for the next years.
- The contribution of tourism to the local agricultural economy is limited to being the outlet of certain agricultural products and the development of *demonstration fields,* due to the rigid regulatory framework *food safety* for selling local products (milk, meat).

Nevertheless, the contribution of Cooperative Banks (especially during the crisis) and Development Agencies in supporting micro-investment plans and utilizing the various European and national policy instruments and measures should not be left unnoticed. Due to statutory principles and the fact that are local bodies, both these two

organizations support small plans with environmental sensitivities, oriented towards local products and agri-tourism services. What is more, the fact that they are formed by local staff allows a more direct contact and support of the producers and entrepreneurs when they are focusing towards products and services more or less linked to the HNVF character

Key policies for the LA are the CAP, PRD (Rural Development Program), National Strategic Reference Framework, European programs like LIFE, Interreg and also programs from Foundations that are active in the field of consulting and technical support for new farmers. Great possibilities of positive synergies exist between Community Led Local Development (CLLD) (horizontal interventions) at the level of the LA's micro-regions and ITI (integrated territorial interventions) in the entire LA and its adjacent areas.

RDP measures are designed in national level with almost the same criteria and are applied in the scale of exploitation (improvement plans, agri-environmental etc.) and the limits of problematic areas due to the effects of intensive agriculture (nitrate pollution). The policy of coupled payments focuses on products important for some sectors (cotton or forage and milk for livestock). In spite the fact that RDP has such measures those have not yet been activated. Therefore, it is predicted that in the scale of municipalities and community it will be difficult to overcome the obstacles for interventions focused in the level of community, agro-ecological zone, terroir aiming at managing HNVf systems and better integration of the farm unit.

The above framework and particularly the measures of RDP (Agricultural Advisory System, Quality Assurance Schemes, Farm Improvement Plans, Installation of young farmers, Processing, Pluriactive holdings, Areas with natural constraints, Agro-environmental measures, organic farming, NATURA 2000 payments, Producer Groups, Short supply chains and local markets, co-operation) provide opportunities for integrated and focused interventions but their exploitation will heavily depend on the existence of management plans within every community and the efficiency of multi-level co-ordination forms (governance). This co-ordination form will overcome the issue of liquidity through a combination of funding that includes the Municipalities' own participation, the exploitation of financial instruments like NSRF, ITI, RDP, LEADER etc.

The basic institutions that can contribute towards this direction are:

- The new co-operatives and the, under construction inter-branch organisation for feta cheese,
- The Municipalities of Pindus (LA) through their collaboration for the sustainable development LA's and reconstruction of local productive systems but also through their initiative for the creation of a Support Center for the HNV farming systems,
- All the elected members of the Parliament and other elected dignitaries originating from the LA,
- LA's cultural and environmental associations, World Federation of Thessaly Associations,
- Terra Thessalia Cluster: a pilot collaboration of all the actors involved in the upstream and downstream of the dairy chain of pastoral livestock products.

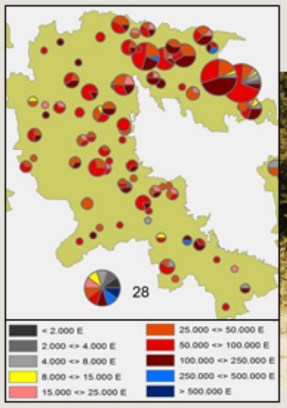
Actors involved in HNV issues: Ministry of Rural Development and Food, Regional Authorities (NUTS 2), Municipalities (LAU2), National Authority of the Tzoumerka National Park, local development agencies, University of Thessaly, Technological Institute of Thessaly, Environmental Centers of Mouzaki and Pertouli.

Resulting consequences on farm economy

Dynamic crops, enlargement of pastoral herds, connection with agrotourism

2015 -2017 :
A new farmer's route

Distribution of free-range cattle breeding in LA



While demand on LA's products is strengthened due to the "mountaininess" and HNV character of existing local farming systems, the producers continue being subject to the difficult, sometimes harsh, working conditions of those systems without benefiting from this trend in the form of a e.g. price premium and/or improved access to markets). Farmers under 45 years old constitute a remarkable force in the area, representing 31.5% of the total. Their mobilization especially in the specific context shaped by implementation of CAP and RDP in Greece, could pursue any of the following alternative development paths:

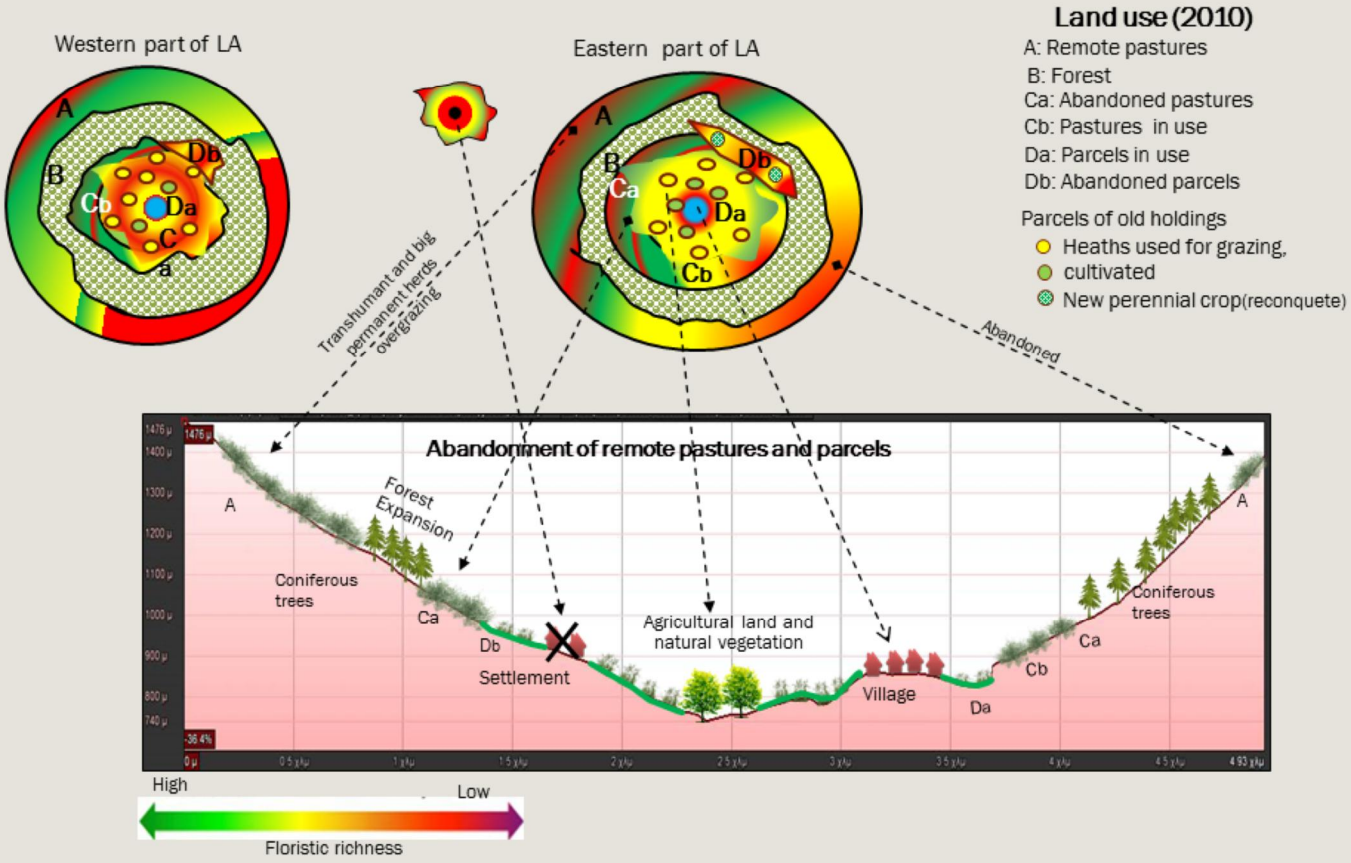
a) pastoral sheep and goat breeding due to access to Thessaly's dairy industries controlled by businessmen who come from the LA but also subsidies and the reduced feeding cost allowed by grazing. Within this path, low yields of extensive farming due to non-rational management (reproduction, feeding, living) of the herds combined with the difficulties of increasing the added value of the produce, push the producers towards enlarging the size of herds.

b) free-range cattle breeding to a lesser extent. It responds to existing demand (since Greece has a deficit in bovine meat), offers better working conditions, and is favored by high subsidies. In both cases above, the lack of easily accessible slaughterhouses and cheese-making with mandatory pasteurization, pose serious barriers to the profitable marketing of the products–not only in the conventional market channels but also in the local tourist market, as well as the market created by the Diaspora.

c) products of recognized value and increased demand (honey, vegetables, fruits, chestnuts, aromatic and medicinal plants) especially by new farmers. There could be a tendency to concentrate parcels and intensify agricultural practices around the village and in the, under-reconquest abandoned and remote agricultural land. It could also cause increased and infrastructure irrigation needs. This dynamic might have negative environmental consequences in the absence of a planned environmental and territorial integration of individual farms in the farming system.

d) preservation of the pluriactivity, with short term (weekend) tourist accommodation and entertainment services. This could also led to a reinforcement of the tendency to integrate pastoral holdings as demonstration fields in tourism development zones.

Resulting consequences on land-use and biodiversity



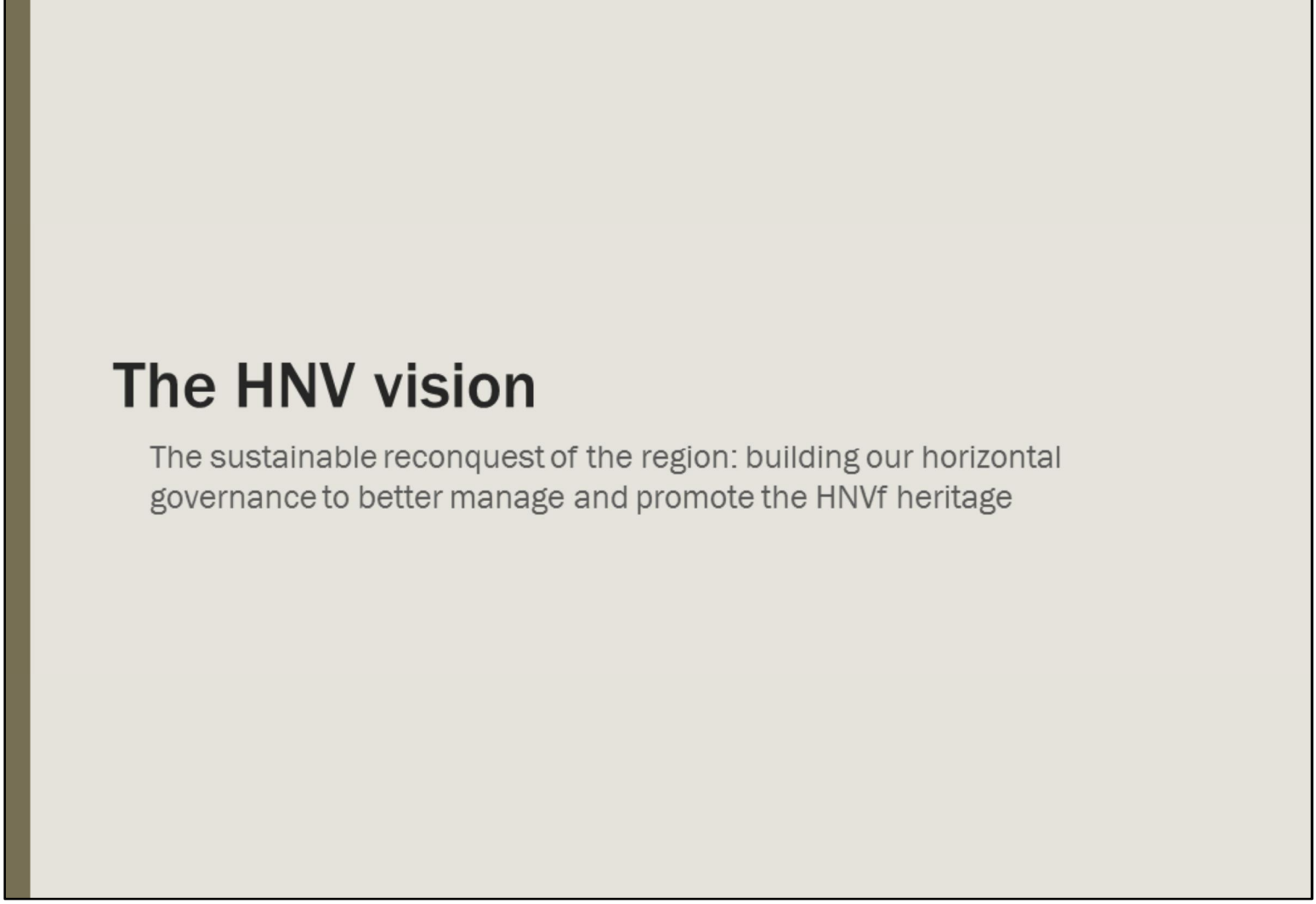
The expected abandonment of livestock breeding and agricultural land by the large number of mainly small holdings with aged leaders (45%) irrespectively of the renewal degree, resulting in the elimination of small herds, will cause changes in the organization of the grazing system in the zone around the settlement. Parallel, the growth tendency of the permanent and transhumant herds will be strengthened. The choice of less remote pastures based on clearly spatial criteria (distance, infrastructures etc.) would continue. Small trend of land concentration and intensification of practices, resulting in the loss of fertile soil. New perennial crops extension in the old remote farmland zone.

Negative consequences

- Expansion and dominance of forest ecosystems in the unused pastures,
- Continuation of the densification and increase of the vegetation height of sclerophyllous vegetation-(asphodels, thorny shrubs, phrygana, etc.) in the abandoned agricultural land due to management,
- Increase of the uncontrolled collection of wild herbs (mountain tea, oregano, Saint John's Wort) and edible flora (chicory, dandelion, etc.) in the grassland ecosystems (grasses, wildflowers), resulting to the decrease of the intrinsic biodiversity
- densification of soft rural tourism, wind power facilities and small hydroelectric dams,
- increased environmental risks (fires) due to the reduction of the landscapes' heterogeneity

Positive consequences

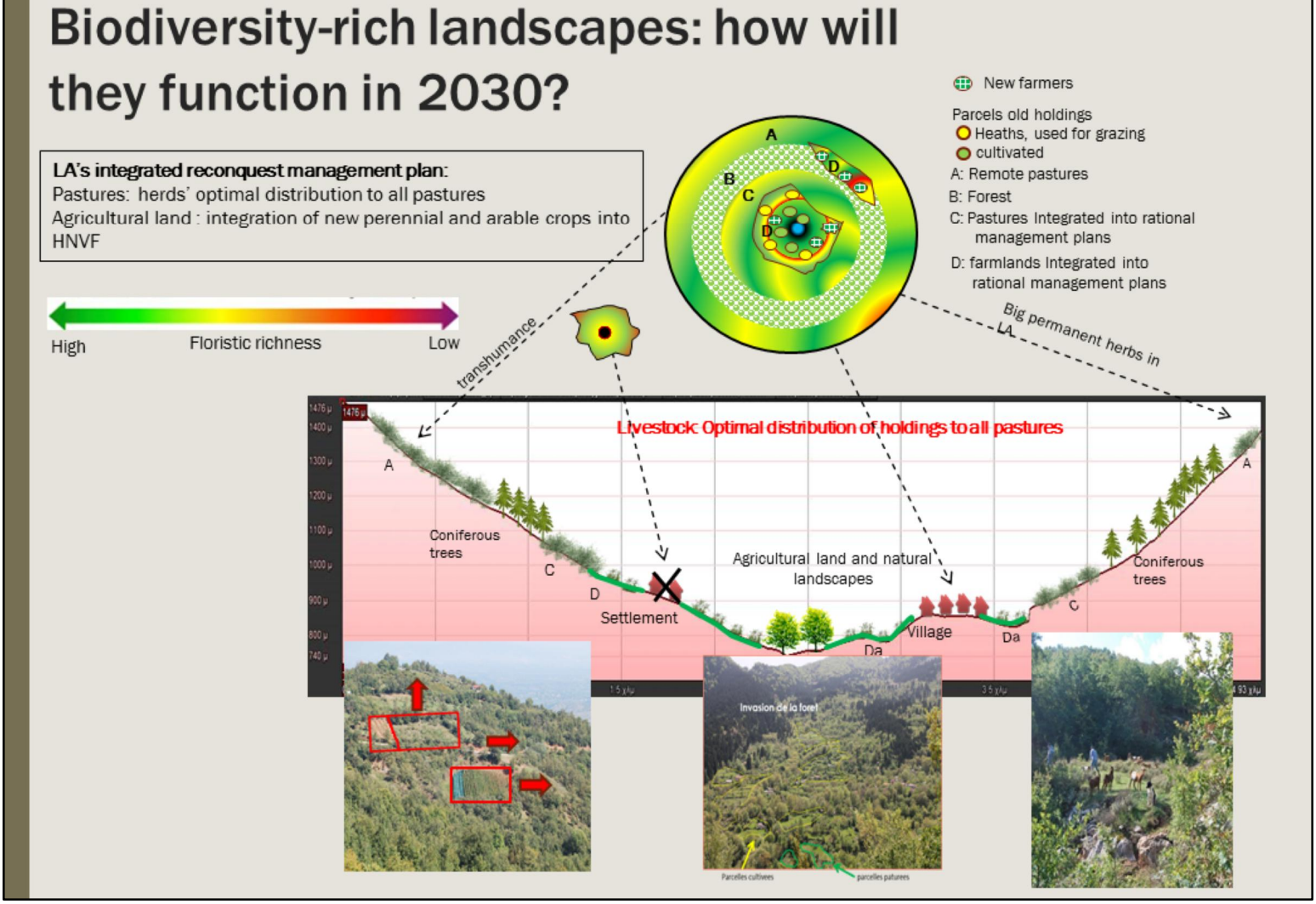
- reconquest of closed pastures and abandoned agricultural land by new or old holdings (sheep and goat breeding, cattle, specialized perennial crops) due to the valorization of the HNVf systems and their products,
- interventions (scattered however) in the framework of implementing agri-environmental measures,
- preservation on the population of the species *Canis lupus, Felis silvestris* and birds of prey like: *Buteo buteo, Falcon naumanni* especially in Natura 2000 areas due to existing protection schemes,
- due to the maintenance of vegetation islands, there could be ~~is~~ an increase in: the fauna of small preys (birds, hare), certain reptiles (snakes)- as beneficial crop regulators, insect fauna (pollinators) and the beekeeping' productivity.



The vision reflects the need to incorporate the HNV dimension into the evolving procedure of LA's re-conquest process within the wider context. A dynamic conjuncture framed, on one hand, by the need to integrate ~~the~~ environment protection and ~~the~~ quality of life as objectives in the development process, a demand that is consolidated more and more also among consumers and, on the other hand, by the socio-economic conditions of the crisis. This objective is achievable because during the last decades, the reclaiming process, shifted from the approach of strict conservation and exclusion ("land spare") to another approach, supported by the Diasporas communities, where natural and cultural heritage management and ~~its~~ speciality production (eg. cheese-making) are integrated in a project that instead of excluding tourism, involve it as an essential part of the vision. The installation of a new farmers' body opens a new chapter for the productive exploitation of the area's significant resources: rich environmental value, big pastoral tradition and holdings that belong to the HNVf1 and HNVf2 category. In that process pastures' and their rich biodiversity and landscapes are the main assets.

A plan for the implementation of the vision is based on the utilization of the multi-partner scheme of the LA's social, economic and political actors and institutions (HNVf producers, diaspora, consumers etc.) from the public, private and social sector. Incorporating those partners in a horizontal governance scheme, attempts their coordination, by assimilating different ways of participation at the various policies (RDP, LEADER etc.) which are an important tool for promoting LA's sustainable reconquest. Such a governance scheme can better deal with issues such as native relations, the rising representation of the regionthe combination of informal and formal institutional relations and knowledge.

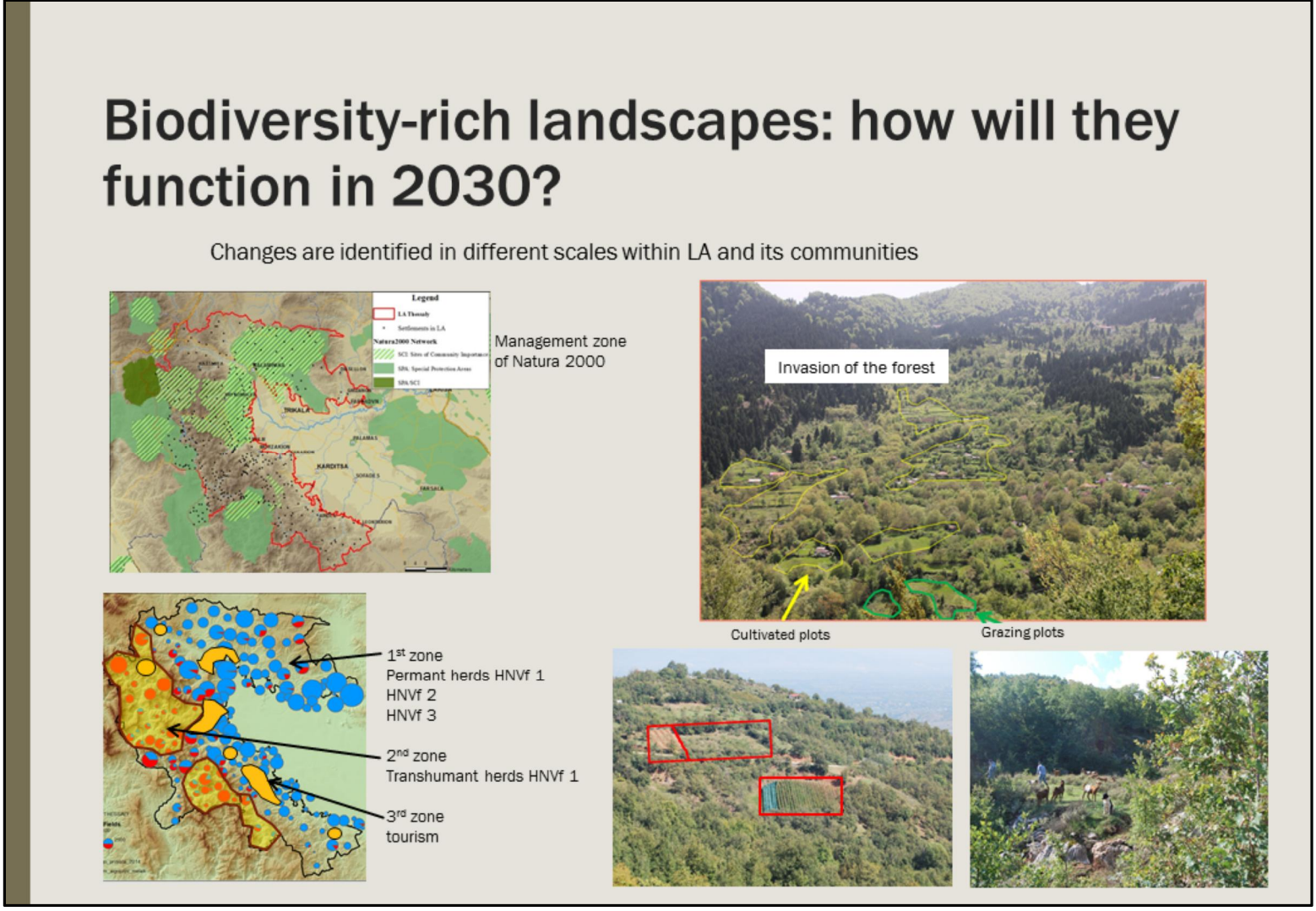
In this cooperation and coordination context, planning an integrated intervention is required to effectively manage the pressures and impacts on LA's landscapes and biodiversity as well as the prevention of intensification and/or abandonment of farming. The proposed governance scheme and management plan, are called to highlight the way in which it is possible to overcome public intervention deficiencies e.g. policy failures. But also to support the multifunctional role of LA's HNVf systems, the scale of every community and biodiversity landscape



Landscapes' function for the preservation of biodiversity within the LA is ensured with the preservation of the HNVF and hence, the traditional structures of the landscape itself. The combination of the various RDP measures can enhance the synergy between support actions of the HNVF systems and actions for the preservation of spatial heterogeneity and thus the structural connectivity of the landscape in favor of biodiversity.

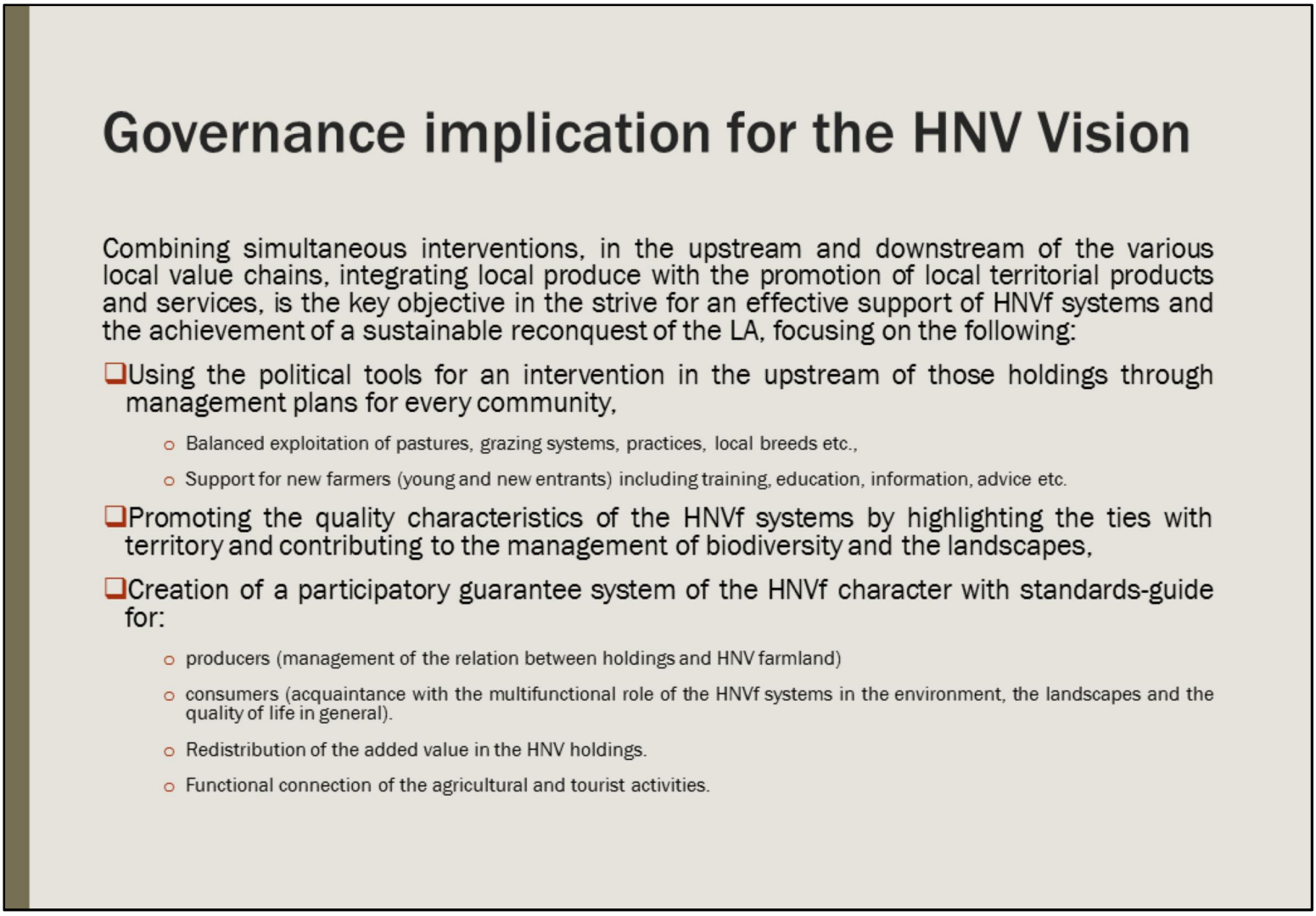
Planning for the sustainable reconquest of Pindus contributes towards this direction. It adapts to the local circumstances by adopting a specific management plan that is being developed in every community under the auspices of the Municipality. The choice of the community, as the optimal intervention level beyond the symbolic dimension, takes into account the complex situation formed within the agro-sylvo-pastoral system by the property rights which involve the state, the municipality, individuals settled and transhumant, as well as the absentee owners.

The management plan is the main co-ordination tool, in the level of the community, of the relationships between HNVF land, the farm unit and the wider landscape. The main objective of the plan is a more balanced and better distributed reconquest, integrating all grazing lands and new farmers' crops and perennial crops at HNVF 2.



The Management plan combines interventions in two levels: a) the level of HNVf land, the wider landscape and raising awareness though actions funded by the various agri-environmental measures (e.g. RDP measure 7.6), b) the farm unit, the zones of agricultural land (HNVF land) and the pastures located in shorter or longer distance from the village with objectives and actions within a framework of specifications that delineate the producers and other stakeholders' activity field. These specifications are enriched and used by the participatory guarantee system for the promotion of the region's HNV farming image.

Pastures: improvement of pasture's productivity, limitation of non-grazing species (e.g. asphodel), management of pasture carrying capacity and stocking rate: distribution of the herds, selection of installation place and grazing plan for the new herds in order to protect herbaceous flora and prevent the expansion of forest vegetation's,
Cultivated land: a) respecting the structures of HNVF land (preservation of hedges) and also vegetation islets, and b) good practices, rational land management etc. at the level of farm unit and the land parcel. Improvement of the flora and reinforcement of invertebrate biodiversity within arable land,
Managing those units as elements of the structure of a heterogeneous landscape and not as production units contributes to the reduction of the habitats' fragmentation and the gradual deceleration of the trend towards a loss of biodiversity. The preservation of hedges, vegetation islets, the protection of streams and riparian vegetation but also the proper distribution of the herds and good practices in agriculture, contribute to the high quality of the natural-agricultural landscape.
Other uses
Restoring the heterogeneity of landscapes and a better organization of grazing contribute to a significant reduction of fire risk. At the same time, any investment in access micro-infrastructures (e.g. new cultivations in the old abandoned agricultural land) facilitates the development of sustainable rural tourism activities since visitors are attracted by the quality landscape.



All the involved actors participate in the governance scheme and use of the HNVf Land and it is managed by a local committee.

Producers: together with the farm unit they are an active element of landscapes' structure and function. They are supported by an information system for the preservation of biodiversity, the positive impact in agricultural systems' productivity. They are actively involved in the implementation of innovations that contribute to biodiversity's preservation and are familiar with the use of new technological tools.

Diaspora: participation in the management of their parcels, the gardens/orchards as well as ~~and~~ the houses within the settlement

Public bodies (local, regional and national level) are involved in the HNV management on the basis of recognizing the Community as a basic organization and operation unit for the co-ordination of the relationships between HNVF land, the farm unit and the wider landscape within the framework of a management plan.

A new governance form in the scale of the LA can oversee the implementation and update of management plans and their assimilation by incorporating representatives of the local community committees.

The mood for co-operation between the various bodies that have different objectives is based on the existence of a common topic that concerns the preservation of natural and cultural heritage of the landscapes:

- for the producers: it is to strengthen the image of local products in which the new farmers invest
- for the Diaspora: it is the preservation of these landscapes for which they fight through material and immaterial interventions
- for the public bodies: they are more and more obliged to activate and implement various measures of the RDP that concern the conservation of biodiversity and the promotion of quality products/services
- and finally for everyone: the risk of the various zones being characterized as wooded land, due to the continuous expansion of the forest

What does need to be addressed for the HNV vision?

A effective territorial governance for an integrated support to HNV farming

LA's balanced reconquest
an effective way to properly manage landscape biodiversity

Promotion of the services and products of HNV farming to the society

Managing an HNV area is an issue, not only for the (rural development, agricultural, regional, environmental ..) policy makers, NGOs, but mainly for all those who live in it, use the natural resources or have been assigned with their management. Therefore, it is necessary to plan an integrated intervention effort in order to include all the individuals and bodies who are directly or indirectly linked to the management of an agricultural system, its farmland and semi-natural areas.

The support of the HNV production systems, in order to be effective, should not be limited in the level of the farm units that adopt them. It should also extend to the integration of these holdings at the plan to valorise the products of and services provided by HNV systems, through new cooperation forms in order to reach out consumers.

Certain elements could be thought as essential for the success of such an integrated intervention:

- Guidelines for the organization and operation of every holding in the limits of the community and the agri-ecological unity in which it belongs,
- Establishment of a participatory guarantee systems' with twofold purpose: a) internally monitoring the implementation of the guidelines by individual farms and b) provide reliable information to consumers on the links of local products and services with the HNV systems which contribute to a sustainable use of natural resources, biodiversity conservation and landscape quality
- Creation at the LA level of a governance scheme to manage, monitor, evaluate and improve the above and co-ordinate agro-ecological actions and interventions.

The obstacles that appear are the following:

Social and Institutional

- Decline of the traditional management forms of the commons (pastures, water) and deficient mitigation of this gap by public administration
- Deficit in raising awareness on the importance of biodiversity in terms of environmental sustainability, system's productivity and potential effects of synergy
- Deterioration or complete absence of cooperation forms (associations, cooperatives)
- Lack of advice, advisors and an effective extension service
- Difficulties for the establishment of an effective rural governance scheme due to continuous administrative reforms (rendering the consultation process ineffective)
- Lack of interaction between indigenous knowledge and modern scientific research

Specific policy issues

- *Food safety regulation*: The cheese production technique traditional used does not include milk pasteurization, hence its nature as a mandatory prerequisite, turns the marketing of the traditionally produced cheese to an illegal activity.
- *Land use*: The lack of Land Registry (Cadastre) makes the delineation precise boundaries' between forest and pastures, impossible
- *Biodiversity conservation*: Delay in the establishment of environmental management plans in most Natura 2000 protected areas. Absence or non-effective participation of producers in the initial designation process and also in management and planning procedures of this areas
- *RDP*: Lack of specific measures to support HNV farming and farmers in the current policy framework

Markets and product innovations

- Difficulty in accessing το loans and financing, especially for small holdings
- difficulties with in networking, especially in access to trading networks, due to lack of co-operation in processing, guaranteeing an adequate quantity in order to enter the market and difficulties in the effective communication of quality

- characteristics of local produce
- Obstacles in supplying the local tourist market due to lack of infrastructure (e.g. slaughterhouses)
- Problems in demarcating the specific quality characteristics distinguishing the local produce, due to the fact that the feta cheese PDO can be used by almost the totality of Greek producers.

Farming techniques

- There are no pasture management systems and locally adapted grazing and feeding systems
- Inadequate utilization of new technologies for the organization and management of extensive livestock

HNVF systems support is largely linked to the recognition by the consumers, their contribution in preserving biodiversity landscapes and the quality of the produced products

Who are the actors to get involved in the process? How?

Meeting under the HNV-link project concerning: finding ways to support the production systems within the LA.
Participants: *Mayors of the LA, Universities, producers, cultural associations.*
March 2017

Meeting under the HNV-link project concerning: the active participation of the communities in the management of HNV areas.
Participants: Mayors from the LA, Universities
February 2017

The installation of new farmers in the LA could be ~~is~~ linked to the crisis but in parallel it responds to societal new expectations by accepting and honoring a heritage of managing the human-animal -nature relationship in mountainous areas. This recovery could be thought as ~~is~~ a new form of institutional, socio-cultural reintegration of the productive activities in a degraded agri-ecological system. In this procedure public policies and services, as well as Diaspora's communities coincide in transfering knowledge and providing financial support to young people (in the form of aid for installation and/or by purchase as consumers' local products). In order for this endeavor to be successful and sustainable it is necessary to redesign land uses for cultivated pastures, pastures/semi-natural and natural areas within the HNVF systems. The participation of all those who can contribute to the synthesis of endogenous knowledge innovative thinking to the management of the commons in a new governance scheme under the auspices of local government, is a prerequisite.
Investing in biodiversity conservation highlights the role and enhances the image of HNVF systems, responds to Diaspora's interests for balanced and equitable management of the natural and cultural heritage (residence, housing, ownerships rights) and highlights communities as an HNV area that produces local quality products and attracts tourists.

Some dimensions of the contributions by each of the stakeholder groups involved

Old producers: Knowledgeable of inherited collective management systems of territory
New producers: preservation of HNVf systems contributes to productivity, increase of the products' value, recognition of their holding's multifunctionality and their quality of life.
Diaspora's communities/cultural associations: management of the HNV farmland concerns community's future and the protection of their own interests (fire prevention, settlement management, quality of life in the village etc.).
Municipalities: preservation of HNVf systems responds to the management and utilisation of its natural resources and territorial cohesion.
Regional authorities, university /Research institutions, local Development agencies: LA's integration in a management plan for the relationship between the HNVf system and farmland is an innovative endeavor that will

allow their active participation in the adjustment of the rural policies and the elaboration of suitable support plans on HNV holdings and rural development.

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