

**THE DADIA–LEFKIMI–SOUFLI FOREST NATIONAL PARK, GREECE:
BIODIVERSITY, MANAGEMENT AND CONSERVATION**

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**WWF Greece
Athens 2010**

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Suggested citation:

Author's name. 2010. Title of paper. – In: Catsadorakis, G. and Källander, H. (eds). The Dadia–Lefkimi–Soufli Forest National Park, Greece: Biodiversity, Management and Conservation. WWF Greece, Athens, pp. 000–000.

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Published by:
WWF Greece,
26 Filellinon str.,
GR-105 58 Athens, Greece
Tel:+30 2103314893, fax: +302103247578
e-mail: support@wwf.gr
<http://www.wwf.gr>

ISBN 978-960-7506-10-8

Typeset by ZooBo Tech, Torna Hällestad, Sweden

Printed by Schema + Chroma, GR-574 00 Sindos, Thessaloniki, <http://www.kethea-print.gr>

Illustrations by Paschalis Dougalis

Maps on pages 18–28, 36, 42, 86, 89, 217 and 231–243 prepared by Nikolaos Kasimis, those on pages 23, 27 and 232 by Konstantinos Poirazidis.

The book was printed on 130 g FSC-certified Sappi Era Silk paper.

Cover photo: Giorgos Catsadorakis.

Development trajectories and prospects in the Dadia–Lefkimi–Soufli Forest National Park

Constantinos Liarikos

The Dadia–Lefkimi–Soufli Forest National Park (DNP) is an area of great ecological importance at national, Mediterranean and European levels. However, all efforts to preserve this unique area are influenced by local development, demographic and social trajectories and other circumstances. As in most comparable areas in Europe and Greece, DNP is affected by a multitude of factors all of which negatively affect the area's potential for capitalizing on its natural assets and geographical particularities. Materialization of its promising potential may only be sought through a diversified production, valorization of the public services offered and a strict focus on local competitive advantages. Not surprisingly, all of these are related to the issue of nature conservation and the direct or indirect results it yields for the area,

Keywords: Dadia, rural development, regional development, protected areas, sustainability

Introduction

Examined within a West European context, Greece is a state that exhibits a series of peculiarities insofar as its political and development paths unfold through its history. These manifest themselves over a wide spectrum of sociopolitical circumstances to formulate citizen-government relations, attitudes towards the use of common resource pools, dependence upon state bureaucracy, pertinent corporatism and corruption practices, the weak cohesion of social engagement and civil society mechanisms, and so forth.

Parallel to these traits, the country is also characterized by a strong polarization between rural and urban social experiences and development paths, against which national policies unfold. Although the country remains predominantly rural compared to its 15 EU counterparts, its recent history has witnessed a systematic promotion of urbanization and the relevant accentuation of dependency mechanisms towards rural economies. The latter have been structured around a strong system of agricultural subsidies and induced political interdependencies regarding land-use and land ownership rights. A

nexus of exogenously driven development activities, be these public (public works, army settlements, academic institutions, etc.) or private in character (major tourism investments, industrial complexes, etc.), has acted to accentuate these effects. On top of these, relevant policy making has lately been overwhelmed by needs to respond to growing competition from previously “third” countries (tourism, agricultural goods), the need to somehow utilize geopolitical advantages in the fields of transport and energy transfer and the concomitant need to struggle for the preservation of natural and cultural resources highly valued by its European and global counterparts.

The above sets the scene for the discussion to follow, regarding the development trajectories and prospects faced by the Dadia–Lefkimi–Soufli Forest National Park area (henceforth DNP). An effort is made to pragmatically depict the social and economic realities of the region in order to familiarize readers with the character of this ecologically unique area, and to allow a deeper understanding of issues that affect conservation prospects. Given that the pertinent historical development and administrative setting have been discussed in the

introduction to this volume, we turn directly to the discussion of the demographics of the area.

Before embarking on this discussion, however, it is important to highlight one critical methodological issue, valid for most sections of this chapter. The DNP expands over a very large area that includes settlements, villages, agricultural areas, pastures and woodland. Although only three villages (Giannouli, Dadia and Lefkimi) are actually situated within the boundaries of the DNP, another eight communities are just outside those boundaries and the activities of their inhabitants relate directly, spatially or resource-wise, to the park. At the same time, the DNP is also affected by, and affects, the wider area of the Evros prefecture within which it is embedded. For this reason, any effort to describe the complex social and economic realities of the DNP as the sum of those of a number of communities will be an abstraction: confining the analysis to the three villages geographically within the DNP will disregard the functional role of the communities just outside its borders and even of the whole prefecture. On the other hand, choosing to discuss the social and economic conditions of all the ten municipal departments of the Soufli and Tycherio municipalities that relate to the DNP, will also erode the accuracy of results, by interpolating conclusions for the DNP from data corresponding to a much wider area.

To overcome these problems, we shall articulate the discussion on three parallel spatial levels: (1) the whole Evros Prefecture, (2) the sum of the two municipalities related with the DNP, henceforth termed the “functional DNP area¹”, and (3) the two municipal departments that are explicitly contained in the park, i.e. Dadia and Lefkimi, in the following called the “core DNP area” (administratively, Giannouli is considered to be a suburb of the town of Soufli).

Demography

Population in the DNP today

According to the latest (2001) population census (NSSG 2003a), the two municipalities that share the DNP are inhabited by 11,622 people, almost 65% of whom be-

long to the municipality of Soufli. As Fig. 1 demonstrates, the vast majority resides in the two main towns (Soufli and Tycherio), while the rest is roughly equally distributed among the other municipal departments, with Provatonas and Dadia having slightly larger populations because of their proximity to Tycherio and Soufli, respectively. The two municipal departments that actually fall within the boundaries of the DNP, Dadia and Lefkimi, plus the population of Giannouli, add up to a total of 1365 people.

The population shows an excess of males and among them non-productive ages predominate together with the age group 15 to 24 years. Both these features represent a departure from the national and regional averages, both of which show an equal proportion of women in the overall population and a higher representation of the productive ages. Similar indices for the Evros prefecture fall between the national/regional averages and those for the DNP municipalities. These characteristics are valid for both the DNP functional and core areas, albeit even more pronounced in the latter.

Combining gender and age structural characteristics, men prevail in the productive age-range (15–64 years), whereas women are overrepresented in the non-productive ages (0–15 and over 64 years). This characteristic is much more pronounced here than at other spatial levels and becomes stronger when moving from the functional to the core DNP area (Table 1). This can be considered as an effect of internal migration: women in the productive ages tend to leave for the cities more often than do men, who mostly remain to work the land. It is also a widely seen characteristic of Greek rural areas and especially the more isolated ones.

Changes in population size and structure

Population trends in rural Greece have seen abrupt changes, due to immigration and emigration movements, violent abruptions in socioeconomic workings (wars and conflicts) and natural forces (natural catastrophes, epidemics, plagues, etc.). Two time periods feature importantly in any discussion regarding rural populations in Greece. The first one concerns the period before World War II, during which two diverging trends are observed: (a) a strong emigration in the early 20th century, especially towards the USA and (b) a strong internal migration current immediately after the end of the Asia Minor campaign (this roughly coincides with the end of World War I) when the Greeks of Asia Minor were forced to relocate to Greece within the framework of an organized population exchange scheme. This latter

¹ The term “functional area” is used in economic and social geography with a very particular meaning, namely an area within which specific economic and social interactions take place. Here the term is used in a similar manner, albeit in a more simplified way, as it is not the outcome of specific linkage analyses, but rather related to certain administrative structures.

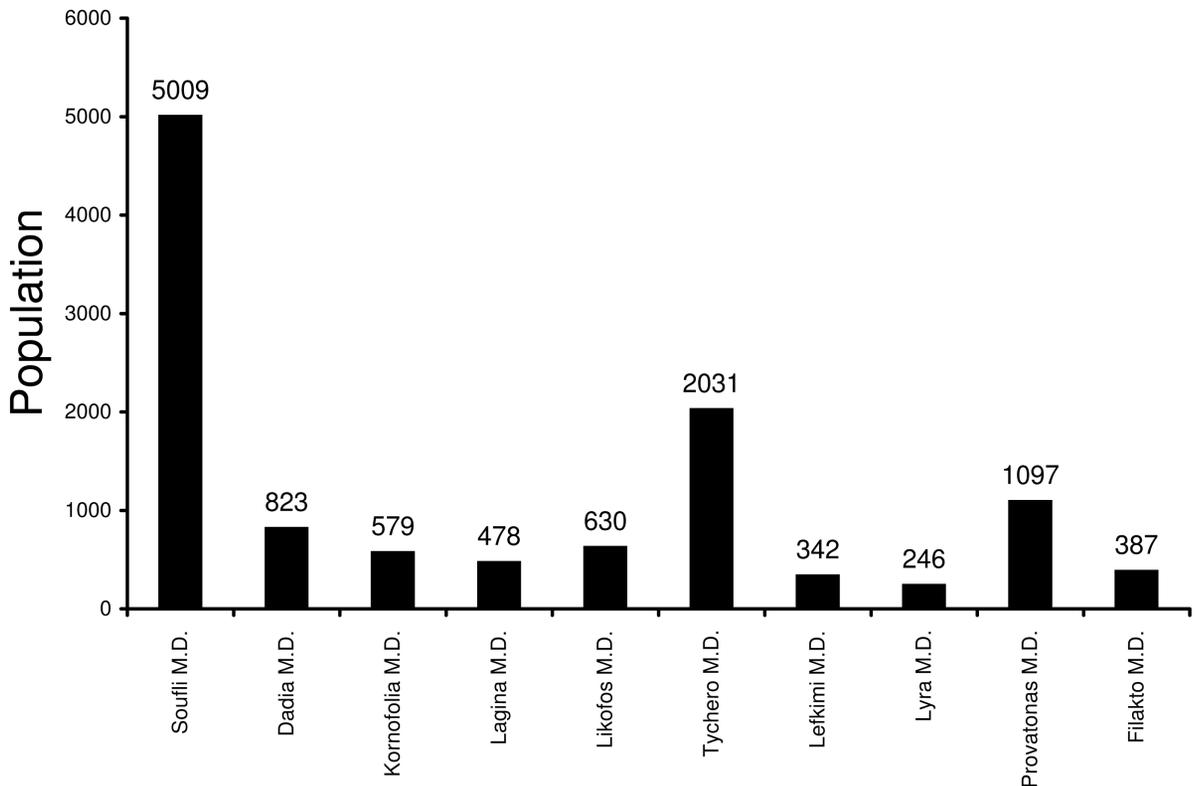


Fig. 1. The size of the human population and its distribution between the different Municipal Divisions (M.D.) in 2001 (Source: NSSG 2003a)

development is of particular importance to the areas of northern Greece which for a variety of reasons received the majority of the refugee waves².

The second important period extends from the eve of the German occupation of the country until the mid 1980s. This was a period of very abrupt demographic changes in the countryside when populations declined rapidly and age and gender structures changed towards that described above for the DNP area. During the first part of this period (roughly until the mid 1950s), migration was mostly internal and driven by people's need to escape warfare and political conflicts (especially the Civil War which laid a heavy burden on rural and

border areas), but was also dictated by hopes of better livelihoods in urban centres. Surprisingly, much of the abandonment of rural space was encouraged by central government policies that sought to diminish the possibilities for a revival of leftist guerilla forces in the countryside. During the second part of this period (end of the 1950s to the early 1970s), migration was both internal (towards urban centres) and external (especially towards western European countries), with the relative importance of the two shifting. Finally, during a third part of this period (1970s to the early 1980s), migration seems to have been regional, mostly confined to movements to nearby cities and towns. After the mid-eighties migration rates slowed down and came to an almost complete halt.

According to the data of the National Statistical Service of Greece (NSSG), the population in the prefecture of Evros went through three quite distinct phases in the post-war period. During the 1950s the overall population increased by 11%, an increase that was immediately lost in the following decade. After 1971, the overall population showed a stable increase, roughly corresponding to the national average. Indeed, it seems that while until

² Among the reasons often cited are the presence of abandoned communities with idle housing facilities and the availability of agricultural land to be distributed. The need to reinforce the Greek identity of border areas and "new lands" as they were termed is also often cited. Thrace was among the Greek regions that hosted the largest waves of refugees, with more than 100,000 people settling. In the wider area of the DNP, large parcels of land were distributed. It is characteristic that in 1928, in the major conurbations of Thrace refugees made up 30–70% of the populations (Hatziosif 2002).

Table 1. Distribution of population by age and gender (%) for the DNP and other spatial levels in 2001 (Source: NSSG 2003a).

	Age	0–14	15–24	25–39	40–54	55–64	65–79	Over 80	Total
DNP	Total	12.40	16.55	17.90	14.48	13.96	21.18	3.54	100
	Men	11.88	22.50	18.89	14.06	12.53	18.04	2.10	100
	Women	12.99	9.78	16.77	14.96	15.58	24.74	5.16	100
Greece	Total	15.19	14.28	22.87	19.97	10.98	13.69	3.02	100
	Men	15.83	15.10	23.46	19.98	10.52	12.63	2.48	100
	Women	14.56	13.48	22.29	19.95	11.43	14.74	3.55	100
Region	Total	15.74	15.04	20.84	18.86	11.74	15.35	2.44	100
	Men	16.23	16.94	21.13	18.89	10.95	14.09	1.77	100
	Women	15.24	13.14	20.55	18.83	12.53	16.61	3.11	100
Prefecture	Total	13.94	17.07	19.45	18.01	12.11	16.63	2.78	100
	Men	13.64	21.73	19.62	17.67	10.98	14.42	1.94	100
	Women	14.27	11.96	19.25	18.38	13.35	19.07	3.72	100

the 1970s emigration was dominated by movements to Athens, after the 1970s these took place mostly within the prefecture, with smaller scale movements towards the major cities. For a thorough discussion of emigration, see Maloutas (2000), Fragiadis (2009), Close (2009).

Very interesting for our case are the stable urbanization trends characterizing the area’s demography throughout the post-war history, and which have greatly affected the demography of the DNP area. Fig. 2 depicts this urbanization trend for the prefecture of Evros, while the impact of this trend upon the DNP area is displayed in Fig. 3, which shows population changes across different spatial levels. As has also been noted (Adamakopoulos et al. 1995), despite absolute trends at each level, changes

after the 1940s tended to influence the demography of the prefecture’s urban centres, which consistently demonstrate lower decrease rates throughout the period.

What is striking in this case is that an urbanization trend is found also within the DNP, with the population decreasing in the core DNP area despite increases in the overall functional area and the two main towns (Soufli and Tychoero). This change would have been even stronger if the Dadia community had been excluded from the analysis to eliminate the outlier effect that its population increase introduces. Relevant to what was discussed earlier, the very strong population increase in the core DNP area during the period 1920–1940, had to do with refugees settling in previously abandoned settlements.

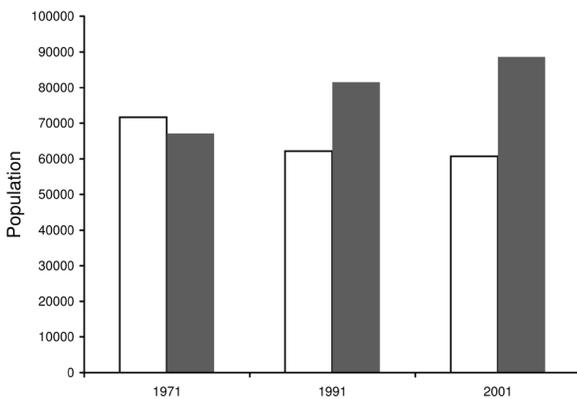


Fig. 2. The sizes of urban (filled) and rural (unfilled) populations in the Prefecture of Evros in absolute numbers for 1971, 1991 and 2001 (Source: NSSG 2003a).

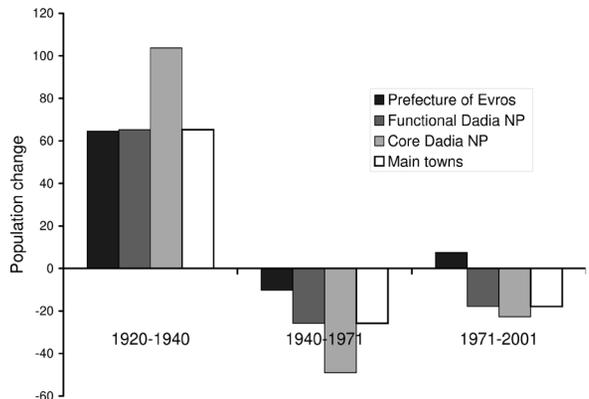


Fig. 3. Population trends (percentage changes) across different spatial levels during 1920–2001 (Source: NSSG 1922, 1942, 1973, 2003a).

Employment structure

As far as the structure of employment is concerned, compared to national averages primary production and the public sector play a more important role for overall employment in the Evros prefecture. The former reflects the rural character of the area, while the latter is mainly associated with the presence of the military forces and the border police. Employment in industry remains strikingly below national averages, whilst that in the services sector remains low. These facts become more obvious in Fig. 4, which shows employment in the main sectors for different spatial levels. As we move from the national level to the lower ones, employment shifts towards primary production, the importance of services and industry declines, and non-employment increases rapidly.

In general, employment trends in the DNP municipalities follow those in the prefecture as a whole but with fewer people in the services and a much higher level of unemployment. Employment in services is nonetheless very important compared to other activities in the DNP, while the higher non-employment levels should be linked to the high percentages of non-productive population discussed earlier. The trends also follow those of the last 40 years, i.e. a decrease in employment in primary production in favour of employment in other sectors, especially in the services (Fig. 5).

Social conditions, infrastructures and networks

The DNP's position in a border area of the country affects it in two ways. On the one hand it accentuates its isolation from administrative centres, while on the other caters for some level of containment of required social and public services. The core of the DNP lies roughly 60 km from the city of Alexandroupolis, from which it draws many of its administrative and social services. Equally, the towns of Didymoteicho and Orestiada, situated at similar distances to the north (40 and 80 km, respectively), constitute peripheral centres which also provide an array of services. The town of Soufli, which partly extends into the borders of the park, constitutes the age-old administrative, cultural and professional centre of the wider DNP area.

Indeed, Adamakopoulos et al. (1995) maintain that most of the activities regarding the DNP are centred on the two poles of Soufli and Tycherio, with Soufli rising as an uncontested local centre, while the cities of Alexandroupolis and Orestiada constitute very important, yet secondary, development poles. These authors also emphasize that the towns of Soufli and Tycherio show a predominantly urban character, despite their small population size.

In drawing a realistic, yet rough, picture of the social conditions in the DNP area, it is proper to take into account the availability of social services and infrastruc-

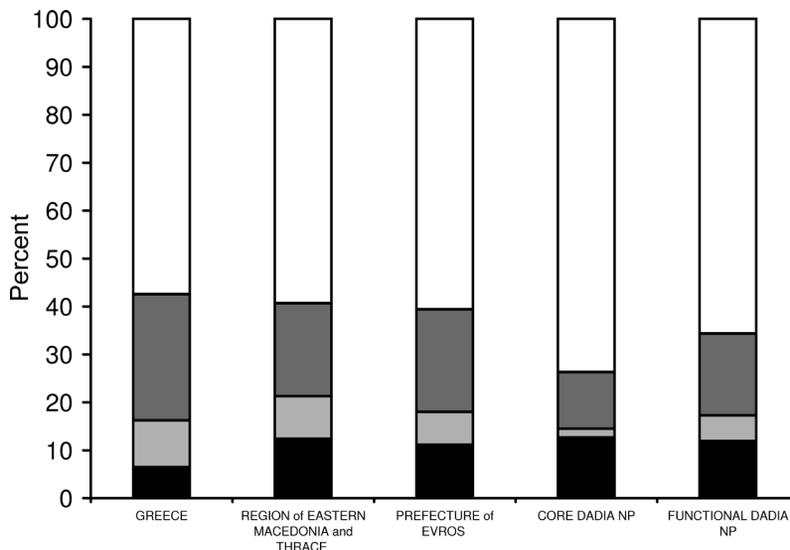


Fig. 4. Employment by main sector among spatial levels in 2001; white = non-employed, dark grey = tertiary (Statistical Classification of Economic Activities in the European Union (NACE) codes C-Q), light grey = secondary (NACE codes C-F), black = primary (NACE codes A-B). (Source: NSSG 2003a).

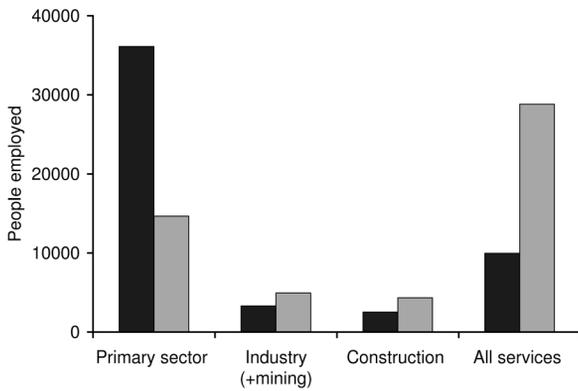


Fig. 5. Employment in absolute numbers by major economic sectors in the Evros Prefecture for 1971 (black) and 2001 (grey). (Modified after NSSG 1973, 2003a.)

tures in the whole area from Orestiada to Alexandroupolis, i.e. within the range of a small round daytrip. Health services in this reference area are satisfactory, comprised of local health centres in many towns, supplemented by the University Hospital in Alexandroupolis, which provides a full menu of high quality medical services. Two regional hospitals, one in Alexandroupolis and one in Didymoteicho, also provide a wide range of services to local inhabitants and visitors. Educational services are also at a satisfactory level with elementary education provided in most villages within the wider DNP and high-school education available in Soufli and Tycherio. Alexandroupolis also hosts two faculties (Medical and Education Sciences) of the Democritus University of Thrace, while a third faculty (Forestry) is located in Orestiada. Furthermore, Didymoteicho hosts a Public Technological Education Institute.

Alexandroupolis is the capital of the prefecture of Evros, and thus hosts the majority of administrative services. Those services that are not provided in Alexandroupolis are catered for in the city of Komotini, which is the regional capital and also within a daytrip from the core of the DNP. Of course, many necessary administrative operations can already be catered for by the municipal administrations of Soufli and Tycherio. In Alexandroupolis one also finds a variety of other necessary social and professional services, including branches of professional and trade chambers, labour unions, as well as services set-up especially for persons with special needs.

As far as transport and telecommunication infrastructures are concerned, the DNP is connected with both Alexandroupolis and Orestiada through a fast highway and a railway line. Alexandroupolis also has

a national airport, with regular flights to Athens and flights to Thessaloniki, Crete and abroad during some periods of the year. It also has a port, which mainly caters for freight transport but also links the city with nearby islands. The road network interconnecting the villages of the DNP is old, but still rather efficient given the small traffic load. All villages and towns of the DNP are connected to the power and telephone grids, with broadband telephony available in almost all settlements. It is important to note that today's situation is radically different from that 15 years ago (Adamakopoulos et al. 1995), to a large part mirroring changes induced by EU regional development funding and the improvement of Trans-European Transport Networks (TENs – Egnatia Odos).

The DNP area hosts eleven cooperatives of loggers and an equal number of agricultural cooperatives. These are further organized under two cooperative unions, one for each municipality of the area (Soufli and Tycherio). All of these cooperatives have seen their membership decrease during the last decade, mainly as a result of the decreasing numbers of people employed in the primary sector. In the case of the agricultural cooperatives, this decrease has also to do with their decreasing usefulness for the farmers as the market for agricultural inputs has been radically liberalized in recent years. The area also hosts two additional primary cooperatives (one each for wine and silk producers), both of little economic importance, while both Soufli and Tycherio host trade and professional unions.

The area also features a local development agency (Evros Development Agency) stationed in Provatonas, which administers EU-funded projects and other development efforts. It was developed in the 1990s to act as an agency facilitating for the LEADER programme. Municipal development companies are also operating in both Soufli and Tycherio, assuming responsibilities for the provision of many local public goods and the management of the business operations of the municipalities³. Similar municipal development companies operate in Alexandroupolis, Didymoteicho and Orestiada.

The two municipalities of the area also participate in a variety of initiatives for cross-border cooperation, together with other Greek cities of the region and cities in Bulgaria. Although these initiatives seldom yield

³ Municipal Development Companies operate in Greece as the profit-making branches of Municipalities, to facilitate the absorption of EU and public funding and to circumvent the bureaucracy of the public in those cases that profitable operations are undertaken by the municipal authorities.

evident results in terms of development or local policies, they have an important political role. Indeed, as Adamakopoulos et al. (1995) note, conditions throughout the prefecture depend greatly on cross-border relations, and thus such local initiatives may be conceived as an effort to regulate the influence of national policies upon local trajectories.

Economy and development trajectories

The economic characteristics of the DNP are shaped by a multitude of factors pertaining equally to the endogenous characteristics of the area's economy and to the national economic importance of this border area. These two economic forces negotiate the development trajectories to be followed by the local economies, and are all too often pulling in strongly diverging directions.

The DNP is very close to Greece's borders with Turkey and Bulgaria. This geographical position gives it a special importance for national defence, but also puts it in the middle of a series of developments aimed at strengthening trade and energy links with neighbouring countries. Investments to materialize these nation-wide development targets directly affect employment and economic activity, but also have an impact upon the overall character of the area, often jeopardizing the very resources on which local economic activities depend. The establishment of renewable energy infrastructures in the area belongs in this same category of activities.

On the other hand, a series of local activities, endogenously driven and based upon local resources and practices still exist to give the area its present economic character. These activities include agriculture, stock-breeding, forestry and, lately, tourism and nature protection. The first three are under the well known pressures that act on primary production (changed methods, societal changes). In recent decades, these have led to dramatic changes in employment and changes in the importance of locally produced added-value. Their character and social standing has accordingly been drastically altered. Tourism is promoted as a developing part of the economy but is characterized by a duality between mass tourism in the coastal areas of the prefecture and niche ecotourism activities in the DNP and the neighbouring Evros Delta National Park. Although seemingly dissociated, the two influence each other, with the former having negative effects on the latter. Finally, nature conservation activities could provide employment and income, albeit at a low yet stable level, but are much restricted

by the various problems examined in other chapters of this volume.

Having discussed the above general characteristics, we may turn to a more detailed description of the different economic and development features of the DNP.

Agriculture

According to the Agricultural Structural Survey of Greece in 2000 (NSSG 2003b), within the two municipalities that comprise the DNP there exist 2245 agricultural holdings, covering over 14,100 ha. The vast majority of this cultivated land is devoted to annual crops (83%), with a very low percentage used for tree crops and vines (Table 2). Holdings of different cultivation types show a more even distribution, pointing to the fact that, with the exception of annual crops, holdings of all other types are of very small size. The fact that 28% of holdings of set-aside status correspond to only 14% of cultivated land also is an indication of the gradual abandonment of marginal land. Likewise, the very small amount of land devoted to tree cultivations and vineyards – in contrast to the number of holdings – depicts the small-scale artisanal production and indicates that multi-employment is common in the area.

Reviewing data on the distribution of agricultural land among the different municipal divisions, one notes that the general trend of a strong dominance of annual crops is manifested in all areas, with the single exception of Kornofolia, where the majority of land is under set-aside (Fig. 6). With this notable exception, production in all other areas is strictly polarized between annual crops and set-aside land (but with a somewhat more varied production in Souffi).

There also exist two additional qualitative trends in agricultural production that have direct impact upon the DNP habitat. The first one regards the restructuring of cultivated land, either through the aforementioned abandonment of marginal land (this also relates to the rapid reduction of the number of farmers) or land re-parcelling schemes. As discussed in other parts of this volume, the ecological characteristics of the DNP rely strongly on the structure of the agricultural lands surrounding the forest. Both abandonment of land, which leads to natural forestation, and re-parcelling schemes, which erode existing cultivation mixes and traditional land-cover features (e.g. hedges), jeopardize the ecological values of the DNP and may threaten its long-term conservation.

The expansion of tree plantations supported by the EU Common Agricultural Policy (CAP) may pose a

Table 2. Distribution of holdings and cultivated land in the DNP (Source NSSG 2003b).

	HOLDINGS							AREA								
	Total	Annual crops (%)	Tree crops (%)	Vines (%)	Pasture (%)	Set-aside (%)	Family yards (%)	Tree cultivations (%)	Total	Annual crops (%)	Tree crops (%)	Vines (%)	Pasture (%)	Set-aside (%)	Family yards (%)	Tree cultivations (%)
Total Dadia NP	2650.00	45.92	3.28	14.15	0.23	26.75	9.47	0.19	73385.00	82.26	0.72	1.01	3.19	12.72	0.08	0.01
Municipality of Soufli	1555.00	42.83	3.99	18.97	0.32	22.77	11.13	0.00	34255.00	77.01	1.36	1.92	6.53	13.08	0.10	0.00
Municipal Division of Soufli	395.00	41.52	0.25	15.19	0.00	35.44	7.59	0.00	15012.80	84.65	0.01	0.39	0.00	14.84	0.11	0.00
Municipal Division of Dadia	251.00	45.82	1.59	5.18	0.40	40.24	4.78	1.99	2729.70	35.46	2.26	0.62	3.88	57.41	0.15	0.22
Municipal Division of Komofolia	252.00	59.13	0.00	2.78	0.00	31.35	6.75	0.00	7272.00	88.35	0.00	0.14	0.00	11.44	0.07	0.00
Municipal Division of Lagina	177.00	69.49	0.00	0.00	0.00	19.77	10.73	0.00	5395.00	95.70	0.00	0.00	0.00	4.23	0.07	0.00
Municipal Division of Likofos	1880.00	46.65	0.74	2.82	0.00	31.28	18.51	0.00	67608.00	84.71	0.09	0.08	0.00	15.04	0.08	0.00
Municipality of Tycherio	904.00	53.87	1.22	0.88	0.00	27.77	16.26	0.00	30919.00	87.60	0.11	0.04	0.00	12.18	0.07	0.00
Municipal Division of Tycherio	289.00	34.95	0.00	0.00	0.00	33.56	31.49	0.00	13927.00	82.03	0.00	0.00	0.00	17.86	0.11	0.00
Municipal Division of Lefkimi	212.00	34.91	0.00	20.28	0.00	32.55	12.26	0.00	4692.00	76.75	0.00	0.79	0.00	22.34	0.13	0.00
Municipal Division of Lyra	475.00	45.26	0.63	0.42	0.00	36.00	17.68	0.00	18073.00	83.90	0.14	0.02	0.00	15.87	0.07	0.00

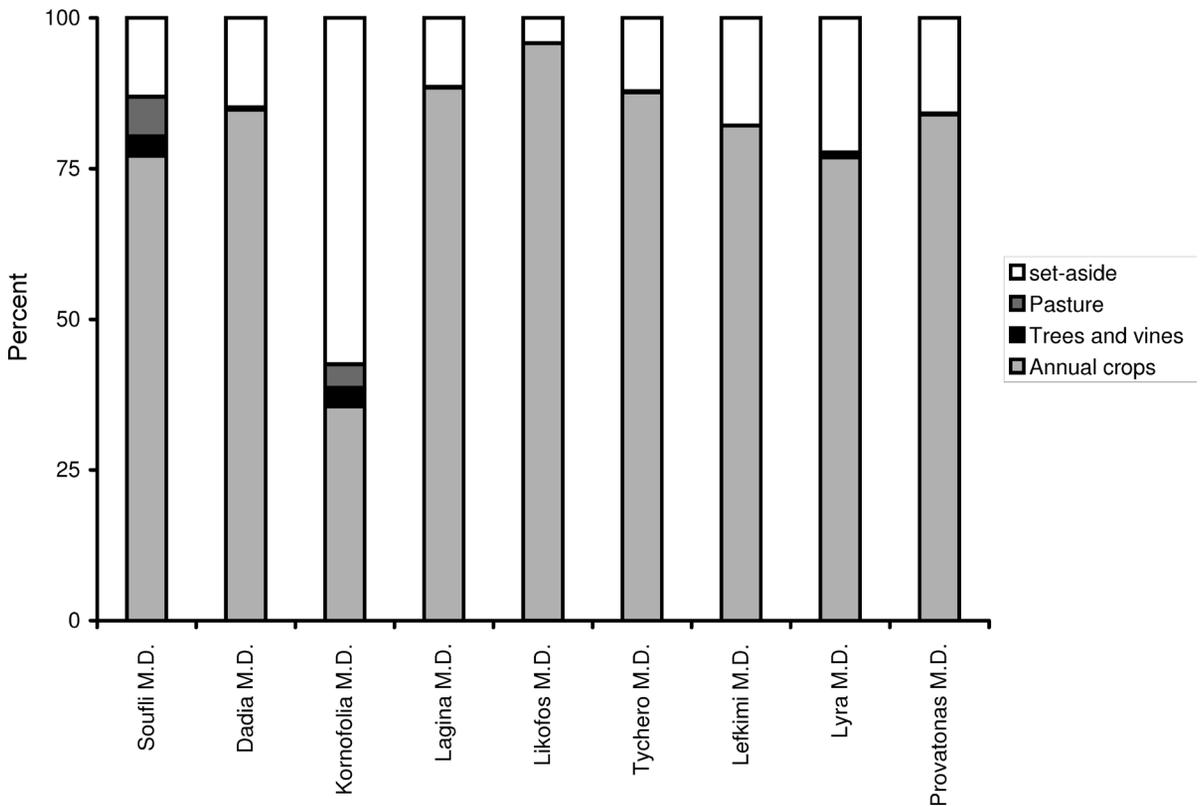


Fig. 6. Cultivated land by type across different municipal departments. Family gardens and orchards are excluded because of their very small size (Source: NSSG 2003b).

similar threat. Although such planting of trees still constitutes a very limited agricultural activity, plantations are expanding in small marginal plots at the fringes of the forest, thus closing important forest breaks, while the tree species used and the nature of the cultivations may pose long-term threats to forest regeneration and growth (Georgiadis 2004).

Forestry

Forestry is one of the oldest activities in the area of the DNP and was a very important source of local income until about a decade ago. According to Adamakopoulos et al. (1995), until the early 1960s forestry in the area was conducted in a totally unplanned manner and with the principal goal to provide for local livelihoods. As much of the area was devastated by forest fires in the 1940s and 1950s, logging during that period revolved around the exploitation of burned wood as a household and industrial fuel. From 1963 onwards, forest production was gradually organized, initially through local management plans for each separate forest, and later

(after 1996) through a forest management plan for the whole Dadia–Lefkimi–Soufli forest.

Harvested wood in the area mainly includes pine and oak and to a very limited extent beech *Fagus sylvatica*, the latter outside the park. An important yield from poplars (*Populus* sp.) has also been recorded in the past but does not relate to the DNP itself but refers to logging within some extensive poplar cultivations near the Evros River administered by the Soufli Forest Department. Wood produced is used for fuel (oak) or by the wood processing industry (pine). As in most other places in the country, logging is selective and clear-cutting is not allowed. Fig. 7 shows that wood production in the area has seen a rapid decrease since the 1990s, so that today it is but a small fraction of what it used to be three decades ago. The reasons for this decline have to do with factors pertaining to the profitability of the operation, the ageing of the labour force and increasing competition from neighbouring countries. The decrease is also mirrored in the financial characteristics of this activity, as shown in Fig. 8. The profit margins have decreased rapidly during the last 20 years and huge losses started

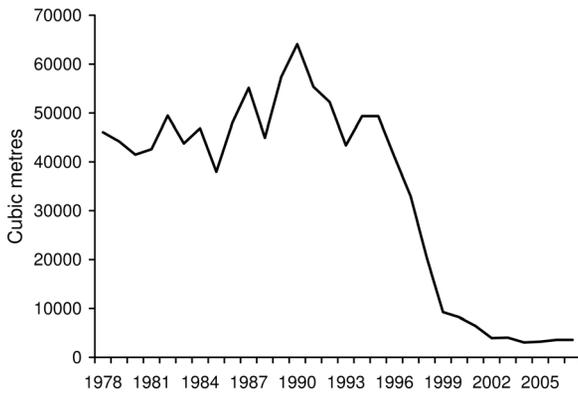


Fig. 7. Annual fluctuations in the total wood production (m³) (Source: Soufli Forest Department).

to accrue to the activity after the mid 1990s. This owes to the rapid growth of costs for logging and transport and concurrent decreases in prices per volume of produced wood. During the last twenty years the costs have increased by almost a factor of five (from € 37 m⁻³ in 1987 to € 176 m⁻³ in 2007), while prices have decreased by more than 50% (from € 53 m⁻³ in 1987 to € 21 m⁻³ in 2007).

This financial situation does not, however, necessarily reflect the income of those employed in forestry as their work is subsidized by the government through the for-

est service. Logging for fuel wood is to a certain extent considered a public good, and the government is covering the costs for fuel wood, which is either distributed to local inhabitants for free or at very low prices. The incomes of the loggers are further supplemented by “forest cultivation” activities, i.e. activities that do not target the production of wood but rather the management of the forest. For these, loggers are paid on a daily basis and generally at much higher rates than for regular logging activities. Such management logging has recently increased rapidly.

As the above facts depict, forestry is today a rapidly declining local activity, which is maintained due to its public-good character and by government support. Yet, it should not be considered as marginal in any sense. With more than 250 people enrolled in the eleven forestry cooperatives of the DNP, this activity employs an important part of the active male population, albeit on a seasonal and temporary basis. It thus acts as a complementary activity, within a multi-employment rural framework, provides an additional income and helps to maintain a traditional primary occupation. It also pays great service to the management and protection of the forest itself, a service that if better capitalized could place forestry employment at a much higher level of importance. This fact will be revisited in the last section of this chapter.

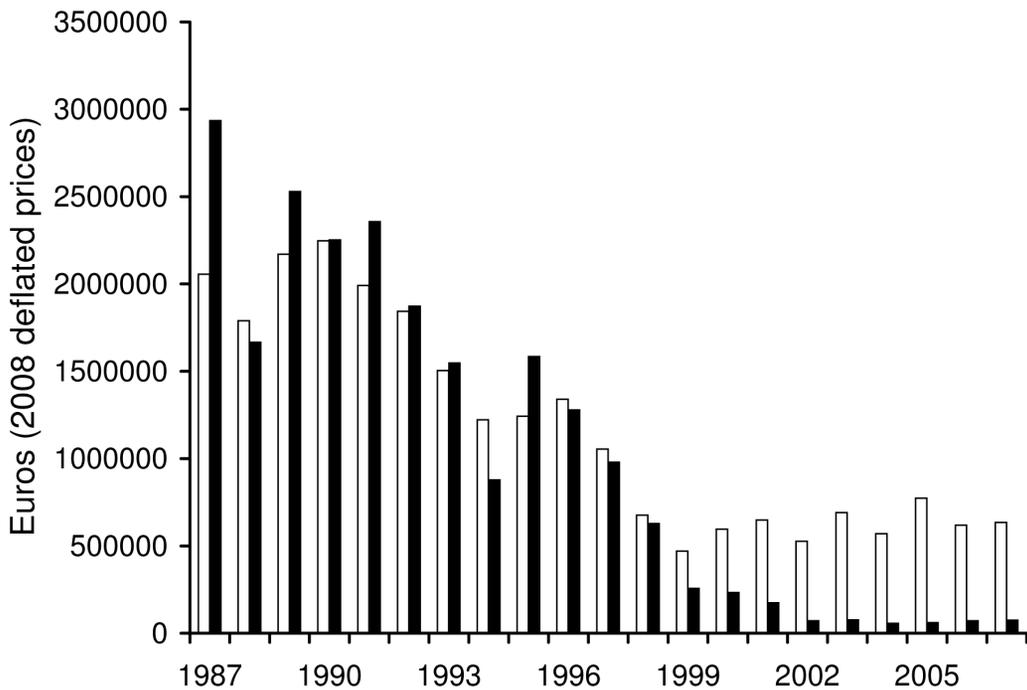


Fig. 8. Wood production income (filled) and cost (unfilled) (Source: Soufli Forest Department).

Live-stock breeding

Within the DNP there exist 350 holdings devoted to husbandry, which keep a total of 20,335 animal unit equivalents (NSSG 2003b). Slightly more than half of these are goats, another 34% are sheep, 12% are pigs and a mere 3% are cattle. Discrepancies between the number of animals and the number of holdings (Table 3) mirror the fact that the breeding of cows and pigs remains largely a small-scale, low-intensity activity, as opposed to the more intensified breeding of sheep and goats.

Both numbers of livestock and numbers and size of holdings in the area have diminished during recent decades, as they also have throughout the country (Fig. 9). This reduction directly impinges on the ecological value of the DNP forest, because reduced grazing pressure leads to the closing of forest clearings and because the economic value of maintaining permanent pasture land diminishes, both with a negative effect on biodiversity and birds of prey.

Tourism

Tourism in the DNP area was initially conceived as a compensation for potential income losses due to the institutionalization of nature-protection measures. Up to that point, very few people – birdwatchers during the spring and summer and hunters during the winter – visited the Dadia Forest. In the early 1990s, basic visitor infrastructure was established and the area started to be promoted as an ecotourism destination (Svoronou and Holden 2005).

Indeed, the approach taken to increase tourism inflow into the area proved very productive for many years. As seen in Fig. 10, between 1994 and 2003 the number of visitors increased by a factor of 26 and reached a peak of 50,592 visitors in 2003. The number of visitors has then decreased rapidly – falling by 20% in the following two years only. Visitor numbers recovered slightly in 2007 and 2008 yet stayed significantly below the 2003 peak. Of course, these are only the figures recorded at the DNP information centre in Dadia and may be an

Table 3. Husbandry distribution between different animals in the DNP (Source: NSSG 2003b).

	HOLDINGS					ANIMAL UNIT EQUIVALENTS				
	Total	Cattle (%)	Sheep (%)	Goats (%)	Pigs (%)	Total	Cattle (%)	Sheep (%)	Goats (%)	Pigs (%)
Total DNP	350.00	22.57	16.29	28.29	32.86	20335.00	2.99	34.22	50.53	12.26
Municipality of Soufli	272.00	23.90	15.07	27.57	33.46	15358.00	3.18	33.27	49.10	14.46
Municipal Division of Soufli	169.00	33.73	20.12	23.08	23.08	9100.00	2.78	44.16	31.85	21.21
Municipal Division of Dadia	41.00	7.32	9.76	46.34	36.59	4083.00	4.26	15.21	75.61	4.92
Municipal Division of Kornofolia	24.00	4.17	4.17	4.17	87.50	444.00	8.11	4.95	79.95	6.98
Municipal Division of Lagina	8.00	37.50	0.00	37.50	25.00	364.00	3.30	0.00	93.13	3.57
Municipal Division of Likofi	30.00	3.33	6.67	43.33	46.67	1295.00	1.00	28.96	66.56	3.47
Municipality of Tychero	78.00	17.95	20.51	30.77	30.77	4977.00	2.39	37.17	54.93	5.51
Municipal Division of Tychero	30.00	16.67	13.33	30.00	40.00	1511.00	5.10	35.21	42.89	16.81
Municipal Division of Lefkimmi	14.00	14.29	14.29	42.86	28.57	1154.00	0.52	18.20	80.76	0.52
Municipal Division of Lyra	8.00	0.00	25.00	62.50	12.50	482.00	0.00	4.15	95.64	0.21
Municipal Division of Provatonas	26.00	26.92	30.77	15.38	26.92	1830.00	1.97	59.45	37.87	0.71

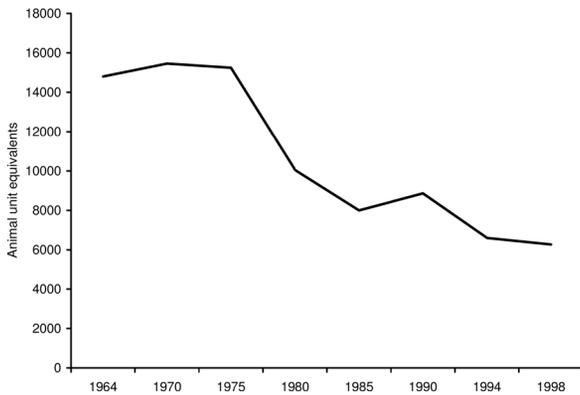


Fig. 9. Total number of livestock (animal unit equivalents) in the Dadia–Lefkimi–Soufli Forest National Park (Source: NSSG 2003b).

underestimate of the true number of visitors, because recurring visitors already exposed to information about the site may have chosen not to visit the information centre. Yet the rate of decrease is so rapid that there exists little reason to question this negative trend.

Tourist inflow is accentuated during the summer months (especially August), as well as during spring and the first autumn months (Fig. 11). This seasonality is directly linked with visitors' profiles. Summer visitors are predominantly mass tourists who visit the Evros prefecture and who pay a visit to the DNP (or the Evros Delta) as a brief day trip. This tourism pattern has been growing over the years, and its effects on the overall visitors' experience of the area and on the area's profile as an ecotourism destination are yet to be evaluated. In any case, ecotourism in the area is promoted by the regional authorities in an attempt to promote the region as a diversified tourism destination. Another big source of visitors are excursions organized by schools or elderly

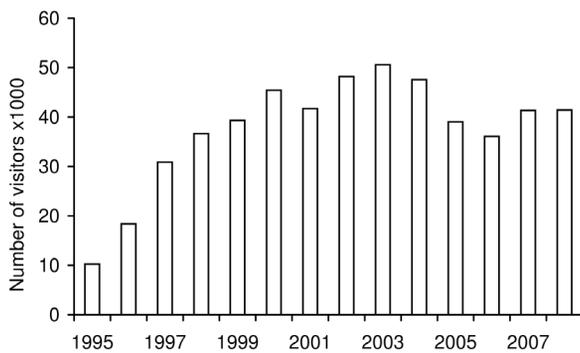


Fig. 10. Visitor inflow to the DNP, 1985 – 2008 (Source: WWF Greece and Management Agency of Dadia–Lefkimi–Soufli Forest National Park).

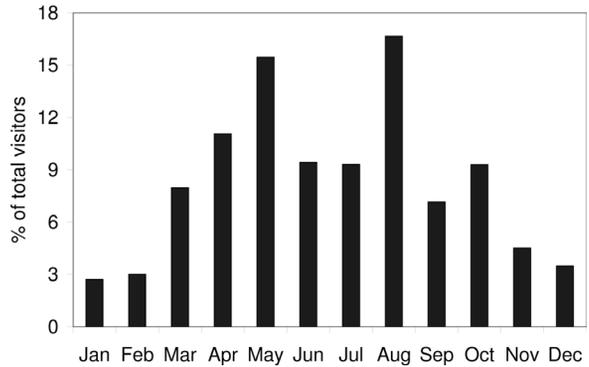


Fig. 11. Seasonality in the visitor inflow to the DNP (Source: WWF Greece and Management Agency of Dadia–Lefkimi–Soufli Forest National Park).

people clubs, mirrored by the high visitation rates in spring and autumn, respectively.

Closely related to the above, two very important issues need to be underlined in order to complete the picture of the area's tourism sector. First, throughout the years the "product" offered to visitors has not been developed to accommodate for the increased promotion of the area and the corresponding large numbers of visitors. The experience offered to visitors has not only remained centred on the village of Dadia but continues to utilize the same infrastructures and services that were developed in the early 1990s, while environmental interpretation schemes and exhibitions have not been extended. Second, the immense increase in tourism in the area has not been followed by a corresponding increase in private investments in visitor services. It is striking that, despite the tens of thousands of visitors to the village of Dadia, the first private hotel was opened in 2006, one year after the opening of the first tourist shop.

Although tourism development in the DNP has not been well analysed as far as its characteristics and socioeconomic impacts are concerned, the data presented above, coupled with reported experiences of local operators and practitioners, help to draw a picture of the state of tourism today. The huge visitation momentum developed in the first years of the area's promotion as an ecotourism destination neither led to the development of relevant activities nor to the assimilation of these and associated potential economic gains within the local society. Tourism seems to have been treated as a marginal activity and was comprehended more as part of the overall conservation work rather than as a potential part of a diversified local economy. As a result, the local tourism structure has become very vulnerable to general tour-

ism trends as well as to the growing “competition” from other ecotourism and rural tourism destinations in the country. At the same time it depends increasingly on the prefectural and regional mass tourism product, thereby gradually transforming itself to just an additional attraction for organized regional tours and packages.

Services and the secondary sector

At the beginning of this chapter it was set out that, as at other spatial levels, services constitute the major source of employment in the Evros Prefecture and the broader DNP area. Employment data at the level of the municipal divisions were not used, and thus exact numbers for the core DNP area cannot be presented. Yet, it is a plausible expectation that the findings hold true for the whole of the DNP, albeit that the primary sector is also important.

With respect to the secondary sector, a few points of particular interest are worth special mention: the first one regards the structure of the secondary sector in the DNP area, which exhibits almost zero industrial activities, and is basically revolving around activities typical for the local subsistence (i.e. home construction, small-scale public works, local mechanical services, etc.). There are two exceptions to this rule: (a) the construction of infrastructures of national importance; these, however, involve an extremely small number of local inhabitants. They include the now finished construction of the Egnatia highway, the installation of wind farms and the planned construction of the Burgas–Alexandroupolis oil pipeline; (b) the AKRITAS wood-processing factory, which constitutes the only purely industrial plant in the area and which used to provide a major source of income for local loggers. However, for quite a few years now it uses wood imported from Bulgaria, and thus its role for the local economy is minimal.

The structure of the service sector revolves around the provision of normal community services (retail, foodstuffs, technical maintenance services, etc.). What is important with respect to this sector is the pronounced role in the wider DNP area played by hospitality services (taverns, hotels), traffic servicing and real estate. These owe on the one hand to the position of the DNP at a major traffic node connecting the neighbouring countries of Bulgaria and Turkey, and thus the need to service passing traffic. On the other hand they owe to the presence of a large military force in the area which requires real estate services for professional personnel and extraordinary hospitality services for citizens taking their tour-of-duty.

Army and border police

As already mentioned above, the area of the DNP hosts an large concentration of military forces, stationed in a few camps and guard posts. Although it is very hard to estimate the exact impact of these forces on the local economy as details on numbers of people and activities are not available, it is very easy to discern two diverging lines of impact. The first one is the direct impact on the local economy of the demand for products and services, as discussed in the previous section. Indeed, Adamakopoulos et al. (1995) recognize military installations as a special reason for the concentration of population and activities. The second one refers to the indirect impact of the military on the development potential of the wider area, as their activities can often be conceived as countering the goals of landscape and nature conservation or visitor attraction. This latter issue will be revisited in the final chapter of this book where the disturbance caused by military activities is briefly discussed.

In addition to the strong military presence, there are also large forces of border police aimed to control trade routes and illegal immigration. Similar to the army, the border police have diverse impacts upon the area. On the one hand, it has provided employment opportunities for the local youth. On the other, it adds little extra demand for local services (as most of its members are locally recruited).

It must be stressed that the establishment of military installations, police forces and other public authorities is often used by the Greek government as a social policy instrument to increase local demand and employment. This government practice often acts counter-productively by creating strong dependencies of the local economies, creating imbalances in the local mix of products and services and, ultimately, hindering the development it was initially meant to promote. A discussion of these complex interdependencies is beyond the scope of this chapter. Yet it is essential to keep in mind the nature of this relationship when we later discuss the development potential of the DNP area.

Nature conservation

Although nature conservation activities also play a notable role in the economy of the DNP, this role cannot easily be quantified and assessed. Nature conservation contributes to the local economy in three main ways: (a) directly by generating employment through either the hiring of local personnel or the attraction of external professionals, who settle in the area to work; (b) through

the generation of income from services provided to experts, students and volunteers temporarily visiting the DNP; and (c) by the general promotion of the area, at national and international levels. These employment opportunities arise through the implementation of projects (mainly by WWF Greece), the establishment and presence of public services and, lately, job positions with the Management Agency of the DNP. Permanent or seasonal job posts with the forest service and the fire brigades in the area could also be seen as partly related to nature conservation, while employment in the local tourism industry also strongly relates to conservation efforts. The concomitant support of projects and public finances also plays an important role for the overall development of the local economy. Here it is important to know that the important EU spending for local development is favourably biased towards areas that have nature protection status.

Concluding remarks: Development perspectives and challenges

The DNP is a site of great ecological importance, which at the same time hosts an active local population and a variety of important economic activities. Its location on the national borders of the country, its proximity to one regional economic and social centre as well as its position at a major transport node, all play a crucial role in shaping its character and its future development paths. These factors lead to a striking duality in the character of the area which, on the one hand is perceived as a remote rural site and on the other as part of the wider Alexandroupolis functional economic zone and an inherent pole in transnational transport and trade. A very fine balance between these two diverging traits must be maintained if a sustainable development of the area is to be realized, as proximity to urban centres and transport nodes can prove catastrophic for the local economy unless coupled with local development dynamism and a strict definition of the area's productive and social image.

Within and around the DNP a great number of diverse productive activities take place, including primary production, nature conservation, army and border police operations, and major transport and trade services and infrastructures. This diversity has a certain number of positive attributes, insofar as it promotes local employment, elicits a diversity of talent and knowledge in the area and could potentially act as a "shield" against changes in the wider economic environment. This fact

is especially true with regard to the presence of state services, and private activities developed to support them, which are especially resilient to economic changes. On the other hand, however, this diversity poses a major challenge to balance these many activities, as many of these cause collisions with respect to land-use and character. Such is for example the conflict between army operations and tourism development, or that between nature conservation and investments in transport and trade infrastructure. To manage such conflicts, very strict strategic planning and proper implementation and communication of pertinent decisions are required.

An integrated and effective spatial planning system for the area is extremely important for the DNP. Such a planning system could set the framework for the management of conflicting activities and interests and could lead to the harmonious parallel development of activities that are initially perceived incompatible, as for example bird conservation and renewable energy infrastructure. The basis for such a spatial plan exists within the zoning pattern of the DNP, which however requires much further elaboration and a multitude of important background studies for its proper implementation. To the extent that the Management Agency of the park constitutes a participatory decision-making instrument and is given adequate support, it could take up the challenge of this exercise. This issue is further explored in the last chapter of this volume.

As far as primary production is concerned, this is today faced with most of the same challenges as are rural areas across Greece and the EU. There is no scope to further analyse these within this short review, but the need for further diversification of production and a gradual shift to quality-oriented products must be stressed. Equally important is to restructure agricultural practices to minimize their impacts on the local environment, as a means to attain synergies with other sectors of the local economy and to avoid possible future breaching of environmental legislation. These issues are included in the overall national development planning and could receive financial assistance through the EU funding instruments. Once again, though, a need for coherent planning and key decision-making is imperative.

Two additional issues pertaining to local primary production also appear to be critical for its future development. The first one regards the possibility for increasing the tradability and value of local products through their better coupling with nature conservation and tourism. Such an approach could encompass, for example, the development of a local labeling scheme to promote DNP products as quality products produced

within a protected site. Coupled with the application of proper agricultural practices (ideally organic farming) such a practice could increase the marketability of local agricultural products, while simultaneously reducing the environmental impacts of production practices. A parallel promotion of local products through tourism facilities – especially through their actual use in local catering services – could also be a very positive measure. This would be in line with the general trends and needs identified during the consultation process preceding the 4th programming period of the EU Structural Funds (Anonymous 2007).

The second issue is more strategic in nature, and regards the role of primary activities for the overall protection and conservation of the area. In fact, all three activities that take place in the DNP (forestry, stock breeding and agriculture) are directly related to the conservation of the park, insofar as they contribute to the preservation of the landscape and its valuable attributes. This kind of service needs to be valued and sufficient resources channeled into the maintenance and development of these activities, as for example had been foreseen for the preservation of hedgerows under the first application of agri-environmental schemes in the country (Dilana 1997). Such funds are readily available from the EU, among others in the form of agri-environmental schemes, and could contribute not only to the establishment of an additional income for the local society, but also to the rejuvenation of crucial activities, like free-range goat herding. Still, this type of a “management” approach to primary activities is only partly taking place within the forestry sector as described earlier.

Yet another important issue is the future development of nature tourism in the area. The present tourism scheme has served for many years, has attracted large numbers of visitors and provided alternative employment especially to young locals. For a number of reasons it has now become obvious that the existing visitor system has reached its limits, something that is mirrored in decreasing visitor numbers and evident dissatisfaction with many of the provided services. At the same time the limited local interest in investing in such services, together with the non-existent coupling of tourism with local production, means that the potential gains for the local economy are not realized. Further incorporation of the DNP in the organized regional tours, will further aggravate these problems, while the visitor system as it is today also possesses a number of problems for the conservation of the area *per se*.

Nonetheless, tourism has a great potential to contribute much more to the local economy and society, not

only by generating local income but also by promoting products from the primary sector. Tourism could also contribute to the site’s conservation and by generating funds to be invested in environmental protection work. Increases in the tourism inflow to the region, changing patterns of preferences and increasing intra-national tourism, all mean a greater potential to expand the tourism product and capitalize more on that activity. For that to take place, however, there is a dire need for a restructuring of the current system, in order to diversify it and to offer the visitors a more complete, fulfilling and quality-enriched experience. It is also important to change local attitudes towards this activity, so that tourism becomes a core activity for local operators, rather than a side activity considered of little importance.

It is also essential to note here the need for a restructuring of the DNP visitor system. Such a restructuring would require a substantial furthering of the offered visitor experience, with the inclusion of additional sites and points of interest, the drastic upgrade of the provided services and probably the connection of the DNP with other neighbouring sites of ecological interest. The target of this restructuring need not be increased numbers of visitors, but rather increased number of stays, more money spent by the visitors and a longer visiting season. It is also important to provide services that will satisfy not only dedicated nature lovers but also a wider audience, so as to be able to better exploit the increased inflows of visitors to the wider region.

One final consideration regards the very role that nature conservation *per se* can play for the development of the area. Nature conservation activities can promote development on parallel paths, (a) by directly increasing employment prospects and demand for goods and services, promoting the sustainability of ecological characteristics and the improvement of scientific knowledge, which can in turn enhance the promotion of the area and the development of recreational and visitor activities, and (b) by attracting human talent to the area, with a long-term prospect of catalyzing important socioeconomic changes. Once again a full circle brings us back to the need of coherent planning, dedication to local development goals and long-term investments.

Returning to the starting point of this chapter, one again needs to conceptualize the peculiar national framework within which the development prospects of the DNP unfold. Within a national reality where coherent land-use, resource and development planning is absent, where polarization between urban centres and the periphery is still promoted through subtle public policies, where rural development is perceived as the sum

of sustained dependencies and where local development planning is usually little more than the resultant of capacities to service clientelistic relations, we may not be justified in hoping that state policies will heed to the sustainable development needs of the area. This is why well-structured effective responses to the development challenges of the DNP can only be sought in locally driven initiatives, whether private or public. Initiatives that are embedded in a full understanding of the values present in this area and that pursue long term development gains through diversification and proper utilization of characteristics that are still today considered liabilities. In fairness to the content of the rest of this volume, it is worth mentioning that many global experiences point to nature conservation as a good starting point for such initiatives.

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