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Protected Areas and Regional Development: An Austrian Case Study

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Abstract

The potential conflicts as well as synergies between the conservation of nature in national parks, Natura 2000 areas, or other forms of on-site conservation, are rarely studied with respect to the marginal (additional) change of regional and local development brought about by conservation policies. This chapter presents empirical evidence on the linkages between Natura 2000 areas and local development in Austrian municipalities. The main result of the empirical analysis is that Natura 2000 is only a minor or even undetectable factor in regional development. Municipalities develop, for instance, according to their location, the territorial capital, the proximity to markets, and infrastructure capital. Natura 2000 rarely influences regional development with one exception; the establishment of Natura 2000 areas might indeed promote tourism. However, as Natura 2000 sites are often overlapping with other categories of protected areas such as national parks, their separate role in development still remains elusive. The main policy conclusions drawn from the results are that protected area management has to develop a coherent and complementary regional strategy to build up networks with all stakeholders (including authorities), and design joint destination marketing policies to attract more visitors while, at the same time, conserving biodiversity effectively.

Keywords: protected areas, national parks, Natura 2000 network, regional development, demography, labor market, tourism

1. Introduction: some economic perspectives on biodiversity conservation

Protected areas including the most prominent categories of national parks according to IUCN's management guidelines [1] and the European Union's Natura 2000 network of protected areas according to the FFH and Birds Directives are often located in peripheral regions,

both within countries and from an international perspective. While other categories of protected areas such as UNESCO's Biosphere Reserves consider sustainable development of the local and regional ecological, social, and economic systems alike, the two aforementioned frameworks do not place an emphasis on regional development nor consider the spatial distribution of costs and benefits of conservation.

However, two main arguments can be made in this context. On the one hand, peripheral regions rich in biodiversity often suffer from slow economic development, which regularly leads to population loss and infrastructure degradation. On the other hand, costs and benefits of conservation and of establishing protected areas may be unevenly distributed within a country. While the general public may enjoy the manifold benefits of conservation such as the existence value of biodiversity (protection of typical landscapes and ecosystems, conservation of flag-ship species) and the contribution to the national natural and cultural heritage, the local population might bear disproportionately high costs in terms of restrictions to economic development (such as land use restrictions for commercial or residential purposes).

The uneven sharing of costs and benefits, of course, has been addressed in various ways including the provisions of the Convention on Biological Diversity (CBD). The CBD, therefore, builds the foundation of benefit and burden sharing, and considers the potentially uneven distribution of costs and/or negative regional economic impacts of conservation. A prominent though often problematic concept that tries to address the securing and provision of biodiversity conservation is the idea of Payments for Ecosystem Services (PES) focusing on a compensation of upstream communities conserving ecosystem services for downstream users.

Besides the debate on the uneven distribution of costs and benefits, a wide range of studies have shown that—from an overall economic perspective—the conservation of biodiversity and the establishment of protected areas in particular is “efficient” in light of the huge benefits of conservation. For instance, Gantioler et al. [2] showed that the economic benefits of the EU's Natura 2000 network, by far, exceed the economic costs. Other publications include studies on single protected areas such as the comprehensive cost-benefit analysis on Austria's Donau-Auen national park [3] that proved that biodiversity conservation in a national park may lead to higher economic benefits even when compared to the construction of a hydro power plant. Other economic and managerial evaluations such as the one of Gesäuse national park [4] as well indicate the effectiveness of biodiversity conservation in protected areas.

One major category of economic costs originating from conservation is opportunity costs of reduced development options. As land is an absolutely scarce resource and cannot be increased, any decision of a certain type of land use necessarily leads to a reduction of other potential alternatives. Since the land devoted to nature conservation according to the IUCN's guidelines, and the Flora-fauna-habitat Directive (FFH) and the Birds Directive in Europe is quite substantial, ranging from 9% up to 37% of a country's total land area [5], opportunity costs of conservation might marginally increase in the future. However, these opportunity costs may also be rather small since significant development options in peripheral regions are usually rare (except for single cases of large energy-related projects such as dams or mining). In addition, the costs of establishing and managing national parks and Natura 2000 sites (in terms of “out-of-pocket” expenses) might be substantial especially for low-income regions of countries.

In light of these aspects, it is important to consider the regional effects of biodiversity conservation. First of all, the establishment and operation of protected areas, to be effective, certainly builds on the involvement of stakeholders. As Getzner et al. [6] showed, participation of stakeholders is not only essential for biodiversity conservation but also important for fully exploiting the opportunities of conservation for the regional economy. In general, many studies have dealt with the regional economic perspective and the regional economic effects of protected areas in various contexts [7, 8]. The results generally lean toward the finding that biodiversity conservation in protected areas may lead to positive economic effects in terms of an increase of local and regional production and employment. In most cases, these positive effects are based on increased tourism. Visitors to the protected area might come for a day or spend their vacations in the region; expenditure for accommodation, food, entry fees, consumer goods all lead to higher local and regional demand and thus may support economic development.

However, a major methodological question arises with the exploration of conservation and the regional economic effects. Since visitors might come to the region owing to the landscape or the diverse ecosystems and habitats, the marginal (i.e., additional) contribution of the establishment of the protected area remains uncertain. If the regional economic effects of protected areas are to be ascertained, the underlying causes and consequences have to be carefully distinguished and analyzed.

As mentioned earlier, many studies have explored the regional *economic* effects of protected areas. Usually, this is done by means of collecting data on additional regional spending, and then computing the spatially distributed multiplier effects of spending in several economic branches. Other regional effects are rarely studied (cf. [9]).

In order to shed some light on other aspects of regional development, the Austrian Association of Environmental Organizations (Umweltdachverband) commissioned a study to explore the demographic, labor market, tourism, and agricultural effects of Natura 2000 sites in Austria over a long period (2000–2015) [10]. This chapter presents empirical evidence on the following aspects of regional development in Natura 2000 municipalities:

- Demographic development (population growth or decline);
- Labor market perspectives (change of the number of jobs, unemployment rate); and
- Tourism (overnight stays).

In order to ascertain developments in these three main categories, we employ a comprehensive database of all Austrian municipalities (approximately 2350); data are collected for the abovementioned categories. In order to distinguish between the different types of municipalities, we chose the following classification:

- Share of Natura 2000 areas (more than 50% of the area is devoted to Natura 2000 conservation; less than 50% of the area; and municipalities without Natura 2000 areas within their administrative borders);

- Degree of urbanization of the municipality (urban/city, suburban/intermediate, and rural).

The following section first presents the broad classification of Austrian municipalities, and then discusses the regional development along the selected dimensions.

2. Regional development in Austrian municipalities: exploring the effects of Natura 2000 protected areas

2.1. Number and location of Natura 2000 municipalities

The perspective that protected areas such as Natura 2000 are mostly located in peripheral regions is certainly supported by Austrian data. **Figure 1** presents a map of Austria that classifies Austrian municipalities according to the two variables mentioned earlier. Behind these two variables, a number of hypotheses should be tested by the differentiation between municipalities:

1. The share of land devoted to conservation in Natura 2000 areas is operationalized by three attributes. According to this approach, municipalities are classified into municipalities “with Natura 2000” areas (more than 50% of land lies within a Natura 2000 area), “with little Natura 2000” (from 1 to 50%), and “without Natura 2000.” The main hypothesis to be tested here is that municipalities with a large share of Natura 2000 are hindered in their economic, social, infrastructure, and spatial development; that is, owing to the restrictions on the use of land within these municipalities, commercial land use (e.g., forestry and agriculture) is largely banned. Of course, the smaller the share of conservation land, the more insignificant might this restricting effect be.
2. The degree of urbanization is based on a standard classification of Austrian communities; larger cities and towns are classified as “predominantly urban”; municipalities outside the bigger cities and suburbs are classified as “intermediate,” while rural municipalities are labeled accordingly. The main hypothesis behind this classification is that—independent of the share of conserved land within municipal boundaries—social and economic development in general might be entirely different between these types of communities. Potential differences or similarities between municipalities may, therefore, be attributed to differences in their economic, social, and spatial structure and location, rather than to conservation according to the Natura 2000 frameworks.

As can be seen from **Table 1**, most municipalities are rural communities (unweighted with respect to their size such as number of residents). About 10% of Austrian municipalities have a share of more than 50% of their land protected under the Natura 2000 framework. Another 36% of communities have some Natura 2000 areas within their boundaries. Given the number of municipalities, the distribution of Natura 2000 areas seems to be rather evenly distributed between these types of municipalities, with a slightly higher share of rural communities with larger Natura 2000 areas.

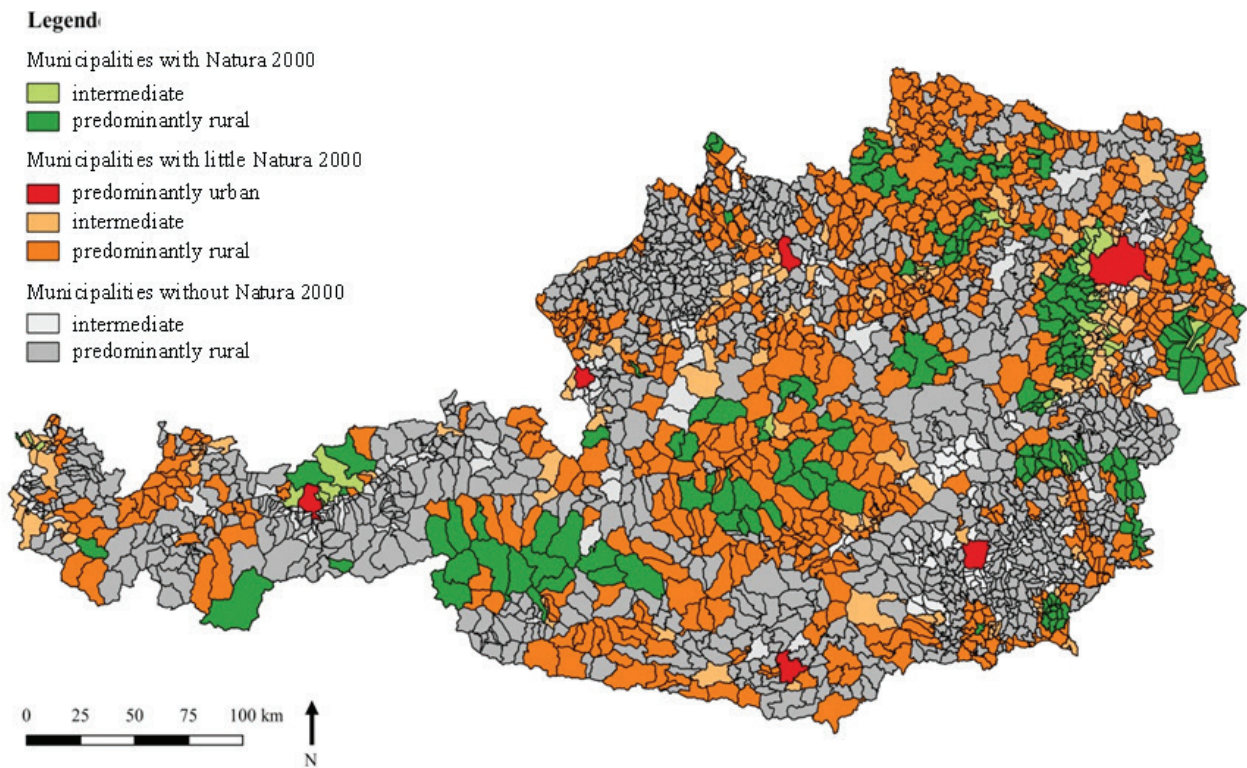


Figure 1. Classification of Austrian municipalities: Share of Natura 2000 conservation areas and degree of urbanization.

	Classification of the share of Natura 2000 areas					
	With Natura 2000		Little Natura 2000		No Natura 2000	
	No.	%	No.	%	No.	%
Degree of urbanization						
Urban	0	0.0%	6	0.7%	0	0.0%
Intermediate	32	14.2%	145	17.1%	223	17.4%
Rural	194	85.8%	695	82.2%	1059	82.6%
Total	226	9.6%	846	35.9%	1282	54.5%

Source: Own calculations and computations based on data from the European Commission, Statistics Austria and the European Environment Agency.

Table 1. Classification of Austrian municipalities according to the share of Natura 2000 areas on their land and the degree of urbanization.

As mentioned earlier, **Figure 1** indicates that municipalities with Natura 2000 areas are especially located along the main ridge of the Central Alps in the federal provinces of Tyrol, Carinthia, Salzburg, Upper and Lower Austria. These areas are particularly mountainous areas with high-alpine and forest environments. Mostly, these areas are also peripheral areas with respect to their location and their economic development.

In addition to the location of Natura 2000 areas, the map indicates that many nature conservation categories overlap. For instance, the Central Alps include three national parks (Hohe

Tauern, Gesäuse, and Kalkalpen); furthermore, around Vienna and the federal province of Burgenland, the Donau-Auen, and Neusiedler See national parks are located (and overlapping with Natura 2000 areas). In and around Austria’s capital of Vienna, there is also the Wienerwald Biosphere Reserve which also includes a number of Natura 2000 sites.

2.2. Social development: demography and labor market

Taking up the hypotheses presented in Section 2.1, one may assume that Natura 2000 areas might to some extent hinder economic development and thus lead to migration to urban areas. Rural areas, therefore, might suffer from population loss.

Figure 2 presents an empirical picture on the development of the population in the aforementioned categories of Austrian municipalities. Austria’s total population grew very slowly from 1990 until about 2000 (at an annual rate of approximately 0.2%). Growth was much higher in the following decade with an annual growth rate of about 0.5% p.a.

As can be seen, population growth was very different between the types of municipalities. The lower dashed line basically mirrors population development in the larger cities, in particular Vienna, which experienced a rapid growth since about 2000. Population grew fastest in intermediate municipalities (between urban and rural); surprisingly, in municipalities with large Natura 2000 areas, population increased by over 15% over the last two decades. This picture is slightly reversed in rural municipalities which saw a slower population growth, or even a slight downward trend.

Regarding the existence of Natura 2000 areas as decisive factors for demographic development, it seems that this conservation framework did not contribute any specifically different

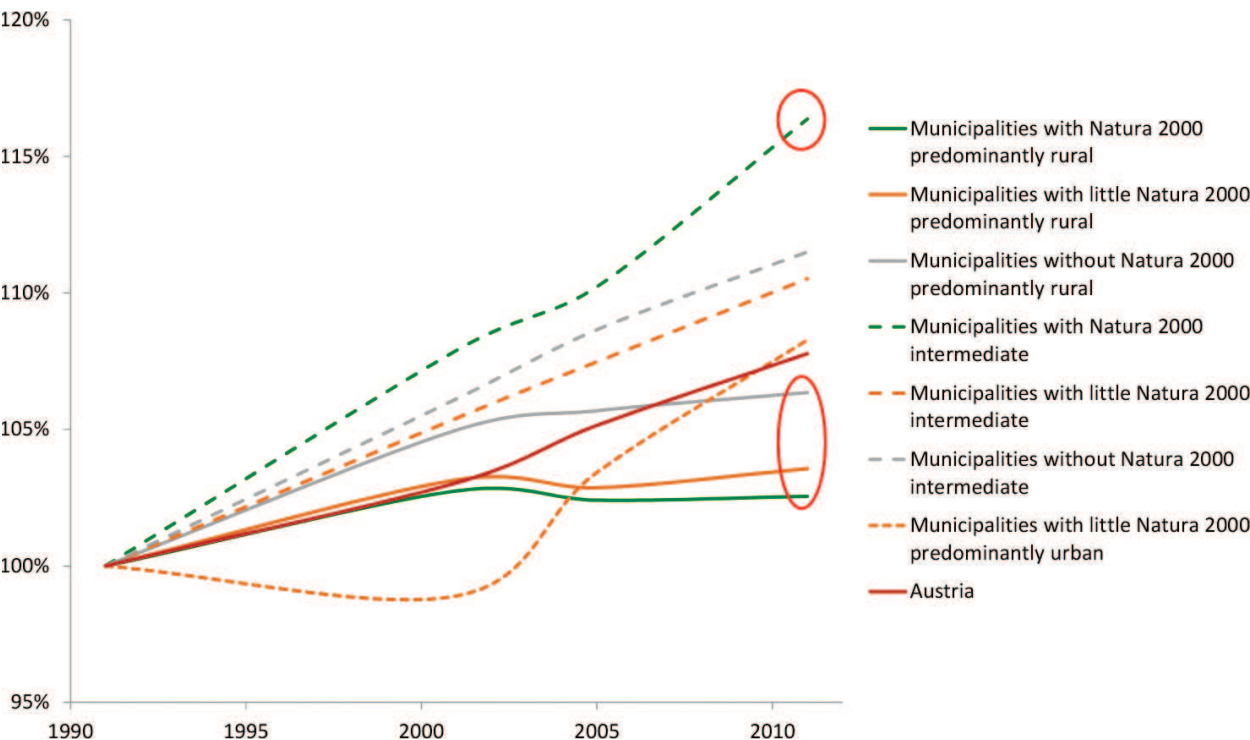


Figure 2. Demographic change: population development in Austrian municipalities (1990–2010).

trend. Municipalities with Natura 2000 both significantly grew faster, and somewhat slower, than communities without Natura 2000. Therefore, demographic development certainly was influenced by many other factors (e.g., location, economic structure, proximity to labor markets, and immigration).

It can therefore be safely concluded that Natura 2000 areas in a municipality on average cannot influence the demographic development which is influenced and determined by other decisive factors which are differentiated according to the degree of urbanization. However, this does not mean, of course, that there might not be single communities where Natura 2000 indeed played a vital role for either emigration or immigration. On the one hand, Natura 2000 may lead to restricted development options, for example, in terms of land use for residential purposes, and might therefore limit the spatial development of a community. On the other hand, Natura 2000 areas may attract new residents since these areas, especially around larger urban areas, are established in ecological and green regions and landscapes.

With respect to the labor market, two indicators were chosen to explore whether there is a recognizable effect of Natura 2000 on the labor market. First, we ascertain potential differences between communities based on the unemployment rate. Second, the number of jobs created in Austrian municipalities between 1991 and 2011 is explored.

Figure 3 presents the results for the unemployment rate (measured by the European Union's standard computation). For rural and intermediate municipalities, the unemployment rate lies between 4 and 5% on average. For the large cities (especially Vienna), unemployment rates are higher with approximately 6–7%. As can be clearly seen, the different classes of municipalities differ marginally regarding the level of unemployment; however, the development of the

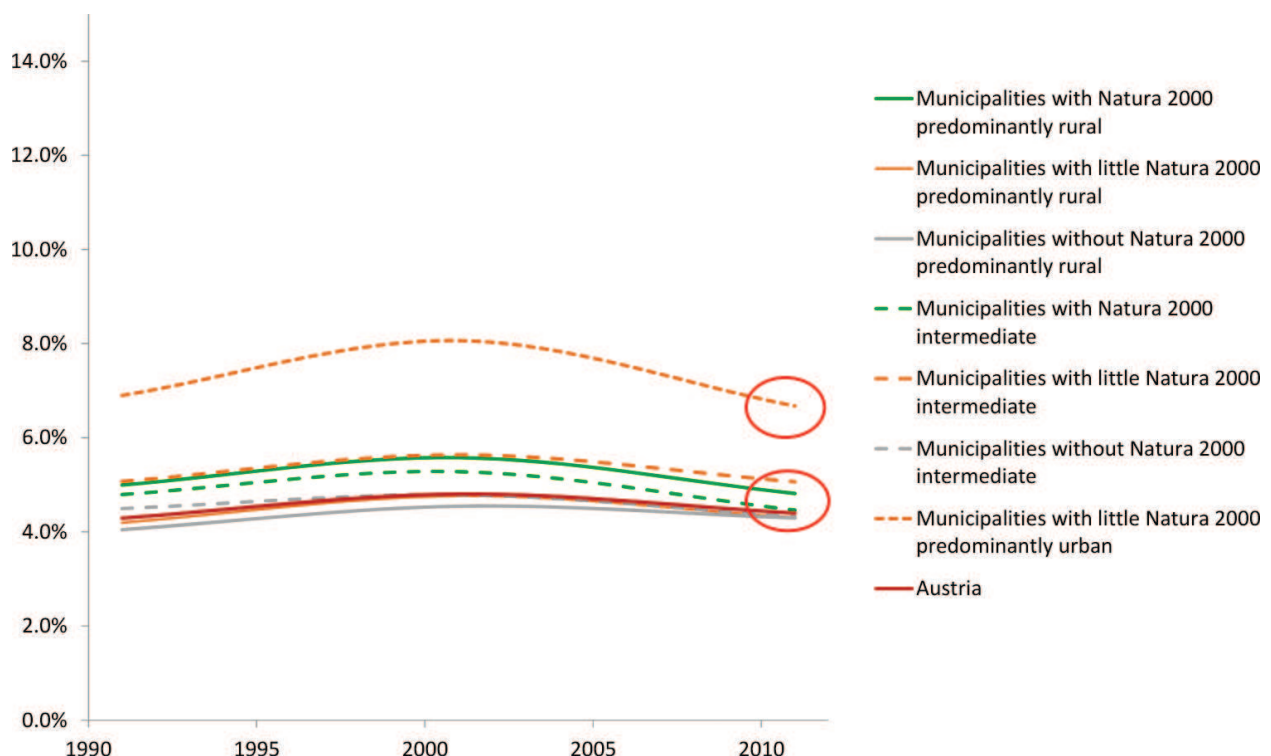


Figure 3. Unemployment rates in Austrian municipalities (1991–2011).

unemployment rate over time is broadly equal, with a peak around 2000, and a reduction in the last decade of the observation period.¹

Regarding the differences with respect to the share of Natura 2000 areas in municipalities, there is merely no conclusive result to be detected. Again, it seems that the economic structure, the location, and the generally higher unemployment rates in urban areas are one of the driving factors—at least much more important for the determination of the unemployment rate than the existence of more or less nature conservation.

Figure 4 details the picture of the labor market more precisely by considering the number of jobs created over time. It can be clearly seen that the highest concentration of jobs is in urban areas. The growth of jobs in the urban municipalities amounts to about 17% over a decade, however, starting at a much higher level than in other intermediate or rural municipalities.

Growth in Natura 2000 municipalities is certainly comparable to growth in urban areas: municipalities with large Natura 2000 areas exhibit a job growth of 19% (intermediate municipalities) and 25% (rural municipalities).

Employment in municipalities with some Natura 2000 areas grew by about 17% (intermediate) and 37% (one of the largest average increases of jobs). Finally, looking at municipalities without Natura 2000 areas, the figures are comparable with a job growth of 20% in intermediate and 36% in rural municipalities.

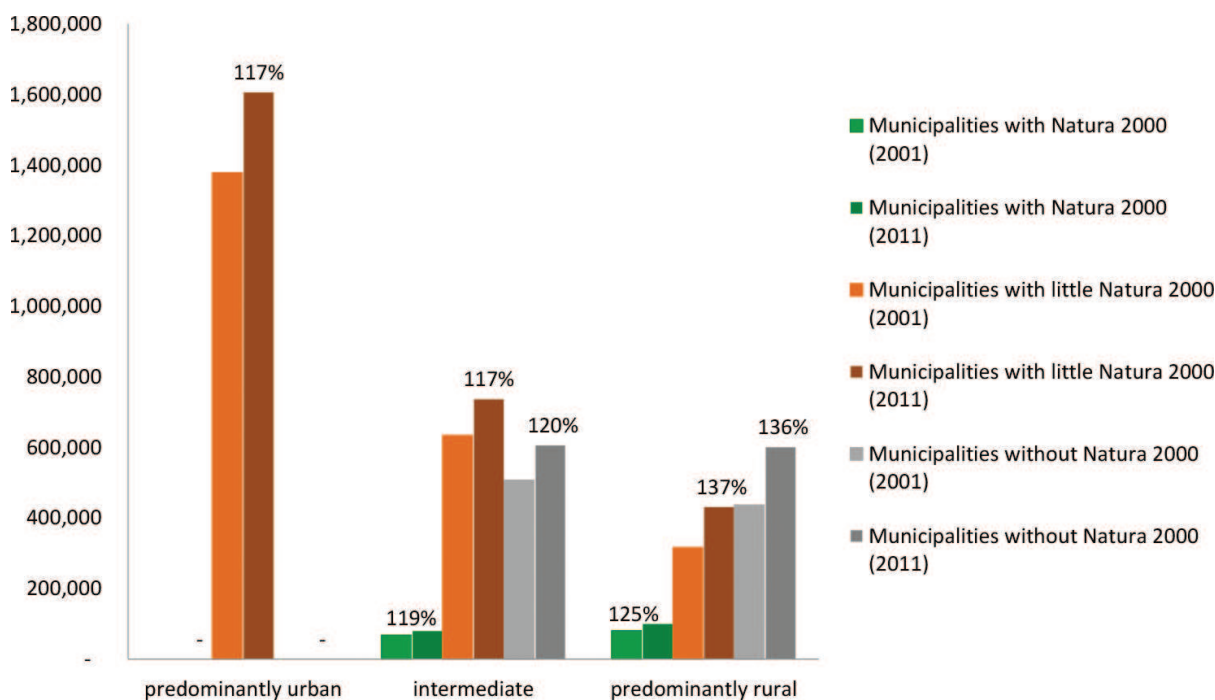


Figure 4. Number of jobs created in Austrian municipalities (2001–2011).

¹We do not have actual unemployment figures at the municipal level for the most recent years; however, it can be expected that the development between classes of municipalities is largely parallel, but the level of unemployment is certainly higher owing to the financial crisis after 2008.

Job creation, therefore, does not seem to depend on the existence of Natura 2000 areas per se. Some rural areas, of course, also face significant job creation in the tourism sectors—but this can hardly be attributed solely to the existence of Natura 2000.

2.3. Tourism development: the effect of Natura 2000

There certainly is a long-ranging debate on the effects of biodiversity conservation on the regional economy, and more specifically on tourism. The existing empirical studies might be broadly summarized as follows:

- Regional development may certainly be enhanced just by the inflow of money to a region originating from national or international funding sources. As protected areas are located in peripheral regions, the local municipalities often do not have sufficient funds to provide for the establishment and management of park. In most cases, this money inflow per se increases demand for park-related goods and services, and creates (some) local jobs.
- If conservation leads to a change of land use in terms of a total loss of production (e.g., in agriculture, forestry, fishing, and hunting), management plans of national parks, Natura 2000 areas, and nature protection areas provide for a sufficient compensation amounting to the loss of property value. In other words, this means that potential production losses are compensated; income of property owners or rights holders, therefore, may stay the same. (Very often, a significant share of a park's budget is devoted to compensation, and alternative management of the land.)
- Some new regional products might be developed such as new handicraft, certain uses of local resources (e.g., joint marketing of natural and/or ecological products such as organic farming or game meat). In terms of the size of the local economy, the value added is relatively small, though important for building companies and stakeholder networks.
- Finally, the most important potential benefit of establishing and operating protected areas is the tourism sector. As protected areas conserve biodiversity and provide experiences for visitors based on the natural environments, it is safe to assume that protected areas usually attract visitors.

From a methodological point of view, there are some uncertainties that have to be taken into account when the effect of tourism is to be ascertained. First of all, many categories of protected areas such as national parks or even more, Natura 2000 sites, do not emphasize a priori the development of tourism. While national parks at the core provide education and information to visitors, Natura 2000 areas often do not include references to regional tourism. Only when it comes to conserve biodiversity, management plans may provide temporal or spatial bans of access to certain areas.

However, the experiences within a prominent conservation area such as a national park are designed and marketed by the park's management, as well as by tourism boards and the tourism industries. While visitors come to certain areas because of their beauty and pristine natural environments, the label and the management of the park provide for additional attractions. In other words, without marketing and additional efforts, establishing a protected

area by itself may not attract more visitors. Only if concerted actions and strategies are put in place, the destination can be marketed accordingly to raise the number of visitors.

For instance, Getzner [11] provided evidence that the long-term effect of a national park on the number of tourist might lie in the range of 3–5% of annual growth in addition to already existing trends, even with the case of prominent and large national parks.

This chapter presents some evidence that Natura 2000 sites, indeed, lead to an increase in the number of tourists in a region. **Figure 5** presents an index of tourism development over time between 1990 and 2015 for the summer season. Generally speaking, the first decade until about 2000 saw a constant decline in the number of tourists in the summer season; a prominent exception is city tourism, again with Vienna as one prominent destination with a 60% increase in tourism numbers over the last 20 years. Inspecting the graph in more detail reveals that municipalities of all degrees of urbanization, and both with larger or smaller Natura 2000 areas, exhibit higher growth rates than municipalities without Natura 2000 sites.

In other words, nature conservation based on Natura 2000 does not lead to a decrease or stagnation in tourism during the summer season, but rather increases tourism above the Austrian average.

The causal linkages at this level of aggregation are, however, hard to detect. On the one hand, as said earlier, Natura 2000 sites are certainly established in areas of natural beauty, or where other conservation areas are overlapping, such as national parks.

On the other hand, most municipalities without Natura 2000 areas are either rural areas without tourist attractions or are industrial areas and centers.

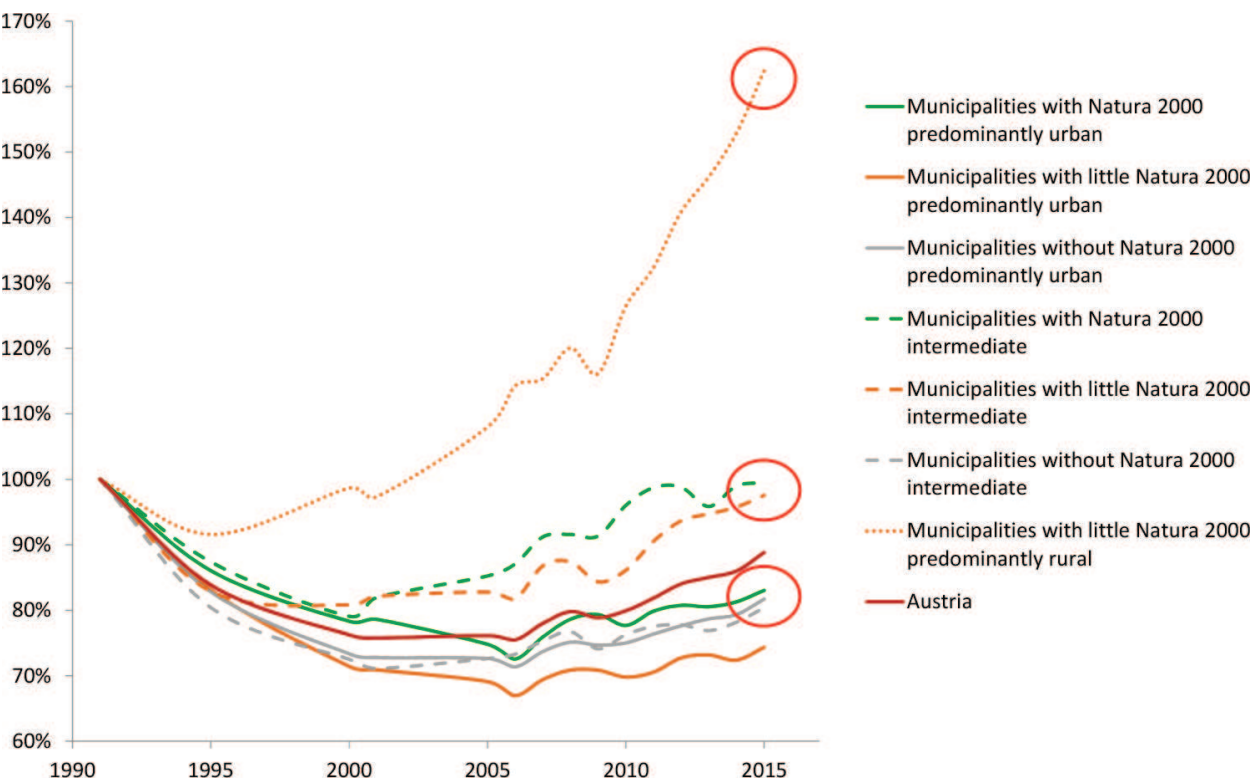


Figure 5. Overnight stays in Austrian municipalities (1990–2016).

It can therefore be concluded that Natura 2000 areas somewhat support tourism development and in certain municipalities may also provide additional attractions in terms of thematic hiking trails, nature trails and educational signposts, or exhibitions dealing with various aspects of conservation.

3. Summary and conclusions

This chapter has briefly highlighted and summarized the potential differences between Austrian municipalities where Natura 2000 areas have been established. The causal linkages between the mere existence of a Natura 2000 area and the regional or local effects are not as strong as it might seem in the first place. Regional and local development is certainly determined by a huge variety of factors such as territorial capital, location and accessibility, available infrastructure, and proximity to markets (factors of production; goods and services). In addition, regions with protected areas are often peripheral regions without much potential for endogenous regional development. Furthermore, many categories of protected areas (such as national parks, biosphere reserves, and nature and landscape conservation areas) overlap with the establishment of Natura 2000 areas. In fact, the Austrian national parks are all managed also according to the Natura 2000 frameworks.

To put it mildly, our study has revealed that Natura 2000 areas do not pose a threat to regional and local development; mostly, demographic, social, economic, and spatial developments are driven by the factors described earlier. This is certainly indicated for the fields of population growth, employment and unemployment, and the number of jobs. One exception can be seen in the tourism development. Data indicate that the establishment and operation of Natura 2000 areas might indeed attract more visitors (in addition to the vast majority who would visit the area even without a protected area on the basis of natural beauty and pristine ecosystems). However, the regional economic impact of protected areas in general may not lead to sufficient private funding or a substantial contribution to the financing of protected areas (cf. [12]).

Regarding management options, the results of this study are mixed. As Natura 2000 does neither harm nor substantially improve regional development, the leeway of management options is very limited. Park management may certainly create visitor experiences based on ecological systems such as nature trails, exhibitions, excursions, and other events. Such options are more feasible in national parks with their aim to educate and inform visitors, while the Natura 2000 framework is first and foremost oriented toward the conservation of species and habitats, and to prevent the further degradation of ecosystems. These objectives may certainly provide the basis for regional development, for example, in terms of increasing visitor numbers, the conservation work has to be complemented by local and regional development strategies. Such strategies may include destination marketing, development of local products based on natural resources, building up networks of local and regional stakeholders, and joint efforts and cooperation between the municipalities and the provincial authorities. Otherwise, it is safe to assume that there is no clear-cut direction of the regional effects of the establishment of protected areas, certainly no “automatism” which may lead to a positive development by merely establishing an area without any further measures or policies directed toward regional development.

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