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## 3.4 Highlights to informed spatial planning in the growing suburbs of Tirana

*The need to mainstream Ecosystem Services valuation into metropolitan land use planning decisions*

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### Land use planning decisions and Ecosystem Services

Many may and have argued that spatial planning is a “probability theory”, as long as it predicts the future use and development strategies for land and operates in an uncertain development context. The more sophisticated the methods and tools for increasing predictability through scientific analysis become, the more increases the number and type of factors to be involved in the complex models that spatial planning uses. As a result, proposing good and appropriate planning solutions remains a major challenge for spatial planners. There are two reasons for this: first, there is a need to define “good and appropriate” case by case, thus highlighting the contextual and reinventing nature of planning; and second, decision-makers are always in need of information on which basis to take the decision. The “good and appropriate” depends heavily on the valuing system to which we as a society refer. The information is related not only to processes, indicators and facts we want to understand and measure, but also to the way we put (societal?) values in a comparative system, which is appropriate for decision-making.

This paper aims to raise the issue of informed spatial planning decisions in Albania, by referring to a suburb of Tirana, as a planning case study, with the follow-

ing assumptions: First, the paper cannot be exhaustive in terms of all of the aspects that characterise informed spatial planning decisions. So, a choice is made to focus on environmentally sound planning decisions, based on the assessment of environmental values. Within “environmental values”, “ecosystem values” and the respective valuing theories and methods are captured.

By ecosystem values, we understand the value/s of a wide range of ecosystem services (ES) provided by the natural capital. These services are in fact processes (such as irrigation, pollination, soil formation, etc.) for which there is a demand that turns them into services. This paper pays attention to agriculture’s provisioning ESs, related to agriculture as an intentionally chosen land use by a planning instrument. Ecosystem services in the case of agriculture would include: (i) agriculture as a provisioning ecosystem service (food), with a (direct) value captured through market prices for agricultural products; (ii) ecosystem (input) processes that influence (support and regulate) agricultural production [i.e. “animal/insect crop pollination, soil retention, pest control, nutrient recycling in the soil, water capture. By contributing to agricultural productivity, these processes become ESs. The value of these services can be proxied by

their contributions to the monetary value of commercial agricultural production, or the utility value of subsistence agricultural production” (Kareiva et al. 2011)] and (iii) the impacts that agriculture has on other ecological processes [i.e. methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions that are greenhouse gases and water and nutrient cycles (Kareiva et al. 2011)]. Measuring the cost of the impacts provides a very helpful perspective in the costs and benefits analysis of the planning scenarios, i.e. agricultural land use versus another choice.

The proposal of the master plan section 3.1 on safeguarding agriculture in the area is confronted with other proposed land uses. The existence of the airport and the potential for intensive economic activities other than agriculture, due to the future strengthening of the urban settlement and the economic Tirana-Durrës corridor, impose strong arguments for and against agriculture. The valuation of agriculture as a provisioning ES, the ESs that influence agricultural production and those that are impacted by agricultural activities, would bring further clarity to the decision. This would be a decision on the use of natural resources (land and other resources in the area) as defined by the value of the services provided by these resources to humans. It would be an input to the cost-benefit analysis between different land uses’ scenarios, but also valuable information at the sectorial level.

## The proposal

The reason for choosing agriculture as a land use is based on the current features of the target area and the related proposals of the master plan. This suburb extends over 50 km<sup>2</sup> in the northwest of Tirana. It is surrounded by the Tirana-Durrës highway in the south; the Tirana-Kamza urban corridor in the east; and the Rinas – FushëKrujë mobility-mixed corridor in the west section 3.1. The main and only international airport of Albania is located on site, being a

landmark, a national hub and international gateway, with high impact on any economic activity/decisions and use of land. While at first sight the area looks like a simple natural suburb of Tirana, in reality it counts for a potentially strong urban organism that complements the metropolitan Tirana and it is part of the main urban agglomeration as analysed by INSTAT. It is composed of a large residential sprawl, two main economic and urban corridors for Albania, and several hectares of good quality agricultural land. According to the official agricultural productivity assessment system, the land varies between categories 4 to 7, out of 10 (the 1st category being the best and the 10th with the lowest impact on productivity and suitability for growing crops). His-

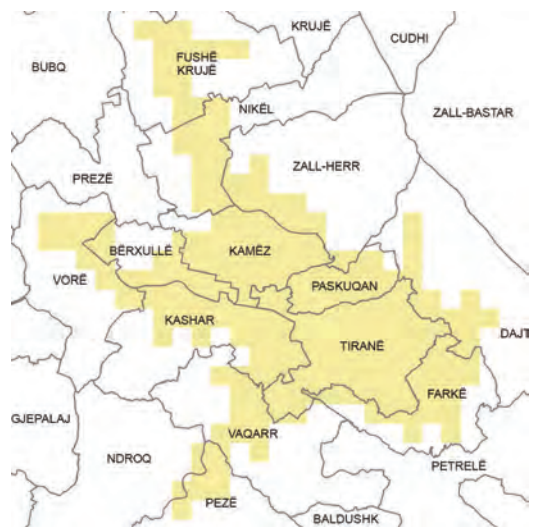


Fig 1. The agglomeration of Tirana and Tirana-Durrës metropolitan, Source: INSTAT 2014, based on Census 2011.

torically, the area has been mostly suitable for establishing orchards (mainly peaches) and vineyards. Around 2km<sup>2</sup> belong to the agriculture university and are used as an experimental site for growing crops, vegetables and orchards.

More than 70% of the area is rich in underground waters that are close to the surface and in risk of pollution due the uncontrolled urbanization in the southeast. As a matter of fact, the geo-hazards map indicates for contaminated ground waters in the settlements along the southern corridor (Tirana-

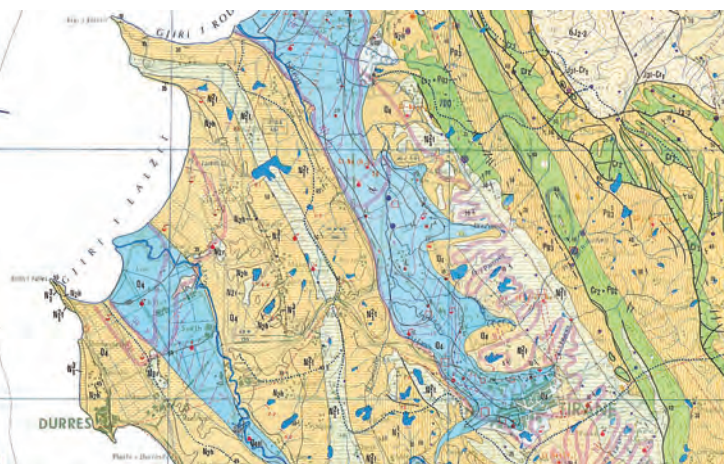


Fig 2. Hydrogeological and Geo-hazards maps

Source: Albanian Geological Service

Durrës) and in the area's entrance "node" from Tirana, where the plot coverage ratio is high for a "housing only" suburb (40-50%) and the ratio of public spaces (including roads) is extremely low (10-15% in both low and high density areas), due to the informal character of the development.

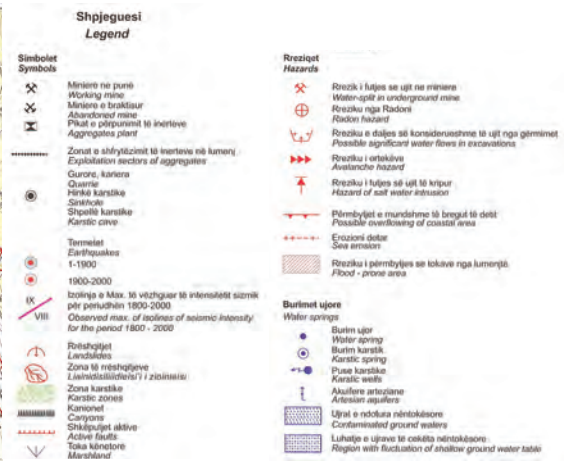
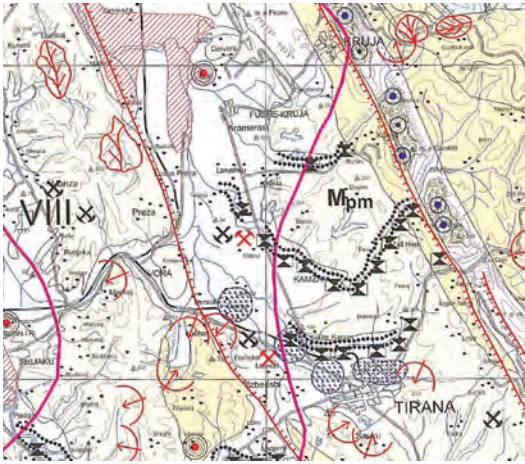
The proposed spatial development concept of the area is built around the existence of the agricultural resources and the long history of agricultural uses in site. The concept has a radial, gradient-like decreasing density and increasing open space ratio from the urban core in the southeast, towards nature in the west and north. Agricultural land use is initially found and proposed to remain in the middle of this gradient-like pattern, as urban agriculture and then takes over more and more space towards the west. The proposal is to use the spacious agricultural land for establishing an agricultural park section 3.1 and contributing to one of the proposed clusters in the area – the one in agriculture. The agricultural park would, among others, serve as a buffer zone between the most urbanised part and the natural and vast agricultural land in the north and northwest. As such, it would provide a perfect transitory space for wild life to penetrate into the agricultural sites and help to both improve input (ecosystem) processes and enrich urban biodiversity.

The proposed agricultural cluster has orchards and vineyards at its core, along with food processing industry related to these products (figure no. 1, section 3.5). Universities found in the area may use the agricultural sites and the small urban farms as laboratories for specific subjects, internships and for carrying out innovation projects.

The farmers can make use of the logistical centres located in the area and retailers in Tirana, Durrës, and the surroundings can buy fresh organic products to supply the market.

## The need for agricultural production ES valuation

The philosophical foundations for valuing nature and the respective methods (Kareiva et al. 2011), preferably quantitative, for measuring values determine the valuing approaches. These factors define the ethics of choice and resources needed to implement the valuing process. The methods comprise good knowledge of the biophysical processes involved in an ecosystem and the appropriateness of using one measurement over the other. Thus, an approach can be selected with regard to data collection, processing and assessment. The fundamental discussion however, remains the one on the ethics towards environment, specifically whether the approach is anthropocentric or biocentric. The former values the environment based on the value of the ecosystem to the human well-being, i.e. utility, while the latter also includes utility to other species (Kareiva et al. 2011). Both approaches involve direct and non-direct uses, or non-uses; are based on the relationship of people and cultures with the natural environment; and are also dynamic due to ideological societal changes, ethics and technological evolution. Referring to Beatley (1994), nature has three types of values, i.e. instrumental (use value) and intrinsic (appreciation value), which are anthropocentric, and inherent (value for the sake of the ecosystem), which is non-anthro-



pocentric (Randolph, 2004). However, this inherent value is difficult to measure. “No comparable measure is currently available for assessing changes in satisfaction to other species or communities of them” (Kareiva et al. 2011).

The residents and users of the suburb, which is being analysed, established their settlements and economic activities in the area for purely pragmatic (utility) reasons. They diverted an agricultural system into an urban one, thus affecting economic production functions and the base natural system. From a utilitarian theory perspective, this land conversion satisfied housing needs and introduced new jobs in the area, supplying a market of around 1,000,000<sup>1</sup> people located in the economic gravity centre of Albania<sup>2</sup>. Employment in agriculture counts for 0.6-18%, the services sector employs 48.9 to 60% of the population and the industrial sector 23.7-36.9%. The conversion can be considered an economically efficient choice given several incentives and factors: i) the proximity to the services offered by the administration and public institutions in the capital and to the international hubs; ii) the “open access” character of the land property in the early '90s – state owned for more than 45 years and with no instruments in place to stop people occupying land and to protect resources in early '90s; iii) the favourable (plain) terrain for building and creating capital in the newly established market economy; iv) the structuring of the

space and future road network by the irrigation and drainage system. At the time, no one had any incentive in contributing to the provision or conservation of ecosystem services in the area.

The goodness of the consequences of this choice to the new residents was fair enough as to satisfy and even maximise their welfare in the early '90s. This type of very “organic” development may be claimed as a social choice, allowed by the government to take place, aiming at increasing the aggregate utility of the society, which by that time was equal to housing and real estate market (capital) formation. The definition of goodness and things that people were valuing (Alexander and Penalver 2012) was pretty narrow, as: first it excluded from calculation segments of the society whose individual welfare was not represented by the above incentives (i.e. the residents of Tirana and the surrounding villages for instance were the first ones to feel the pressure of urbanisation, while the society at large would in latter stages bear the costs of this newly informally established economy); second, it only included some of the instrumental values of a societal group (a certain group of residents and the government), and definitely did not count any intrinsic values. Being embedded into a strongly utilitarian approach, inherent values, those of the ecosystem for itself, were simply and conceptually unknown.

Nevertheless, the current situation in the area is a mixture of the three systems, urban, agricultural and natural, which leads to a very complex ecosystem and system of

<sup>1</sup> This counts for almost 1/3 of Albania's population.  
<sup>2</sup> The metropolitan area of Tiranë-Durrës as defined by INSTAT (2011) has 932,110 residents, versus 796,449 in the other urban areas and 1,071,579 in the rural areas.

relationships. The agricultural land is only partially cultivated, while the natural system along the rivers crossing the area is highly polluted from the urban uses – solid waste disposal and direct sewage discharge into rivers and underground water. So far, the risk for water and land pollution is present and may proliferate due to: increasing urban densities and lack of waste and waste water collection and treatment system; uncontrolled use of septic tanks; uncontrolled water extraction for individual purposes with wells; discharge from the food industries located along the Tirana Durrës corridor.

On the other hand, if land is kept cultivated for agriculture, in the absence of natural vegetation and in the presence of high underground waters, it would most probably become a source of nutrients and sediments, adding up to soil and underground water pollution on site and to the eutrophication of coastal waters in the west. Still, the almost horizontal slope of the area is a factor that favours nutrient retention, and the latter can be amplified if proper vegetation is used along the roads and canals and the proposal on the agricultural park is implemented. The soil is mainly sandy-loam with good draining capacities and moderate water retention capacities. The soil has thus a good ability to supply water to cultivated plants and also leave infiltration downward contributing to the water table replenishment. However there are no assessments made to understand what part of the water is (or would be) removed by current and more intensified agriculture practices in the area as compared to the current replenishing capacity. Neither is there any indication of the value of (for instance) Nitrogen, Phosphorous, and Carbon left, or removed from the soil as result of the application of different agriculture production systems.

The decision on accepting agriculture as an intentionally chosen land use has in a way set limits to the further intensification of the residential, industrial and commercial land uses. The limits are on: the economic benefits from residential and economic activities; and the presumed impacts of these activities on the ecosystem processes and services (especially those related to agriculture and water supply). Furthermore, this decision affects residents, landowners and businesses in the area, as well as stakeholders in Tirana



and Durres, who could have an interest to invest there, other than on agriculture (related) activities. Any stakeholder interested on real estate and industry and commerce would have no direct incentive to think of, or internalise impacts on ecosystem processes and services.

With this preliminary analysis at hand, decision-makers would accept the proposal on agriculture as an intentionally chosen land use as opposed to the other also attractive land uses, only based on some overall costs and benefits analysis. The latter should include the valuing of agricultural provisioning, regulatory and support ESs. But, let's assume that the valuing process is in favour of the agriculture land use. Does this mean that the decision-makers would have to take a stand between conservation and non-agriculture development? Should agriculture land use as a choice be considered simply as a conservation of ecosystem services as related to agriculture? And still, to what extent is possible that the cost and benefit analysis between development/conservation scenarios favours agriculture land use choices?

## Next – thinking for future

The proposal on having agriculture as a main land use in over more than 1/3 of the area, impacts not simply the ecosystem, but a chain of economic activities linked to each other in the agriculture cluster network. Thus, a choice that strictly imposes conservation of land and its features for (eco) agricultural activities, also allows for a variety of economic development activities to take place, and impacts a chain of stakeholders located beyond the borders of the area and in different future time horizons. Decision-makers would employ a cost-benefit analysis (CBA) that involves ESs valuation, prior to approval of the land-use. The costs-benefits analysis should compare economic development scenarios that imply several market chains' networks, capturing also impacts on multiple ESs. Sometimes, the latter could make the only and most important difference between scenarios and is crucial to the sustainability of the choice.

Nevertheless the complexity of this analysis is not to be underestimated. For prop-

er results, the CBA would carefully target the real beneficiaries and impact bearers. They are found in the wider metropolitan region, due to the "organic"<sup>3</sup> economic market chains' networks and the much wider boundaries of the ecosystem where this suburb is located. Also, considering the different valuation methods in place, the measured facts, transactions or behaviour and willingness revealed and/or stated (Wratten et. al 2013) represent the current context and individuals' perception. The same individuals may/will change their attitude, say 10 years from now, and this holds true for ESs and any land use and economic decision as well. Time series of related information would be key to proper EC valuation and CBA, but not only are these missing in Albania, the context is also so dynamic and continuously changing, that time series of the past most probably do not indicate attitudes of the future.

The networks include stakeholders, or organizations and their interaction in a flow of functions, based on a supply and demand model, which is regulated by the government. In this model, in the context of Albania, landowners would receive financial rewards for producing crops, or for developing their land as a real estate, but it seems hard not to call it impossible that they would receive any incentive for protecting ecosystem process and services. However, this assumption is made for the time being and for the residents of the selected area. The network analysis should consider what the interests and costs are for all those living or having a business in the metropolis, if agricultural uses were conserved/intensified in the selected site as opposed to more urbanisation. For instance, the government, which by law is also the owner of the seashores and other important natural resources along the coast, would definitely be interested in protecting the coast from polluted inland waters. Thus, for the Government of Albania as a stakeholder it would be of interest to analyse the pollution generated from the different land uses and how ESs would contribute to its reduction. In fact, all stakeholders in the network, based on their roles and need for economic functions, create a demand for ecosystem processes, thus services.

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<sup>3</sup> As synonymous to the organic development of the settlements and economic areas in the agglomerations of Tirana and Durrës, composing the Tirana-Durrës metropolis.

This CBA that covers all flows of a complex network, including ESs is a very new approach to the Albanian context. It would differ a lot from past practices that focus heavily on the economic costs and benefits, as it includes externalities, by emphasizing the “other values” – environmental ones. As CBA would have an integrated multi-sector approach, given that ESs are embedded in the actions and decisions of all development sectors, it would also be a tool for fostering and strengthening multi-level governance. In fact, the latter is a precondition for ESs being included in planning and decision-making agendas. A CBA involving ESs would significantly contribute to the reduction of (especially) the information (knowledge) gap, the policy gap and the administrative gap<sup>4</sup>.

These gaps exist when knowledge on the need and impacts of public policy delivery is incomplete (which happens quite often with regard environmental knowledge); ministries take vertical approaches on the territory (also the case in Albania due to lack of sub-national regional government) with little if any consideration for the territorial (horizontal) impacts; and administrative borders do not coincide with functional economic areas, which results in environmental challenges that by nature require large scale responses and reduced territorial fragmentation (unlike the system of local government in Albania). The ecosystem services mapping and valuing would be of high benefit to decision-makers in facilitating their processes, but would also help planners, due to being spatially explicit not simply by showing where to target investments and policies, but by visualising the distribution of the opportunity costs of choice and no-choice on the territory.

<sup>4</sup> There are 5 gaps in multilevel governance as described by Charbit, C. and M. Michalun (2009), “Mind the Gaps: Managing Mutual Dependence in Relations among Levels of Government”, *OECD Working Papers on Public Governance*, No. 14, OECD Publishing. <http://dx.doi.org/10.1787/221253707200>.

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