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# WHY BIODIVERSITY AND ECOSYSTEM SERVICES MATTER TO SOCIOECONOMIC GROWTH IN SOUTH-EAST EUROPE:

THE CURRENT STATE OF KNOWLEDGE,  
LESSONS LEARNED AND  
WAYS FORWARD

## ECOSYSTEM SERVICE ASSESSMENT & VALUATION (ESAV): A TOOL TO INFORM AND STRENGTHEN DEVELOPMENT PLANNING

**T**he South-East Europe 2020 Strategy sets out an ambitious agenda for attaining the levels of socioeconomic growth that are required to improve prosperity and facilitate integration with the European Union. Yet, although one of the five core pillars of SEE20 is sustainable growth, scant attention is paid to the dependence of these development prospects on a well-managed natural environment. In fact, the region's rich **biodiversity and ecosystem services offer considerable opportunities to strengthen socioeconomic growth and development** – while their degradation runs the risk of giving rise to substantial (and lasting) costs and losses across most sectors of the economy.

These omissions are also all too apparent in many national and local-level development policies, strategies and plans. While there is **frequent mention of the importance of managing environmental impacts**, this has tended to remain at the level of good intention, and has been followed up by few concrete actions and even fewer results. As in many other parts of the world, this is the case even for the sectors that depend and impact most on biodiversity and ecosystem services (and stand to gain the most from the sustainable development opportunities they afford), such as agriculture, tourism, forestry, fisheries, energy, water and infrastructure development.

Clearly there is a need to overcome these information gaps and to demonstrate tangible evidence of the returns to investing in the natural environment as a core component of socioeconomic growth. **Ecosystem service assessment and valuation (ESAV)** has been gaining currency across much of the world as a useful tool with which to generate the data, evidence and arguments to ensure that biodiversity and ecosystem service values are factored into the calculations that are used to determine the 'best' uses of land, resources and funds or to select the most 'profitable' and 'cost effective' development and investment options. The ultimate aim is improved decision-making for more effective, inclusive and sustainable socioeconomic growth.

**This paper describes how ESAV has been applied in the region to date, and summarises the current state of knowledge on biodiversity and ecosystem service values in South-East Europe. It seeks to identify key needs, priorities and opportunities to harness these linkages to strengthen development and conservation planning.**

The main conclusion of the paper is that **ecosystem service assessment and valuation (ESAV) offers an extremely useful tool** for generating and communicating new evidence and information about the values of biodiversity and ecosystem services to development planners and decision-makers, as well as other (especially local) stakeholders. Experience from the region also suggests that ESAV can serve as a vehicle with which to promote better cross-sectoral interchange and co-operation.

However, a number of important – but in no way insurmountable – **challenges remain** which prevent ESAV from reaching its full potential. While the body of useful information and evidence on the ecosystem service and values opportunities is increasing and improving, there are still substantial gaps in knowledge and understanding which need to be addressed.

Ten priority **recommendations are made on the future use of ESAV to strengthen development and conservation planning in South-East Europe**, focusing on capacity (building skills, knowhow and empowerment), communication (fostering dialogue and understanding) and solutions (changing on-the-ground conditions and practices). The emphasis is on practical tools and instruments that can be used to promote conservation-oriented investments, incentives and financing mechanisms among the sectors that depend and impact on biodiversity and ecosystem services.

The paper draws on work carried out under the **GIZ Open Regional Fund for South-East Europe – Biodiversity (ORF-BD) project** between 2015 and 2018. The ORF-BD project is funded by the German Federal Ministry of Economic Cooperation and Development (BMZ) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

## RECOMMENDATIONS FOR FUTURE ACTIONS:

### TAKING ESAV FORWARD IN SOUTH-EAST EUROPE

**A**n expert symposium and roundtable on ‘*Valuing and Investing in Biodiversity and Ecosystem Services for Sustainable Development: Lessons Learned and Future Directions*’ was held April 2018 in Novi Sad, Serbia. This brought together more than 60 technical experts and decision-makers from government, academia, CSOs and international organisations across South-East Europe.

It was agreed that a number of pressing – but in no way insurmountable – challenges remain which prevent ESAV from reaching its full potential. While the availability of information on ecosystem service values is steadily increasing and improving, there are still **substantial gaps in knowledge, capacity and understanding** to develop and apply ESAV and to use its findings to influence real-world development policy, planning and practice. Ten **recommendations were made on the future use of ESAV** to strengthen development planning in South-East Europe, focusing on three key areas of need, priority and opportunity:

- **Capacity: building skills, knowhow and empowerment.**

ESAV approaches are still considered to be novel and are as yet relatively untested in the region. Experience is only just being built, technical skillsets remain under development, and experts are few in number and tend to be dispersed and disconnected from each other as well as from their target audience.

- **Communication: fostering dialogue and understanding.**

Much of the information on the value of biodiversity and ecosystem services remains inside conservation organisations and the scientific community. There is an urgent need to communicate this knowledge to other sectors and the general public, in ways that are credible, convincing and relevant to them.

- **Solutions: changing on-the-ground conditions and practices.**

Considerable work has yet to be done to take ESAV to the next stage in terms of influencing real-world decision-making. There are few practical examples of instruments to better integrate biodiversity and ecosystem services into development planning processes, or to operationalise conservation-oriented investments, incentives and financing mechanisms among the sectors that depend and impact on biodiversity and ecosystem services.

### Recommendations on the use of ESAV to strengthen development planning

1	Commission and conduct ESAVs to create and share evidence targeted to practical policy purposes and issues of priority conservation and development concern.
2	Develop procedures, steps and guidelines on ESAV geared to the South-East Europe context and the needs of key development sectors.
3	Incorporate ESAV into the processes, procedures and requirements for cost-benefit analysis, investment appraisal, environmental impact analysis, strategic environment analysis and other planning tools used to guide public and private decision-making.
4	Work with financial institutions and the corporate sector to develop investment-oriented ESAV approaches and case studies.
5	Pilot the development of spatial planning documents, local-level plans and reporting protocols which integrate ecosystem service assessment and valuation.
6	Include ESAV requirements in legal frameworks and associated rules, regulations and guidelines.
7	Promote the use of ESAV to inform the design and implementation of conservation-oriented incentives, investments and finance in key development sectors.
8	Develop and deliver in-service training modules on ESAV for government agencies and the private sector.
9	Roll out communications strategies, media tools and information on biodiversity and ecosystem values, targeted especially towards the general public, non-technical and corporate audiences.
10	Develop materials and curricula on biodiversity and ecosystem service values for schools and universities.

## CONTEXT:

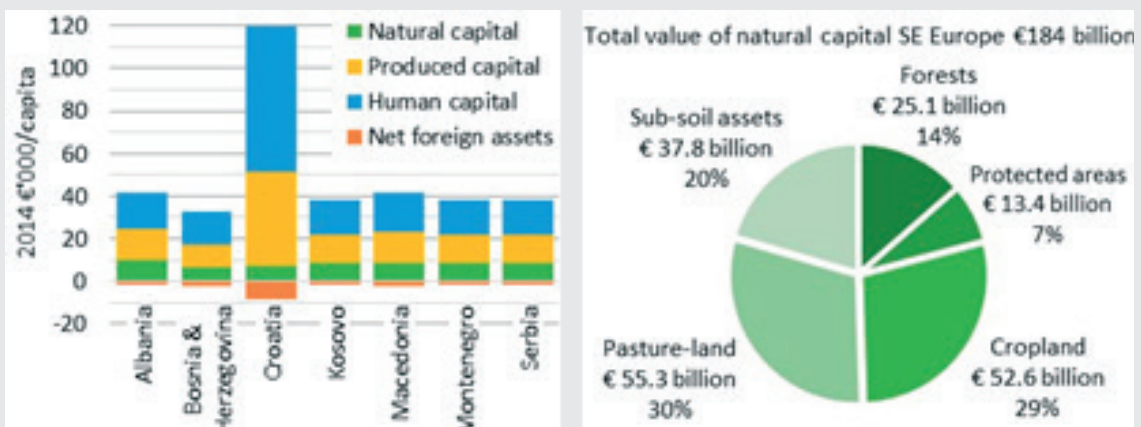
### WHY ASSESS AND VALUE BIODIVERSITY AND ECOSYSTEM SERVICES?

**S**outh-East Europe is exceptionally **rich in biodiversity and hosts a wide variety of natural landscapes**, ranging from Mediterranean coastal zones, through rivers, forests and steppes, to alpine high mountains. In addition to offering a source of physical products and raw materials (such as timber, fish, fuel, crops and minerals), biodiversity and ecosystems provide a host of other economically valuable services, for example erosion control, flood protection, water purification and waste management, disease regulation, disaster risk reduction, crop pollination and pest control, as well as recreational, aesthetic and spiritual benefits.

Collectively, these benefits are known as **ecosystem services: “the benefits people obtain from ecosystems”**<sup>1</sup>. As we shall see below, ecosystem services underpin human wellbeing, and support almost every sector of the economy. At the same time, ecosystem degradation poses massive and often untenable costs to the region’s development processes. Yet, despite the fact that evidence suggests that the region’s ‘natural capital’ assets constitute a vast source of wealth, these values are rarely factored into the calculations that are used to inform decision-making. There is often seen to be few gains from conserving and sustainably using the natural environment, and little or no cost to converting, degrading and depleting it in the course of carrying out economic activities. The data that are used to inform decision-making (and the decisions that result) are thus almost inevitably incomplete, and may in the worst case be flawed and misleading.

#### The value of South-East Europe’s natural capital assets

Traditionally, estimates of a country’s wealth look only at ‘produced’ capital – human-made infrastructure, machinery, equipment and built-up land, and sometimes ‘human’ capital – the knowledge, skills, and experience embodied in the workforce. Yet this presents an incomplete picture, because it ignores valuable ‘natural’ capital – natural resources and ecosystems such as forests, protected areas, farmlands, energy and minerals.



The World Bank has pioneered a new approach to assessing countries’ capital wealth, looking at the full range of assets upon which development depends and valuing their future income

streams (World Bank 2006, 2011, 2018)<sup>2</sup>. This provides a comprehensive measure of changes in wealth and indicator of the sustainability of growth.

In South-East Europe, the figures are striking. Natural capital is worth €184 billion across the region, an average of €8,150 per capita<sup>3</sup>. In Albania, Bosnia & Herzegovina, Macedonia, Montenegro and Serbia, it contributes up to a quarter of total wealth. This translates into asset values of some €412,000/km<sup>2</sup> for protected areas and around €255,000/km<sup>2</sup> for forests.

These results suggest that better management of biodiversity, ecosystems and natural resources will be key to sustaining development in the future. Conversely, it is clear that growth will be illusory (and in reality, may be negative) if it is based on converting, depleting or otherwise degrading the natural environment.

**Ecosystem service assessment and valuation (ESAV)** can be defined as the process of describing, measuring and analysing how ecosystem services are generated, managed, used and perceived. It incorporates biophysical, economic, social and institutional aspects. ESAV seeks to generate the data, evidence and arguments to ensure that biodiversity and ecosystem service values are factored into the calculations that are used to determine the 'best' uses of land, resources and funds or to select the most 'profitable' and 'cost effective' development and investment options. The ultimate aim is improved decision-making for more effective, inclusive and sustainable socioeconomic growth, as laid out in Agenda 2030 and other documents.

While ESAV still remains relatively unknown in economic and development planning contexts, recent years have seen repeated calls for its use in **global, regional and national environmental policy**. Most importantly, in 2010, the Conference of the Parties to the Convention on Biological Diversity adopted a revised and updated Strategic Plan for Biodiversity for the 2011-2020 period which lays a great deal of emphasis on ESAV. The plan (and associated Aichi Targets) makes numerous references to the need to improve, share, transfer and apply scientific and other knowledge relating to biodiversity, its values, functioning, status, trends and the consequences of its loss. It also underlines the need to integrate biodiversity values into national and local development planning processes, and reflect them in policies and incentive structure across the economy.

**ESAV in South-East Europe national biodiversity strategies and action plans for 2011-20**

<b>Economies</b>	<b>Goal, target or action</b>	
Albania	5.2	Fostering the understanding of the importance of improving biodiversity, knowledge on biodiversity and ecosystem services in Albania
	5.3	Promoting awareness in different sectors with direct or indirect impact on biodiversity, including private sector involvement
	7.1.3	Evaluation and the map of the status of ecosystems and their services
Bosnia & Herzegovina	A2	By 2020, integrate biological diversity values into development strategies and strategic plans, with an emphasis on rural development
	D15	By 2020, map and evaluate the benefits from forest, agricultural and water ecosystems ... etc.
Croatia	4.3	Evaluate and map ecosystem and their services with the goals of assessing and improving their status
Kosovo*	SO4M1	Develop and implement projects to increase of awareness of the importance of nature, biodiversity, landscapes and their economic and financial values
Macedonia	A2	The values of biodiversity to be gradually incorporated into economic development policies on national and local level (poverty reduction, accounting systems, national and local development plans, etc.)
	D17	To encourage and financially support the research of all components of biodiversity, to establish and update the database on national level to better use and sharing of information on biodiversity
Montenegro	A3	The basic assessment and analysis of scenarios of economic values of biodiversity and ecosystem conducted at the state level
	G21	Make information about biodiversity publicly available, compile knowledge and ensure equitable distribution of benefits of genetic diversity
Serbia	3.3	Increase national awareness and use of biodiversity economic valuation techniques as a mechanism for more accurately assessing and accounting for trade-offs between biodiversity protection and human activities that may result in biodiversity loss
	6.1	Collect, review and synthesize available data and information on biological diversity to provide a basis for assessing its status, monitoring, conserving and sustainable use.

All of the economies in South-East Europe have either ratified the Convention on Biological Diversity or are in the process of doing so, and have recently revised their National Biodiversity Strategy and Action Plans based on the 2011-2020 Strategic Plan. Most of these documents contain actions which in some way involve biodiversity and ecosystem service assessment and valuation. These also follow the EU -2020 Biodiversity Strategy, which declares that “Member States, with the assistance of the Commission, will map and assess the state of ecosystems and their services in their national territory ... assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level”.



## EVIDENCE:

### WHAT DO WE KNOW ABOUT THE VALUE OF ECOSYSTEM SERVICES?

**A**lthough ESAV is still an emerging field in the region, a **small – but rapidly growing – evidence base on the value of biodiversity and ecosystem services** is being built up, spread across a range of biomes and economies<sup>4</sup>. Some of these studies are primarily descriptive, aiming to contribute towards available knowledge or to correct the gaps and inaccuracies in existing statistics. In Serbia, for example, the total national economic value of forest ecosystem services was calculated to be between €394-564 million or €164-235 ha/year<sup>5</sup>, taking account of a wide range of non-market benefits which would not conventionally be reflected in traditional, timber-based calculations<sup>6</sup>. It is interesting to note that this figure is some 6-9 times higher than that which is cited for the forest sector in conventional income accounts and GDP statistics<sup>7</sup>.

One particularly common application of ESAV has been to seek to provide convincing – and usually much-needed – **arguments to ‘make the case’ for conservation**. To these ends, a variety of studies have been carried out which demonstrate the social, economic and biophysical importance of ecosystem services in specific sites, or for particular sectors and stakeholder groups. Thus, for example, a study carried out in Serbia’s Special Nature Reserve “Koviljsko-Petrovaradinski rit” was able to demonstrate that 18 priority ecosystem services, ranging from grazing and fishing to flood protection and water purification, are together worth €19.6 million/year or an average of almost €3,400/ha<sup>8</sup>. The resulting figures were used to underline the importance of the Nature Reserve to the local economy and advocate for improved ecosystem management efforts. Likewise, the high economic value of the Tara River watershed in Montenegro is used as a justification for conserving the Durmitor-Tara-Prokletije landscape; water-based recreation, alone, is demonstrated to generate more than €1 million a year in income and to support the livelihoods of up to 22% of the local population<sup>9</sup>. Along similar lines, valuation of the ecosystem services of the Park Forest Marjan in Split, Croatia at some €18.7 million is presented as evidence of the importance of ensuring that the protected area territory is kept intact, and is not encroached or fragmented<sup>10</sup>. An ESAV carried out in the Sava, Drava and Danube floodplains in Croatia provides strong arguments for their protection by articulating the wide variety of ecosystem service values that result<sup>11</sup>, such as flood mitigation (€3,775/ha/yr), nutrient retention (€189), habitat provision (€13,400), drinking water supplies (€298), wood production (€213) and fisheries (€208).

In many cases, ESAV studies involve **comparing the returns to biodiversity and ecosystem service conservation with those to alternative land uses, or weighing up alternative management approaches**. One of the earliest regional applications of environmental valuation, carried out in the mid-1990s, sought to evaluate different options for the World Bank-funded Coastal Forest Reconstruction and Protection Project in Croatia. The major innovation was to include of a wide range of non-market forest values (such as visible landscape benefits, watershed protection and erosion control) that would not normally be included in cost-benefit analyses, and to find that these high values justified reforestation as a profitable option<sup>12</sup>. More recently, comparable techniques were used to demonstrate that the benefits of conserving Ezerani Nature Park in Macedonia would be twice as high as the costs, and that ecosystem restoration and rehabilitation was a profitable option<sup>13</sup>. A similar case was made for restoring Albania’s Buna River ecosystem by showing that the

value of wastewater dilution, erosion control, habitat protection and recreation services to local communities far outweigh the estimated costs of river restoration<sup>14</sup>. Economic valuation was also applied to Albania's Karaburun-Sazan Marine and Coastal Protected Area to demonstrate ecosystem services worth more than €12 million a year or €970/ha, and to show that optimal management could add annual value in excess of €100,000 a year<sup>15</sup>. Social ESAV techniques (in this case a public participation process aided by multi-criteria decision analysis) were used in the Albanian part of Prespa Park to assess people's perceptions of ecosystem services and preferences for different protected area management approaches<sup>16</sup>.

Reflecting the pressing budget constraints plaguing many conservation agencies in the region, there is now a relatively large body of ESAV studies targeted at **advocating for increased conservation funding**, especially for protected areas. Most use economic valuation techniques. For example, figures showing that every €1 of public funds invested in Montenegro's protected area system would generate almost €29 worth of economic benefits were used to argue for increasing current funding substantially beyond the current level of €1,800/km<sup>2</sup>, which was deemed to be less than half of the actual financing needs for effective conservation management<sup>17</sup>. A national-level economic valuation of biodiversity and ecosystem services was also carried out in Montenegro to advocate for investments in the National Biodiversity Strategy and Action Plan 2011-20, demonstrating that its actions and projects would add more than €540 million value to the economy<sup>18</sup>.

ESAVs are also often further used to **identify and recommend new revenue sources and financing mechanisms**. For example, a participatory ecosystem service assessment and valuation study carried out in Tara National Park, Serbia, investigated stakeholder perceptions of ecosystem services in order to recommend potential financing mechanisms with which to diversify protected area income sources<sup>19</sup>. Building on the study to value protected area tourism in Croatia, a variety of new fees and income streams were identified<sup>20</sup>. A study in Croatia found that tourists were willing to pay between €100,000 to €2 million per year to protect the biodiversity and landscapes of Brijuni, Kornati, Paklenica and Risnjak National Parks, helping to inform the identification of new possibilities for revenue-generation (Spurgeon et al. 2010a, b). In a similar vein, mechanisms for capturing ecosystem values through user fees (such as fishing licenses, tourist charges and carbon offsets) were demonstrated to have the potential to cover 30% of conservation management costs in Albania's Karaburun-Sazan Marine and Coastal Protected Area (Binet et al. 2016). At an average of €25 per household per year, the stated willingness of communities living along the Buna River in Albania to accept increases in their water bills which would guarantee funding for improved water quality and associated ecosystem services was shown to be more than sufficient to cover the physical costs of river restoration measures<sup>21</sup>.

**Payments for ecosystem services (PES)**, in particular, have been gaining in popularity across the region over recent years<sup>22</sup>, and are the focus of a growing number of ESAV studies. For example, work carried out in Kosovo\* looked at the role of sustainable forest management in generating ecosystem services so as to identify potential carbon credits and renewable energy markets, while a biophysical assessment and participatory survey of stakeholder perceptions of forest erosion and sedimentation services in the Ulza watershed was used to point to water-based PES options<sup>23</sup>. A series of ESAVs were carried out in support of Montenegro's National Biodiversity Strategy and Action Plan, and used to point to needs and niches for the development of new PES mechanisms<sup>24</sup>, including those specifically targeted towards biodiversity utilisation<sup>25</sup>. Similar analyses have been carried out to analyse PES needs, feasibility and potential pilot schemes in Croatia<sup>26</sup> and Serbia<sup>27</sup>. Macedonia's main ecosystems are currently being assessed and valued, with a view to identifying their potential for providing ecosystem services and generating ecosystem service payments<sup>28</sup>.

Many ESAVs are concerned with underlining the **importance of considering ecosystem services in sectoral policies, plans and projects**, reflecting their typically wide spatial impact and diverse

beneficiaries. For example, an ESAV of the Sava, Drava and Danube rivers and floodplains in Croatia provided strong arguments for integrating both the value of ecosystem conservation and the losses from ecosystem degradation into cost-benefit analyses carried out to select and design development projects such as hydropower accumulation systems or multipurpose water schemes<sup>29</sup>. A study of the economic contribution of Northern Velebit National Park and Velebit Nature Park in Croatia demonstrated the high value added by sustainable ecosystem management to tourism, hydropower, agriculture, fisheries, and forestry, thereby hoping to foster the integration of ecosystem values into development and investment policies in these sectors<sup>30</sup>.

### WHY PIGS IN THE BOSUT FORESTS STOP FLOODING



The Bosut Forests are located in the floodplain of the Sava, Bosut and Studva Rivers in the north-west of Serbia, close to the borders with Bosnia & Herzegovina and Croatia. They have exceptional value in hydrological, forestry and biodiversity terms. Four forest ecosystem services are of particular importance: timber production, flood mitigation, habitat for wild species and livestock-keeping.

Over recent years the forest has become progressively more degraded. In the past, regular flooding sustained biomass production and maintained both ecological and hydrological processes in the area. However, since 1938, constructed flood defence systems have been set in place so that approximately 90% of the originally flooded forest area is now separated from rivers by an embankment. As the capacity of the forest to retain and buffer floodwaters has decreased and groundwater levels have fallen, so timber production has declined and key habitats have been lost.

The ESAV sought to communicate to decision-makers the implications of adopting a more integrated approach to forest ecosystem management, as compared to the current, rather narrow, production-oriented approach. This would be geared towards the generation of multiple

benefits (timber, livestock, flood retention and biodiversity) and actively involve a range of key stakeholders (forestry and water authorities as well as local farmers). The intention was to generate evidence with which to guide and inform constructive cross-sectoral dialogue, and to support a process towards improved cooperation in the utilisation and management of Bosut Forests.

The study combined qualitative assessment with a quantitative analysis of the biophysical and monetary changes arising from different forest management scenarios, and also investigated local stakeholders' perceptions of ecosystem service values. It compared the 'business as usual' situation (where forest management approaches and goals are narrowly focused on timber production) with an integrated management scenario based on forest conservation and sustainable use, environmental water retention and the use of traditional farming as a tool for habitat management.

Traditional pig-herding by the local community has played a particularly important role in shaping and maintaining the forest landscape over the centuries, contributing towards its unique character, services and biodiversity today. As they feed, and root around the forest floor and marshlands, pigs prevent shrub encroachment and stop wetland areas from becoming overgrown. This helps to maintain (and even increase) the capacity of the ecosystem to receive and absorb even high water flows and flood discharges, as well as weeding and maintaining wildlife habitats.

The findings showed that managing the Bosut Forests for multiple ecosystem services would result in demonstrably higher value-added and costs-saved as compared to the current situation, for a much broader range of sectors. Maintaining forest pigs at sustainable capacity levels would enable a 5-7 fold increase in herd numbers, leading to savings of around 50% of fodder costs as well as

allowing for more and better quality meat production. In total, the potential value-added to farmers was calculated to be something between €0.5-0.7 million a year. Using pig herding as a habitat management tool would also reduce mulching and mowing costs by between €50,000-70,000 a year.

There would also be an appreciable effect on the forest's capacity to store water. This would allow for the retention of peak flooding volumes of between 100-200 m<sup>3</sup> of water. Improved flood control capacity translates into savings on alternative, engineered defence expenditures and damage mitigation measures of more than €3.6 million per flood event. Biomass production would increase, leading to a 30-50% increase in wood production and higher-value timber worth

between 3 and 10 times more. In addition, 20-60% of the surface area of wetland fish spawning zones would be restored. Although not possible to express in monetary terms, the study was also able to demonstrate marked improvements in biodiversity status across six habitat types, nine species of flora and 11 species of fauna.

From Kiš, A. and Stojnić, N. (2018) *Advocating ESAV in Bosut Forest Area: integrating biodiversity and ecosystem services in natural resource management. Case Study for GIZ Open Regional Fund for South-East Europe – Biodiversity (ORF BD) sub-project "Ecosystem Services and Valuation (ESAV) in Future Course of Action in South-East Europe Region"* prepared by Institute for Nature Conservation of Vojvodina Province, Novi Sad.

## HOW NERETVA AND TREBIŠNJICA FRESHWATER ECOSYSTEMS UNDERPIN THE REGIONAL ECONOMY



The Neretva and Trebišnjica River Basins span three economies and four political entities: Republika Srpska and Federation Bosnia and Herzegovina (both in Bosnia and Herzegovina), Croatia and Montenegro. Decision-makers at all levels are faced with difficult and complex choices as they attempt to weigh up development options and balance the land and water needs of different sectors, while also considering the natural environment.

It is perhaps hardly surprising that transboundary river basin management remains something of a challenge. While there is an urgent need to bring

different sectors and stakeholders to the table to discuss joint strategies for the shared water resources and ecosystems of the Neretva and Trebišnjica River Basins, a question remains as to how to secure the interest and commitment for such an integrated and collaborative approach. The purpose of the ESAV was to investigate and communicate to decision-makers what the shared waters contribute to the economy of the Neretva and Trebišnjica basins in terms of income and jobs. It focused on the four sectors that underpin the economy of the area: hydropower, agriculture, public water supplies and tourism.

This information was deemed to be both critical and urgent. The natural water regime is already substantially and permanently altered. Stretches of the Neretva and Trebišnjica have been channelized for navigation and hydropower systems, and surrounding wetlands have been drained for agriculture. Meanwhile, climate change is further intensifying the pressures on scarce water resources. While these threats are widely known, decision-makers across the region are continuing to make separate water management decisions that negatively affect both their own and each other's communities, economies, and the environ-

ment. They currently lack a comprehensive understanding of the value and interdependence of these shared water resources, or of the common costs that will result to all parties if freshwater ecosystems are converted, degraded and depleted.

The study underlined the massive economic values that are at stake. The gross primary returns from water use in just the four sectors covered are almost €450 million a year. Tens of thousands of jobs – and hundreds of thousands of livelihoods – depend directly on freshwater ecosystems. For example, hydropower facilities generate around 4,400 GWh of electricity a year from the waters of the Neretva and Trebišnjica, earning revenues of almost €380 million. About 16% of cropland in Federation Bosnia and Herzegovina is irrigated from the two rivers, generating more than €23 million in income and supporting around 5% of the population. In the Croatian portion of the basins, around a third of the population rely on farming, with tangerines – one of the most important export crops – worth more than €15 million in 2014. Meanwhile, in Republika Srpska, up to 80% of commercial wine production in the study area depends on irrigation, earning almost €4 million. Municipal water utilities distribute some 18 million m<sup>3</sup> a year of water from the Neretva and Trebišnjica basins in Bosnia and Herzegovina and Montenegro alone, contributing more than €16 million in public revenues. Last

but not least, tourism represents a still-small, but rapidly growing, sector. For example, visit numbers to the Neretva Delta have more than doubled over the last 5 years. By 2016 some 83% of tourists (more than 122,000 people) came specifically to enjoy freshwater-based activities such as rafting, kayaking, caving and bird-watching, generating direct spending of almost €7 million.

As is the case with almost all economic activities across the Neretva and Trebišnjica basins, hydropower, agriculture, water supplies and tourism depend heavily on water for their economic output, and yet also run the risk of impacting on the integrity and status of the very ecosystems that help to maintain waterflow and quality (and thus sustain their economies). The ESAV makes the point – and illustrates with hard economic evidence – that it is in everybody's interest to ensure that these shared water resources are managed in an integrated, transboundary way: for economic growth, sustainable development, environmental management and disaster risk reduction.

*From Drew, H. (2018) Streams of Income and Jobs: The Economic Significance of the Neretva and Trebišnjica River Basins. Case Study for GIZ Open Regional Fund for South-East Europe – Biodiversity (ORF BD) sub-project “Ecosystem Services and Valuation (ESAV) in Future Course of Action in South-East Europe Region” prepared by WWF Adria and Udruga Dinarica, Mostar.*

This type of multisectoral perspective, and the integrated approach to conservation and development that is implied, means that many ESAVs have been carried out with the purpose of **advocating for collaborative approaches to ecosystem management which recognise (and seek to secure) multiple values**. As shown in the boxed examples on the previous page, both of the ESAV case studies carried out under the ORF-BD project demonstrate the ways in which managing ecosystems for multiple values can generate markedly higher and more wide-ranging benefits than more traditional sector-based approaches, and at the same time requires that a far broader array of actors are included in planning processes<sup>31</sup>. For example, a participatory assessment of the benefits and values of 58 protected areas in the Dinaric Arc region highlighted the potential to re-orientate local planning systems in a way which brings rural development and biodiversity conservation together as partners working towards similar goals, rather than driving opposing strategies<sup>32</sup>.

Despite the focus on demonstrating ecosystem service values and making the case for more integrated conservation approaches, there are still relatively few examples of ESAV being used to **identify concrete instruments or measures with which to mainstream biodiversity and ecosystem service values into real-world development planning processes**. Most remain at a more descriptive or diagnostic, rather than applied, level, or are focused more narrowly on making rec-

ommendations only for environmental policy and planning. Thus, although a variety of policy instruments were identified for mainstreaming a sustainable biodiversity economy into national and sectoral development agendas in Montenegro, these instruments were envisaged to operate primarily through the national biodiversity planning frameworks<sup>33</sup>. In most cases, ESAV studies offer few practical solutions to improve either conservation or development outcomes.

There are also very few documented cases of **ESAV techniques being applied by non-environmental sectors**. One, rare, example involves an extended cost-benefit analysis to examine alternative adaptation options for Albania's power generation sector, which included, alongside more conventional financial costs and revenues, ecosystem service values, disturbance to people and property and vulnerability to natural disasters<sup>34</sup>.

To date there seem also to be still very few examples of ESAV to assess **biophysical aspects of ecosystem service provision**. Especially, evidence is lacking about the causality and attribution of given types and levels of services to particular ecosystem types, areas and quality. This is despite the wealth of biological, ecological and other scientific studies which describe the distribution and status of key species and habitats in South-East European economies. This situation does, however, seem to be changing, especially as economies attempt to operationalise the 2011-20 Strategic Plan for Biodiversity and Aichi Biodiversity Targets and follow associated provisions in the EU 2020 Biodiversity Strategy concerning ecosystem service mapping, assessment and valuation.

One example is the ongoing exercise to map, assess and value ecosystems and their services in Croatia using the Common International Classification of Ecosystem Services (CICES) and Mapping and Assessment of Ecosystems and their Services (MAES) frameworks<sup>35</sup>. In Montenegro, a pilot study and feasibility analysis has been carried out on the mapping and assessment of ecosystems and their services, valuing grasslands and forests in Piva and Komovi National Parks at € 757 million and €543 million respectively<sup>36</sup>. A case study of integrated ecosystem and economic accounting based on the System of Environmental Economic Accounting - Experimental Ecosystem Accounts has been used to develop physical and monetary accounts for the water purification services of Europe's rivers using nitrogen retention as a proxy, and demonstrating showed sustainable annual ecosystem service flows of €35.5 million for Bosnia & Herzegovina, €14.4 million for Croatia, €2.7 million for Macedonia and €12.4 million for Serbia and Montenegro<sup>37</sup>.

## CONCLUSIONS:

### HOW CAN ESAV REACH ITS FULL POTENTIAL?

**T**he application of ESAV approaches in South-East Europe represents a major step forward. An evidence base has been built up which serves to demonstrate and articulate much more clearly the linkages between ecosystems and socioeconomic growth. Studies show that just as the economic and development benefits of well-managed or intact ecosystems are significant, so the economic costs of ecosystem degradation and loss can be substantial – at local, national and regional levels, for multiple groups, and across many different sectors. In this sense, **ESAV is an extremely useful tool for generating and communicating new evidence and information.** There is a critical need to generate evidence of the values of biodiversity and ecosystem services for development planners and decision-makers, as well as other (especially local) stakeholders.

Another important lesson learned is that **ESAV provides a vehicle with which to integrate ES values into development policy and planning processes.** This is especially important in relation the types of tools that are conventionally used in economic and development planning and which largely omit consideration of environmental costs and benefits, such as national income accounts, investment appraisals, cost-benefit analysis and so on. ESAV enables a shift in the way in which development and conservation trade-offs are calculated – moving from approaches which fail to factor in ecosystem costs and benefits, to those which value and invest in ecosystems as an integral part of socioeconomic growth.

Following on from this, experience from the region also suggests that **ESAV can help to promote cross-sectoral interchange and dialogue, as well as fostering collaborative management approaches.** It offers a platform for the environmental conservation sector to extend its communications to other sectors, especially those that depend and impact on biodiversity and ecosystem services. Not only do ESAV studies demonstrate the high value of the natural environment, but the more holistic or integrated approach that they embody also typically underlines the importance of managing ecosystems for multiple benefits, rather than focusing on optimising the output of just one product or serving the interests of a single group or sector. In turn, this demands an integrated approach to planning which brings together different stakeholders and attempts to balance their interests. This represents a considerable departure from traditional development paradigms.

These lessons learned are of paramount importance. It is always important to remember that **ecosystem assessment and valuation is a means to an end, not an end in itself.** The primary aim is to both enable and encourage decision-makers to make more informed decisions, which will result in more effective, equitable and sustainable development outcomes. Here, however, it appears that ESAV has not yet reached its full potential. While a solid evidence base has been built up about the value of biodiversity and ecosystem services, there is less indication that this information is being acted on. Both public and private investment in the natural environment remains low, across the region.

The overwhelming focus of ESAV studies remains on demonstrating and making the case for ecosystem values, not on **proposing implementable actions and solutions to real-world development challenges.** Yet, however great the value of biodiversity and ecosystem services is demonstrated to

be in theory, this means little unless there are real changes in the conditions and opportunities that people face as they go about their economic business. And however convinced decision-makers are that it is in the public interest to conserve the natural environment this has minor impacts unless people have sufficient incentives, adequate finance, and perceive there to be tangible gains from doing so. Still, there relatively few ESAVs follow up their data and analysis with concrete policy solutions and instruments targeted towards 'capturing' ecosystem values as investments, incentives and finance in support of conservation and sustainable development.



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\* This designation is without prejudice to positions on status, and is in line with UNSCP 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence