

IMPORTANCE OF SOCIO-ECOLOGICAL RESEARCH AND THE SCIENCE-POLICY INTERFACE IN ENVIRONMENTAL SUSTAINABILITY IN ALBANIA

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ABSTRACT

In this opinion, I stress the importance of socio-ecological studies and close cooperation between the academic world, decision-making and investors in environmental sustainability. It is based on our experience in years of environmental studies in Albania, recently in our efforts to protect Vjosa/Aoos River from HPP plans, and better understanding the natural values and the links between ecosystem integrity and economic, social and cultural integrity. The aim is to stir up the politics and all the related social groups to make serious attempts towards strengthening the quality of knowledge for all actors in this process as a need in balancing better the development with the conservation natural resources. Setting up a round table Science-Policy is recommended as interface between the academic world and decision-making in all major infrastructure projects. Such an experience can be of interest not only for Albania, but also for other countries on a Planet, suffering today from severe environmental concerns.

Keywords: the socio-ecology concept, infrastructure projects in Albania, Vjosa/Aoos River, Science-Policy interface.

1. Socio-ecological research - an interdisciplinary approach

Socio-ecological research is an interdisciplinary approach dealing with biophysical aspects, as well as political, economic, and cultural elements (Castillo et al., 2020). The concept was considered in our efforts to protect Vjosa River from damming and HPP plans in Albania (Schiemer et al., 2020; DCM 60/2022). The natural rivers and their floodplains provide a wide array of ecosystem services, such as natural purification of water, vast groundwater aquifers for drinking water supply and agriculture, flood mitigation, maintenance of natural biodiversity, and unique opportunities for recreation and tourism development (Vjosa Memorandum, 2016). Worth to mention that ecosystem services are the benefits that flow from nature to people: Regulating: air quality, water and climate regulation, reproduction, selfpurification; Supporting: protection, nutrient cycling, water cycling, formation of beaches, or fertile soils, photosynthesis; Provisioning: food, raw materials, biomass, fuel, clean air and water, and natural medicines; Cultural: ethical values, existence values, health cure, inspiration, recreation and ecotourism (Troy & Bagstad, 2009;

EWA, 2022; etc.). Ecosystem services have been widely recognized by EU policy (e.g. EU strategy to halt biodiversity loss by 2020, EU COM Green Infrastructure Initiative) as a useful tool for a holistic approach to solve multiple ecological and socio-economic challenges, and also are part of regulations for environmental impact assessments (EIAs).

Here in this opinion, I will share our experiences regarding the importance of socio-ecological studies, and the science-policy interface for Albania in the quality of infrastructural investments, the quality of the related EIAs, their professional approval and their profession follow-up during the construction and working phase. I have already shared the opinion to Albanian community in Miho (2022); but it can be of interest to other countries on a Planet suffering today from severe global environmental concerns, such as the climate change, pollution and biodiversity loss (UN, 2021).

2. Infrastructural projects and initiatives in Albania

Public infrastructural projects and initiatives, such as a new roads and tunnels, airports, harbors or power plants, projects on urban sanitation, incinerators, urban 'renaissance', all are flourishing in Albania, most of them realized through a public-private partnership (PPP). Additionally, private projects are seeking mostly in urban and touristic infrastructures, or other services, along the sea coast, but not only, from the biggest towns to the remote pristine mountainous areas. Even protected areas or other sensitive areas including those with international values are not saved (Fig. 1; see Miho, 2018; Miho *et al.*, 2017)! Of course, building within the PAs cannot be considered friendly with nature, and not sustainable in principle. On the one hand, it indicates a good economic development of the country. But are all these projects and initiatives often environmentally healthy? Is there any scientific opinion considered? Is there any socio-ecological research in environmental sustainability? How is the scientific quality of these researches and the corresponding authors? What is the environmental approach of these investments during the construction and then after during the working phase? Experts working in conservation biology are skeptic and critical. In some projects, decision is somewhat arbitrary, fast, doubtful, and controversial.



Figure 1. Both hillsides are cut away at the Kalivaçi Dam site on the Vjosa River, but stopped due to the decision of Albanian government to protect the whole Vjosa riverscape in January 2022 (Wendle, 2016).

3. EIAs of the infrastructural projects

Some EIAs considered by our group of experts at the Albanian universities and in cooperation with EU experts, were evaluated as rushed and superficial, not fulfilling the required standards. It can be for the scarce performance of their experts, or because of short time for the entire assessment, and the lack of essential data; i.e. Diku *et al.*

(2017): Independent review regarding the HPP construction in the Valbona Valley; Miho *et al.* (2020): Vjosa river: Review of the Main Environmental and Social Impact Assessment (ESIA) for the HPP Kalivaçi (Fig. 1); Schiemer *et al.* (2021): Review of the Main Environmental and Social Impact Assessment (ESIA) for the HPPs on the Shushica.

Miho *et al.* (2017) in their experience as advisers in the National Environmental Agency stressed somehow the cursory and non proper examination of the project files by the responsible institutions; scarce enforcement during the construction or the working phase is also observed in some projects (i.e. Shala, 2022). Let me mention some bad practices and behavior: unfriendly construction of HPPs, industrial works, roads, etc.; poor land use practices in watershed areas, like deforestation, excessive grazing, fires, gravel mining in river beds, mines and quarries; the intense urbanization and tourism, especially in the western coastal area; riverine and coastal pollution due to the scarce waste management; still the limited authority of governmental bodies, combined with low public awareness and education on environmental and nature protection towards the new development in Albania (Miho, 2018).

The experience in developed countries, but also in Albania, show that it has resulted in profound and long-term negative environmental consequences and trends, e.g. increased frequency of catastrophic floods; slope, riverbank and coastal strong erosion; reduced water quality; dwindling of groundwater resources in alluvial floodplains; and loss of biodiversity (Schiemer *et al.*, 2018; Miho *et al.*, 2021, Mullaj *et al.*, 2017); of course these have negative consequences for the country, for people, for the climate, and the quality of our life. Moreover, it requires costly restorative measures for future generations to reverse the degradation of ecosystems, with negative effects for people, the climate and the planet.

Figure 2. The map of the main watersheds of Albania; the Vjosa river watershed is circled in red (elaborated from https://en.wikipedia.org/wiki/List_of_rivers_of_Albania).



4. Our experience in Vjosa/Aoos River

Vjosa/Aoos River is a transboundary ecosystem shared between Greece and Albania (Fig. 2), and the last free flowing river in Europe, outside Russia. Due to its hydrology and biodiversity, the River is considered a riverine ecosystem of European significance (Acta ZooBot Austria, 2018). A total of 1175 species are known to date; 39 species are endangered according IUCN, and 119 are on the Albanian Red List (2013). 148 species are listed in Annex 1–3 of the Berne Convention; 41 species in the Bird Directive; 78 species in the Habitats Directive (Meulenbroek *et al.*, 2020). On the other side more than 40 HPPs were planned to build since 2007 (Fig. 1), with eventual high impact in riverine ecosystem, biodiversity and related ecosystem services.

Our efforts focused to protect the River from dams started since year 2014, as cooperation with biology, hydrogeology and chemistry experts from several Albanian, Austrian, German and Italian institutions. More than 10 joint field trips research were organized on widely unexplored areas of the Vjosa and its tributaries. The aim was to find high quality scientific evidence and make conservation efforts more effective, understand better the natural values of Vjosa and the links between ecosystem integrity and economic, social and cultural integrity in view of enhancing the well-being of the area. International activities were organized in Tirana aiming the consultation and dissemination with governmental institutions, the local representatives, and NGOs. Moreover, Vjosa Research Centre was established in Tepelena (Fig. 3). Thanks to all efforts in years, academia and NGOs, Albanian government designated recently the whole Vjosa River Valley a Natural Park (IVth Category; DCM 60/2022); but a working group led by the Ministry of Tourism and Environment started planning for the establishment of the National Park on River Vjosa and its most important tributaries in Albania (Fig. 4; CAN, 2022).

Figure 3. During a field working meeting of experts at the Vjosa Research Center in Tepelena in September 2022.





Figure 4. The Round Table established in the Ministry of Tourism and Environment involving national and international experts started working in October 2022 for the establishment of the National Park on Vjosa Riverscape and its most important tributaries (turizmi.gov.al).

5. Next steps in Vjosa/Aoos River

Actually, the new project has started, focused further on the environmental assessment of the Vjosa riverscape as the basis for an integrated water management and sustainable catchment development (APPEAR Project 2022-2026), supported by the Austrian Development Agency (ADA). It is

a cooperative and interdisciplinary study of Albanian and Austrian scientists that will provide evidence-based guidance towards integrated management of a valuable water resource to ensure its long-term use. Four cross-cutting researches will help to achieve a truly participatory, interdisciplinary and translational character: 1) monitoring and understanding the fundamental physical regime governing the Vjosa riverscape; 2) maintaining the Vjosa riverscape's ability to support biodiversity; 3) ecosystem dimensions behind clean water provisioning, a key fluvial ecosystem service; 4) Science and Society interactions for sustainable development. APPEAR Project is simultaneously in synergy with two other ADA projects: The ESPID4Vjosa project (2022-2026) - implemented by two NGOs, Euronatur-Ecoalbania consortium (German-Albanian), aiming to encourage the decision-making for good water management based on scientific findings. The third EUSIWM project (2023-2027), implemented by the Water Resources Management Agency (AMBU) in Tirana, aims to draw up the Vjosa River Basin Management Plan, with the aim of protecting natural values and supporting and cooperating between interested institutions/groups within the Vjosa basin.

6. The science-policy interface

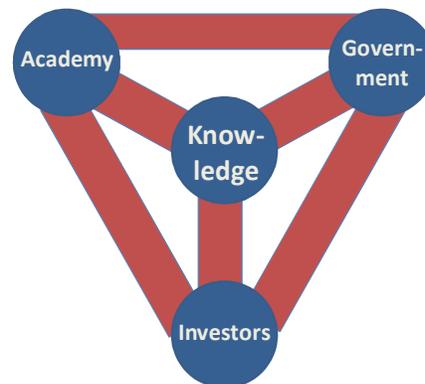
Establishing a platform across the science-policy interface is considered crucial. It was often stressed during working in years with other international experts: in Albanian rivers (Miho *et al.*, 2005); in Bovilla Reservoir (Miho *et al.*, 2009); recently in Kune-Vaini wetlands (Miho *et al.*, 2021); in protection of Valbona River (Diku *et al.*, 2017); and especially during last 10 years in protection of Vjosa/Aoos River (Schiemer *et al.*, 2018; 2020; 2021; Meulenbroek *et al.*, 2020; etc.). The platform would require a clear participation and decision structure where science can 'speak to' policymakers, authorities and other stakeholders, and a direct involvement of political decision makers in the discussion process; it can be a Round Table' involving national and international experts (Fig. 4) in order to allow for informed decision making on key identified issues related to each important investment in the country (IWRS, 2019 – Petition of Scientists For Vjosa River). Such a communication way is noted only in emergency situations in Albania, such as Technical Committee of Experts for anti-COVID measures, Reconstruction Commission from the earthquake consequences, etc. We insist that it can be institutionalized even for normal situation, for major projects and initiatives, public or private, focusing environmental sustainability and sustainable development.

7. The Academia-Government-Investors trinity

A strong Academia-Government-Investors relationship (Fig. 5) is quite necessary to guarantee environmental sustainability, proper management and sustainable use of natural resources, better quality of life for us and future generations. It seems a vicious circle, somewhat utopia, but education, especially higher education is a key driving factor for economic growth. The high performance of the academia people (staff and students), their scientific activity, as well as the quality of the degrees, greatly condition the performance of decision-making and policy-making institutions, but also the performance of investing companies, the quality of projects, their implementation, and the quality of working activity afterwards. There are gaps in Albania in this triangle, at each of its corners,

objective and subjective, historical and born during the economic transition (after yrs. 1990), but it does not mean that the politics and all the social groups should not make concert efforts together to do the best possible.

Figure 5. Knowledge is vital either for the academic world or all other parties: decision- and policy-making and investors.



It is strongly suggested the politics make serious attempts to strengthen the professional knowledge and support capacity building, either in universities, research institutions and also public agencies, proper staff recruitment, especially quality of young experts, proper motivation, and promotion of their scientific performance. It is needed first in universities, but also in research institutions, in public agencies, and also in their respective regional directorates, as well as ministerial or local government directorates; scientific performance is also needed by the experts during the construction or working phase of the investments, too.

On the other side, as the scientific community we are in debt to build up an integrated and more successful applied research, focused in socio-ecological aspects, to face properly with the urgent needs rising from the economic development. Only in this way Albania will '*build the resilience of our societies against future threats, such as the impacts of climate change, forest fires, food insecurity or disease outbreaks*' as the EU Biodiversity Strategy 2030 calls for. Moreover, the most evolved opinion nowadays is that the science and democracy go together (i.e. KNAW 2014); the more policymakers let science 'talk' to them in important decision-making, the healthier democracy will likely be.

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