Science-policy interfaces for biodiversity governance

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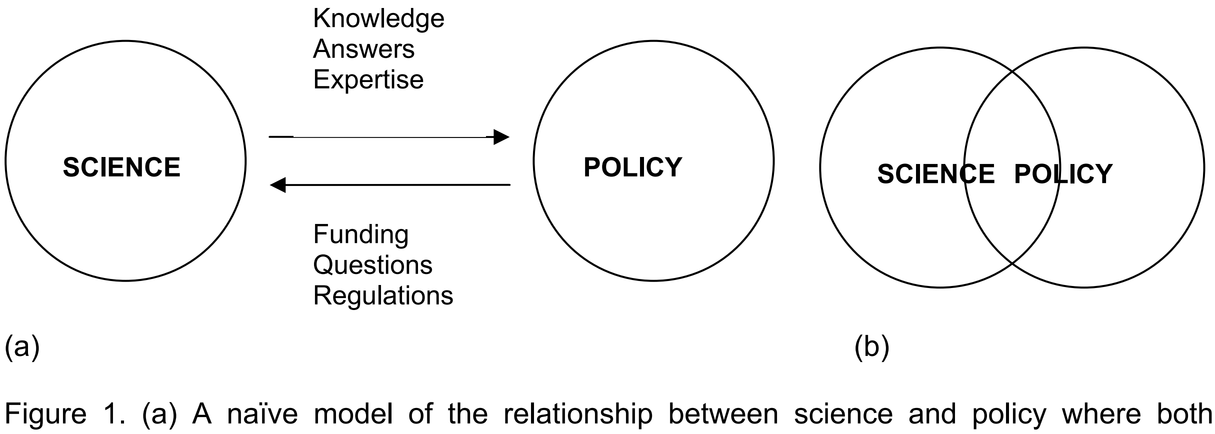
If we as scientists were given floor next week to present a recommendation to European Commission, what would it be?

Our suggestions were the following:
1) Public should be made aware that biodiversity and socio-economic issues are closely related
2) Increase taxes to fossil fuels and use the money for improving the technologies of alternative energy production
3) Improve the heterogeneity of landscapes and ecosystems at multiple scales
4) Implement long-term planning
5) Abandon economic growth system
6) Implement rational landscape-planning
7) More interaction between science and policy
8) Reduce production-oriented CAP subsidies and target more money to agri-environmental schemes
9) Allocate more money for biodiversity research
10) Coordinate adaptive management and societal feedback
11) TV-free day a week
12) Impose taxes and other mechanisms to change companies more biodiversity-friendly
13) Allocate more resources to GMO-studies
14) Promote organic farming
15) Promote vegetarian nutrition

One of the aims of biodiversity science is to solve environmental and societal problems related to the issue of biodiversity maintenance. The task is not easy while it presumes the understanding of complex self-organising natural and social systems. The role of science is to provide policy-makers with scientific knowledge – with explanations and predictions (Figure 1(a)). Scientists as experts provide understanding that is the prerequisite for action – for decision-making processes. Science also contributes to the emergence of issues on political agenda. Research policy is driven by political considerations as the results of science have an impact on policy prioritisation.



(a) (b)

Figure 1. (a) A naïve model of the relationship between science and policy where both categories are mutually exclusive and independent and (b) science and policy as intersecting and co-evolving disciplines – i.e. science-policy interfaces.

One of the major policy issues where scientific knowledge is substantial, is technology. Science acts upon the environment and society via technology, e.g. nuclear power technology that is the source of nuclear wastes and causes societal risks giving thus ground to major political issues in relation to problems with nuclear technology. Environment also acts upon science – anthropogenic climate warming as an important issue on political agenda determines the prevalent research directions in climate science.

Derived from the latter we can conclude that science and policy are coevolving domains of human activity not two separate and mutually exclusive categories (Figure 1 (a)) that find their intersection in science-policy interface (SPI) (Figure 1 (b)). The definition of science-policy interfaces can be formulated as the following: *“Science-policy interfaces are social processes which encompass relations between scientists and other actors in the policy process, and which allow for exchanges, co-evolution, and joint construction of knowledge with the aim of enriching decision-making.”*

However, one has to recognize that the issues concerning society and environment include uncertainty, non-linearity and complexity. This is one of the tasks of SPI to communicate on the possible choices, uncertainties and limits of scientific knowledge, and to enhance the inclusion of other knowledge into decision-making process (local, indigenous, political, moral and institutional).

Science can broadly be divided into two - curiosity-driven (i.e. aspiration to understand and explain the world around us; comparable to objective knowledge) and issue-driven (i.e. to solve some particular societal or environmental problem; comparable to subjective knowledge). Urgent need to find solutions for serious environmental problems has influenced science to shift more towards issue-driven science. Nevertheless, these two approaches in science are in practice usually combined. The task of SPI is to balance the output of both sciences and to enable the formulation of these outputs into policy-relevant knowledge.

Science brings about explanations and predictions for action, for solving the problem. However, predictions that are related to complex environmental processes (e.g. climate change), are often loose being presented as scenarios or narratives, and may thereof not provide the ultimate and optimal solutions for policy-makers (as it is generally believed). Nevertheless, such predictions enable to choose “better” possible options and to justify the actions undertaken to solve the problem.

The boundaries between science and policy are fuzzy as the intersection of science and policy are closely related to social processes. Therefore, the aim of SPI is to enable the recognition of the interdependencies between the social and scientific systems and to facilitate the dynamic exchange of different knowledge across the border of science and society.

SPI should include a reflection of research priorities and research organisation. The critical assessment of scientific output in the point of view of users’ needs (and various potential user groups) and other knowledge should be considered in SPI. SPI processes should facilitate the scientists to realize and exercise their responsibility as knowledge holders and technology developers.

There are a number of challenges in SPI that need to developed and considered: enlargement and reinforcement of scientific quality and validation processes, the development of transdisciplinary research methodologies, the facilitation of transparency and participation – i.e. the role of stakeholders and public. The translation of scientific knowledge into policy-relevant ‘language’ and policy knowledge into scientific knowledge remains another challenge to be evolved by SPI. Diversity of knowledges and intelligences have to be included into the communication between science and policy. Dissemination channels should be developed to provide different user groups with scientific knowledge.

Q: Are there any good examples of science-policy interface?

A: One good example of science-policy interface is the EU 6 Framework project HERMES (research to study deep-sea ecosystems) that includes science implementation panel carried out by the representatives of European Commission, UNEP, WWF, oil company, scientists. The aim of the panel is to disseminate the results of scientific research to stakeholders, to change information and to discuss the possible application of results for organising the protection of deep-sea ecosystems more effectively.

Proposition: Being active in science-policy interface should somehow be rewarded in academic world.

A: Some academic institutions accept it, but this is not the subject at present. That is largely due to the fact that scientist themselves maintain this closed system of science.

Q: Most of the examples presented in the lecture were about science-policy interfaces at macro- or global scale. Is it because the implementation of science-policy interface is more difficult at smaller or local scale?

A: Local-scale science-policy interface could be even more effective – communication is easier, local dynamics can be considered. There are also a number of examples about effective cooperation at local level.

Q: Isn't there a danger of political corruption – politicians "listen" to you while are actually trying to force the dialogue toward the direction that is useful for them.

A: Of course there exists such a danger - corruption exists on all levels of politics. The problem often lies in the fact that people do not trust each other. But there are still several very good examples of successful and effective science-policy interface – e.g. on EU level the application of Birds Directive and Habitat Directive.

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