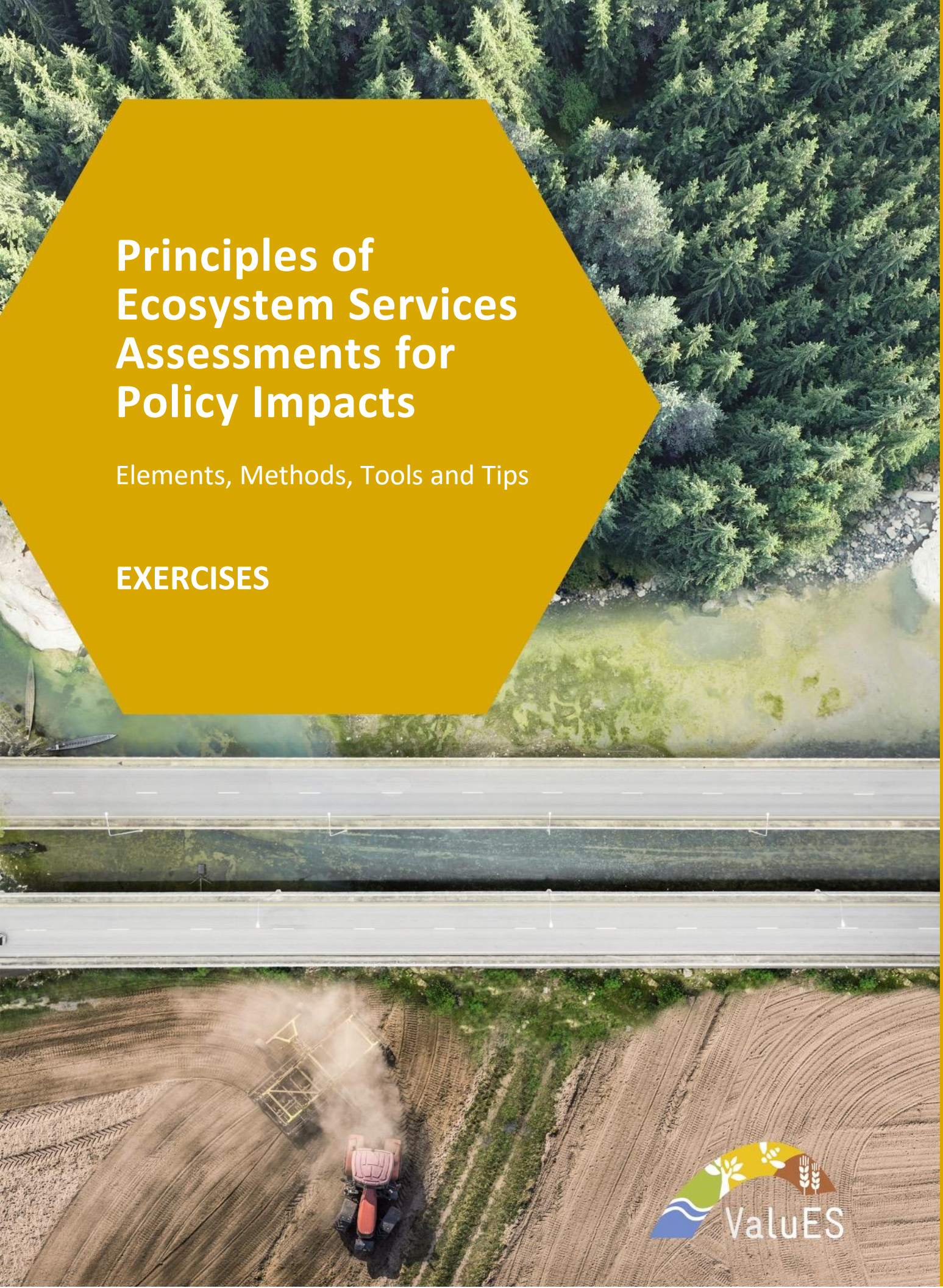

Principles of Ecosystem Services Assessments for Policy Impacts

Elements, Methods, Tools and Tips

EXERCISES

ValuES

ValuES

PRINCIPLES of Ecosystem Services Assessments for Policy Impacts

EXERCISES

IMPRINT

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

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GloBe – Department Sector and Global Programmes
Division Climate Change, Environment & Infrastructure

This project is part of the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag.

On behalf of the BMU and as part of IKI, the project "ValuES: Integrating ecosystem services into policy, planning and practice" is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in close collaboration with the Helmholtz Centre for Environmental Research (UFZ) and the Conservation Strategy Fund (CSF). Since 2012 the project provides practitioners and decision makers in partner countries with the skills to select and effectively use methods and instruments to identify, prioritize, assess, value and integrate ecosystem services into national and local policies and strategies. Additionally, since 2015 ValuES has been supporting the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) on its concept of multiple values of nature and benefits, on the catalogue of policy support tools and methodologies, and on its capacity building programme. *www.aboutvalues.net*

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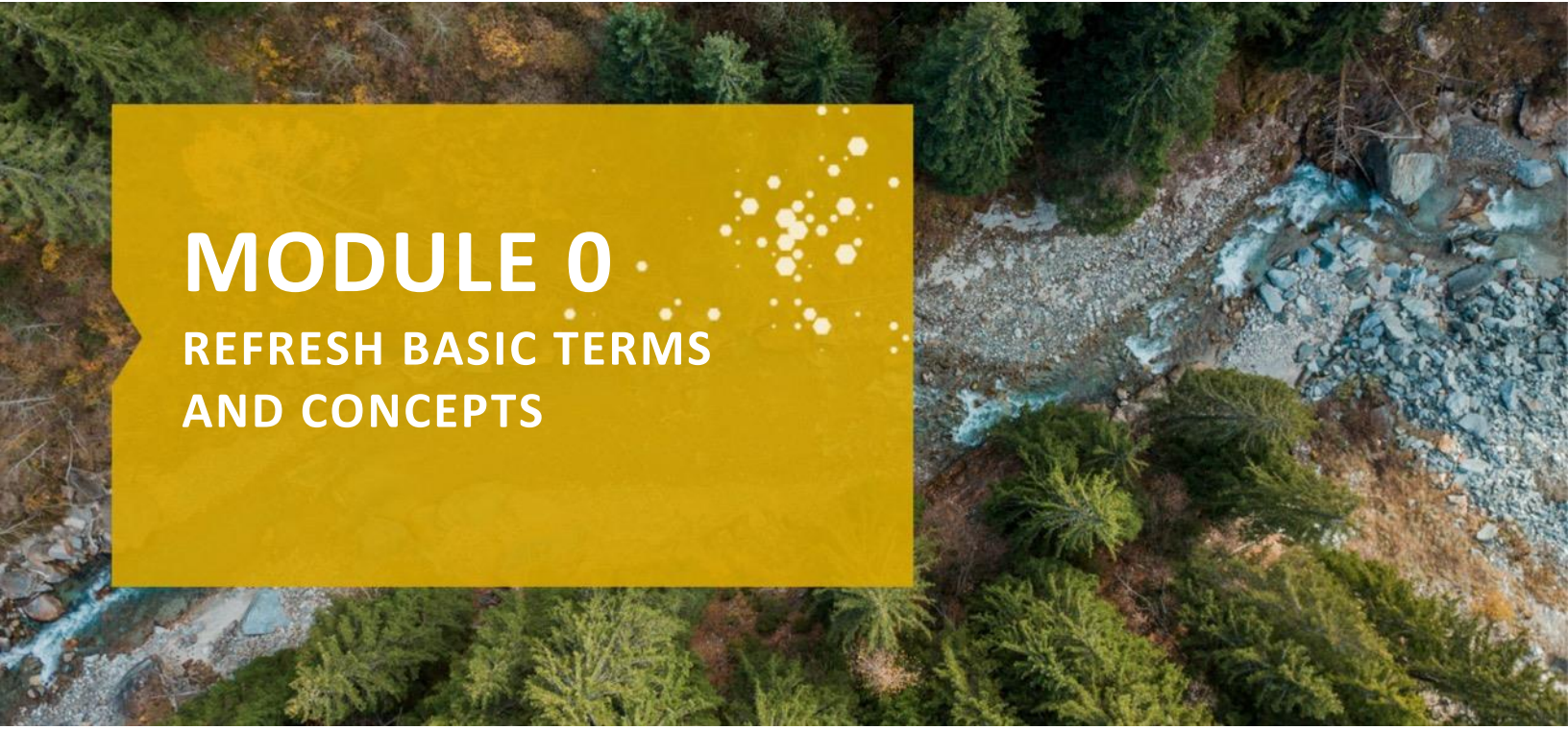
INTRODUCTION

This booklet contains all exercises and supplementary materials for the training course "Principles of Ecosystem Services Assessments for Policy Impacts." This training focuses on the appropriate conception and design of Ecosystem Services Assessments and Valuations (ESAVs) to achieve policy impacts. It provides hands-on tools to tailor policy and research questions, perform initial scoping, identify suitable assessment and valuation methods, design ES indicators and communicate effectively with stakeholders and target audiences. The training course´s objectives are listed below.

OBJECTIVES

1. Understand the main characteristics of ecosystem services, including spatial and temporal dynamics, aspects of joint production, connectivity, impacts, dependencies and trade-offs.
2. Learn how to design, conduct and use the results of ESAVs and become familiar with some important challenges that may arise at different stages.
3. Get an overview of international ESAV processes and products in the Framework of IPBES and the Strategic Plan 2011-2020 of the CBD.
4. Learn about basic principles and elements for the construction of ES indicators and for ecosystem services mapping.
5. Reflect on how ESAVs could be integrated into a policy-advisory process and explore how different methods are related to specific decision-making situations and policy contexts.
6. Review crucial elements for effectively communicating the importance of ES and the results of ESAVs.
7. Acquire skills for influencing decision-making and policy.

Please follow the trainers' directions and advice, since some exercises might be adjusted or left out, according to each specific situation.



MODULE 0
REFRESH BASIC TERMS AND CONCEPTS

Exercise 1 (plenary discussion): Ecosystems and Assessments

Participate in a plenary discussion regarding the following questions:

1. ***What is an ecosystem?***

   What do you think are the defining elements of an ecosystem?

2. ***What are ecosystem services?***

   Think about the difference between a service and a function. What do you think is the main purpose of ecosystem services and how are they related to human activities and human well-being?

3. ***What is an ecosystem service assessment?***

   Name some of the crucial elements and objectives of an ecosystem service assessment.

4. ***What is an ecosystem service valuation?***

   Consider the concept of “values” and think of monetary and non-monetary values. Why do you think is it important to value ecosystem services?

8. ***What is the difference between an ecosystem service assessment and an ecosystem service valuation?***

   In your own words, what do you think is the main difference between an ecosystem service assessment and valuation? How are the two related to each other and in what way do they differ?

MODULE 1
MAIN CHARACTERISTICS OF ECOSYSTEM SERVICES

Exercise 2 (group work):
Main Characteristics of Ecosystem Services and Challenges

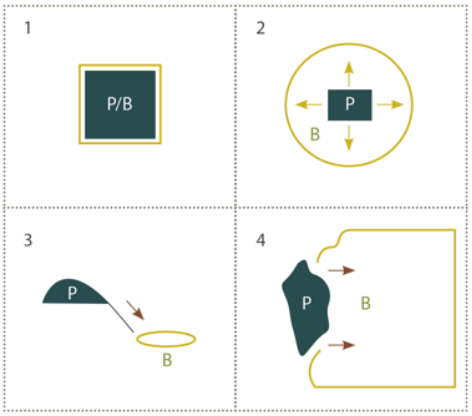
Discuss and answer the following questions within your work group. Select one of the team members to present your findings in plenary.

1. ***Identify one real-life example of an ecosystem service (ES) for each of the spatial dynamics shown in the figure below.***

2. ***For each example, identify two potential beneficiaries of the provision of the ecosystem service.***

Make use of your own work experience and personal knowledge when answering the questions. Use cards of different colors to write down your answers (one color for ES examples and another one for beneficiaries) and pin them next to each one of the squares.

SPATIAL DYNAMICS:



In panel 1, both ES provision and benefit occur at the same location. In panel 2, the ES provision occurs in one place and the benefits are received in the surrounding landscape. Panels 3 and 4 illustrate ES that have specific directional benefits. In panel 3, down slope areas benefit from ES provided in uphill areas, whereas in panel 4, the ES is provided for an outside area, in a specific direction (adapted from Fisher et al. 2009).

Supplementary information for exercise 2 (group work): List of ecosystem Services

Ecosystem services and their symbols. Adapted from MEA (2005) and TEEB (2010). Copyright of ecosystem services illustrations: Jan Sosse. For more information please write to teeb@ufz.de

1. **Provisioning services are ecosystem services that describe the material outputs from ecosystems. They include food, water and other resources.**

	**Food**	Ecosystems provide the conditions for growing food – in wild habitats and in managed agro-ecosystems
	**Raw materials**	Ecosystems provide a great diversity of materials for construction and fuel.
	**Fresh water**	Ecosystems provide surface and groundwater.
	**Medicinal resources**	Many plants are used as traditional medicines and as input for the pharmaceutical industry.

2. **Regulating services are the services that ecosystems provide by acting as regulators, e.g. regulating the quality of air and soil or by providing flood and disease control.**

	**Local climate and air quality regulation**	Trees provide shade and remove pollutants from the atmosphere. Forests influence rainfall.
	**Carbon sequestration and storage**	As trees and plants grow, they remove carbon dioxide from the atmosphere and effectively lock it away in their tissues.
	**Moderation of extreme events**	Ecosystems and living organisms create buffers against natural hazards such as floods, storms, and landslides.
	**Waste-water treatment**	Micro-organisms in soil and in wetlands decompose human and animal waste, as well as many pollutants.
	**Erosion prevention and maintenance of soil fertility**	Vegetation cover helps avoiding soil erosion, which is a key factor in the process of land degradation and desertification.
	**Pollination**	Some insects and animals transfer pollen, allowing fertilization of crops. 87 out of the 115 leading global food crops depend upon animal pollination, including important cash crops such as cocoa and coffee.
	**Biological control**	Ecosystems are important for regulating pests and vector borne diseases.

3. **Habitat or supporting services underpin almost all other services. Ecosystems provide living spaces for plants or animals; they also maintain a diversity of different breeds of plants and animals.**

	**Habitats for species**	Habitats provide everything that an individual plant or animal needs to survive. Migratory species need habitats along their migrating routes.
	**Maintenance of genetic diversity**	Genetic diversity distinguishes different breeds or races, providing the basis for locally well-adapted cultivars and a gene pool for further developing commercial crops and livestock.

4. **Cultural Services include the non-material benefits people obtain from ecosystems. They include aesthetic, spiritual and psychological benefits.**

	**Mental and physical health**	Natural landscapes and urban green spaces plays an important role for maintaining mental and physical health.
	**Outdoor recreation**	Visiting of natural landscapes provides opportunities for recreation, leisure and enjoyment.
	**Aesthetic appreciation and inspiration for culture, art and design**	Language, knowledge and appreciation of the natural environment have been intimately related throughout human history.
	**Spiritual experience and sense of place**	Nature is a common element of all major religions; natural landscapes also form local identity and sense of belonging.

Exercise 3 (group work): Trade-offs

Discuss and answer the following questions within your work group. Select one of the team members to present your findings in plenary.

1. ***According to your experiences, give an example for each type of trade off that was presented and identify management challenges associated with each type.***

   Consider the different types of trade-offs that have been presented and discussed by the trainers (trade-offs in time, space, and ES). Draw from your own life and work experiences and identify at least one example per type of trade off. Identify the reasons why it is difficult to effectively manage that trade off.

2. ***How are different groups of people affected by trade-offs?***

   Choose one of the trade-offs from the previous question and identify the key stakeholders involved. Describe how benefits and costs are distributed among the different groups. Keep in mind that trade-offs can have positive effects on one group and negative effects on another. Think about distributional issues (social, economic and ecological).

3. ***What types of economic activities or policies may lead to the three different types of trade-offs? What kind of incentives would be needed to address the different types of trade-offs? Give an example of each one.***

   Based on your life and work experience, reflect on economic activities and policies that affect the spatial and temporal provision of services. Also, think about incentives or other ways to address the different types of trade-offs. For example, what can policy makers do to shift from a less sustainable to a more sustainable path?

MODULE 2
INTEGRATING ESAV INTO POLICY PLANNING

Exercise 4 (group work): Understanding and Framing Policy Issues in Exportul

Read the Bykipedia of the country Bakul and its province Exportul. Then, split into five groups. Each of the groups will answer one of the questions below and write down their findings in a flip chart or panel. Then, each group will rotate and complement/discuss the answers of the next group regarding the next question. All groups will complement/discuss all questions. Select one person who will explain your findings to the other participants, and who will present the results in plenary.

1. ***What are the main policy issues in Exportul?***

   Consult the Bykipedia of the country Bakul to identify (some of the) main policy issues in Exportul. Which one do you think is particularly important, and why do you think so?

2. ***What are the main environmental issues in Exportul?***

   Consult the Bykipedia of the country Bakul to identify (some of the) main environmental issues in Exportul. Which one do you think is particularly important, and why do you think so?

3. ***What kind of policy instruments is the government using to promote development in Exportul?***

   Consider the policy instruments that were discussed earlier in the presentation. From the Bykipedia of the country Bakul, try to identify as many examples as you can of policy instruments implemented in Exportul.

4. ***Where in the policy cycle can you place the different initiatives that are being undertaken in Exportul (problem definition, agenda setting, policy development, implementation, evaluation and awareness raising)?***

   Consider the policy cycle that was discussed earlier in the presentation. From the Bykipedia of the country Bakul, try to identify an example of initiatives in Exportul that relate to each one of the steps in the policy cycle.

5. ***What would be some of the entry points that would facilitate a change in the development path of Exportul?***

   Consider the concept of entry point discussed earlier in the presentation. Form the Bykipedia of the country Bakul try to identify potential entry points for the case of Exportul. Also, draw on your own experiences in policy or decision-making, and try to distinguish possible opportunities for changing or affecting the political agenda of the province.

Supplementary information for exercise 4 (group work): Understanding and Framing Policy Issues in Exportul

REPUBLIC OF BAKUL	
Capital:	Hanku (3 Million)
Population:	15 Million (2010 estimate)
Total Area:	300.000 km^2
Official Language:	Bakulesi
Political parties:	Social Rights Party (SRP), rather conservative and ruling since the last elections Power to the People (PTP), which is popular in the rural northern districts
Independence:	1964

Bakul

From Bykipedia, the free encyclopedia

Bakul, officially the Republic of Bakul (Bakulesi: Sathalanalat dschoik Bakul), is a representative democratic republic. The political history of the country has been turbulent. Since its independence from colonial powers in 1964, it has had numerous political turnovers.

Bakul is a developing country with a market-oriented economy. From the start, the economic development of Bakul has been strongly influenced by external markets. Periods of high economic growth have therefore succeeded basically due to export booms of commodities such as rubber or sugar. This development pattern, with inadequate export diversification, has left the economy vulnerable to chronic shocks. Historically, the country's economic performance has been tied to exports which provide hard currency to finance imports and external debt payments. Although these exports have provided substantial revenue; self-sustained growth and a more egalitarian distribution of income have proven elusive.

Its capital city is Hanku, which was declared a World Heritage Site by UNESCO in the 1970s for having the best preserved and least altered historic centre worldwide. The beautiful beach promenade of Hanku is especially renowned and hosts plenty of restaurants (Bakulesi and international cuisine), cafés and hotels. The cuisine in Bakul is excellent and has recently received international acclaim due to its diversity of natural ingredients and mix of ancient and modern techniques.

Demographics

Bakul is a multi-ethnic country formed by a combination of different groups over centuries.

- As of 2016, total population is 15 Million, with 55 % living in urban areas and 45 % in rural areas.
- The population growth rate is currently 1.9% per year, but declining slowly.
- 31.3% of Bakul's total population is classified as poor, including 9.8% that is extremely poor (2016).
- Bakulesi is the primary language of the country coexisting with several indigenous languages.
- The main indigenous groups include: Tabakalues and Hankules (Northern territory), and Bankas and Kulres (Southern territory).
- Urban areas are home to a growing middle class, as well as growing areas of extreme poverty, especially due to the influx of unskilled and semi-skilled rural immigrants.

Economy

- Bakul is a developing country with a market-oriented economy. The IMF estimates its 2016 per capita income at US$5,195. It has a medium Human Development Index score of 0.723 based on data from 2016. Historically, the country economic performance has been tied to exports, which provide hard currency to finance imports and external debt payments. Although these exports have provided substantial revenue, self-sustained growth and a more egalitarian distribution of income have proven elusive.
- The current administration is trying to increase social spending and improve social conditions through promotion of key cash crops such as palm oil and through the development of new income sources such as tourism and textiles. However, most of Bakul's industry is oriented towards servicing domestic markets and since income per capita is low, it is difficult to make the market grow. In addition, levels of education and medical services still have to be improved for the majority of the population.
- Agriculture, forestry and fisheries: Presently, the main export crops are palm oil, fish and shrimp, and, to a lesser degree, timber. Fluctuations in world market prices can have a substantial domestic impact. Small-scale fishing and subsistence agriculture remain the backbone of the economy for more than 45% of the population living in rural areas. Timber companies are having difficulties renewing licenses since most of the remaining forests are either in remote areas, or within indigenous territories. Nevertheless, most of the benefits coming from ecosystems in terms of goods and services do not have a visible impact in national accountings
- Industry is largely oriented towards servicing the domestic market, with some exports reaching to countries within the region. However, this is meant to change, considering plans from the Ministry of Transport to expand by 2025 the existing Historic Harbour. The objective by 2025 is to achieve a handling capacity of 60 million tons of cargo/year.
- Tourism is gaining importance as the nations' fastest growing industry in terms of revenue. It is mainly based on the country's archaeological monuments, ecotourism in the rainforest, adventure tourism in the Mighty Mountains and beach tourism. Beach resorts are plentiful along the coast with a couple of new luxury resorts having recently been built on the south-eastern coast. Another tourist hot-spot can be found just north of Hanku city, the Nelam wetlands. They are part of the Ramsar List of Wetlands of International Importance and a mecca for birdwatchers. British tourists particularly love this beautiful and varied landscape with its countless birds.

Climate

- The great variety of Bakul´s climate zones is largely determined by altitude. In the mountain valleys, the weather is mild all year around. The rainforest areas of the lowlands are characterised by a humid climate. The coastal area has a tropical climate with a severe rainy season. Bakul's **seasons** are defined by how much rain falls during a particular period.
- The year can be split into two distinct periods, the dry season known to the residents as summer, and the rainy season, known locally as winter. The summer goes from December to April, and winter goes from May to November, which coincides with the cyclone season. During this time, it rains constantly and sometimes severely in some regions. Average **rainfall** in Bakul varies

considerably, from 1,350 mm in Indare province to over 4,500 mm in the extreme south of Exportul province. Seasonal differences in rainfall are greatest in the northern and central regions of the country where, between January and April or May, less than 100 mm of rainfall per month. The dry season is shorter in the south, normally only lasting from February to March.

Temperatures vary according to elevation and proximity to the coast. Average temperatures in the coastal regions range from 24 °C in January to 27 °C in July. Temperatures are slightly higher inland. Overall, the seasons are marked more by differences in humidity and rainfall than in temperature.

Environment

Bakul is one of 17 megadiverse countries in the world according to Conservation International, and it has more biodiversity per square kilometre than that of any other nation. Total number of bird species in the mainland area amount to 1,600 (15% of the world's known bird species) including the endemic Bakulu bird (it was declared national bird by the government in 2001). In addition, Bakul is home to over 16,000 plant species, 106 endemic reptiles, 138 endemic amphibians and 6,000 species of butterfly. The current protected areas system (14 % of the country´s area) includes 6 national parks, 4 communal reserves and 3 ecological reserves, among others. Well-known areas include the Nelam-wetlands and Tabakalues reserve (Indare), the HANCER reserve (Belandu) and Reskul national park (Exportul).

A large number of landholders (especially small-scale landholders and indigenous communities) in Indare and Belandu do not have legal land titles and enforcing property rights is costly, especially in remote areas. Insecure property rights (especially land use and tenure rights) often prevail resulting in violent land conflicts and expropriation procedures. At the same time these conflicts reduce the present value of forests and foster forest conversion into agricultural and pasture lands. Landowners clear the forest preventively in order to assert the productive use of land and to reduce expropriation risk. Squatters invade land plots, clear the forest and may afterwards gain official recognition with formal property titles. To avoid social revolts during the last decades the government has acknowledged indigenous territories in some parts of the country. However, some of these territories overlap with national parks and public policies tend not to be properly coordinated **Land conversion, deforestation, and subsequent soil and water depletion are some of the main environmental problems the country is facing.**

The national environmental authority, the Ministry of Environment (created in 2004), has established complex regulations for timber operations and some for palm oil plantations. Unfortunately, resources allocated to the Ministry are insufficient to address the problems and enforcement is lacking. Overseas development assistance and international donations have financed important conservation efforts, particularly the strengthening of controls on timber operations and the creation of the National Park System (NPS).

Governance and administration

- Bakul is a representative democratic republic that gained independence in 1964. Due to the central government's weak enforcement of national laws and international treaties, there is a strong presence of NGOs and advocacy organisations.
- Administratively, Bakul is divided into three provinces: Indare, Exportul and Belandu. The three provinces have considerable autonomy, as well as limited taxation powers. Although each province owns revenue funds the state recurrent budget, most of the development budget is provided by the national government. Ministries cover all important sectors at both national and provincial levels. Most important are the Prime Ministry and Ministries of Planning, Finance and Economy, Industry, Water Resources, and the Ministry of Agriculture, which is also responsible for Fisheries. A Ministry of Environment has been created in 2004. Unfortunately, resources allocated to the Ministry are insufficient and enforcement of environmental regulations is lacking.

Indare province

Indare province is known for its lovely hillsides, the crystal clear water of the Coroné River, the Nelam-wetlands and last but not least it's beautiful beaches. While the lowlands´ natural vegetation is tropical evergreen forest, the eastern foothills of the Mighty Mountains are covered with tropical mountain rainforest. These forests are very rich in species and are widely considered as hotspots of biodiversity.

Hanku city is located at the banks of the river Milaku, just south of the Nelam-wetlands. They are internationally known for their amazing flora and fauna and recognized as an Endemic Bird Area (EBA) with the largest number of restricted-range birds of any EBA in the continent. During the last decade the water quality of the Milaku River dramatically decreased and the water company of Hanku city has planned a new water treatment plant.

The economy of the province relies mainly on industrial and artisanal fishery as well as agriculture. Agricultural production is dominated by smallholders descendent from different indigenous groups. Livelihoods of farmers are based on cash crops such as cacao and tropical fruits as well as timber sales. Recently the tourism sector has been growing rapidly. Tourists love the beautiful beaches and national parks that the province offers. However, tourism infrastructure is still poorly developed and many potential visitors are left without options to explore the wetlands.

Nowadays, foreign investors from Moneila city in the south are frequently seen in this part of the country buying land in order to convert them into palm oil plantations.

Belandu province

The highland province of Belandu is well-known for its excellent dairy products. It is characterized by subsistence agriculture which is mostly run by indigenous groups. At the same time, the textile industry is becoming more and more important.

The main city is Kalu. Farmers have been migrating to this area over time; clearing the forest for pastures and increasing the number of cattle. Presently there are approximately 300 farmers in the surroundings holding land with a farm size varying from 10 to 50 hectares. Uncontrolled expansion of

cattle farming has lead to heavy problems with erosion and river contamination, in particular the Milaku River. The textile industry might increase water pollution in this area as well.

Forests are still covering large parts of the region, but soon may be restricted to steep slopes and remote areas. The province hosts the water catchment areas of important rivers such as the Milaku und Coroné. In this area highland vegetation can be found between the upper forest line and the permanent snow line. In the northern part you can find the Hankulen Community Ecological Reserve (HANCER) which is co-managed by the national service for protected areas and the local indigenous communities. HANCER is home to endemic species and the source and catchment area of the Coroné River which crosses the northern part of the country until it´s track gets lost in the Nelam-wetlands.

Exportul province

The province of **Exportul** is the centre of the agribusiness industry, which is run by both, local-medium and large-scale farmers, and foreign investors. Manufacturing and beach tourism is also becoming important in the region.

In the last two centuries, timber extraction, the rubber economy and land conversion for banana and sugar cane plantations have changed the landscape radically. Today, most of the original vegetation cover has been depleted for palm oil, sugar cane and other cash crops. In order to reduce conflicts over land and promote investment, the province has undertaken efforts to issue land titles and update the land registration. However, environmental assessments have shown that after years of intensive use, soil fertility is decreasing and there are water supply problems, especially because of reported longer dry seasons. More recently, the main daily newspaper in the province, *Exportul Today*, reported that a study commissioned by the Ministry of Agriculture and Fisheries had found evidence of serious drinking water contamination resulting from over-use of agrochemicals in the plantations. The Ministry and the local authorities tried to keep it a secret but the story turned into a national scandal after several children in a local school got extremely ill from drinking tap water. As a consequence, there have been demands for resignation both of the minister and the city mayor, but so far, no decisions have been made.

The main commercial centre of the region, Moneila city, has been growing rapidly and is now the economic and financial heart of the country, attracting financial capital to be invested in agribusiness, tourism resorts along the coast and foreign and national direct investment in manufacturing, which is attracted by its newly created industrial zones and free trade zones.

There is mounting evidence that the water discharges from Moneila and adjacent industrial areas that are directly poured into the Nha Du River are generating pollution problems. This contamination not only affects the attractiveness of the beaches, which in some parts now “stink of rotten eggs”, according to several foreign tourists, but is also generating problems for the small-scale fishers who fish in the coast of Exportul. Massive fish deaths and increased algae growth in the reef areas are reducing fish availability and quality. Several fishers have been voicing their discontent over this situation and have been pressing the Ministry of Agriculture and Fisheries to look into this problem. The Ministry has traditionally provided fuel and equipment subsidies to the fishers, a situation that has provoked over-fishing.

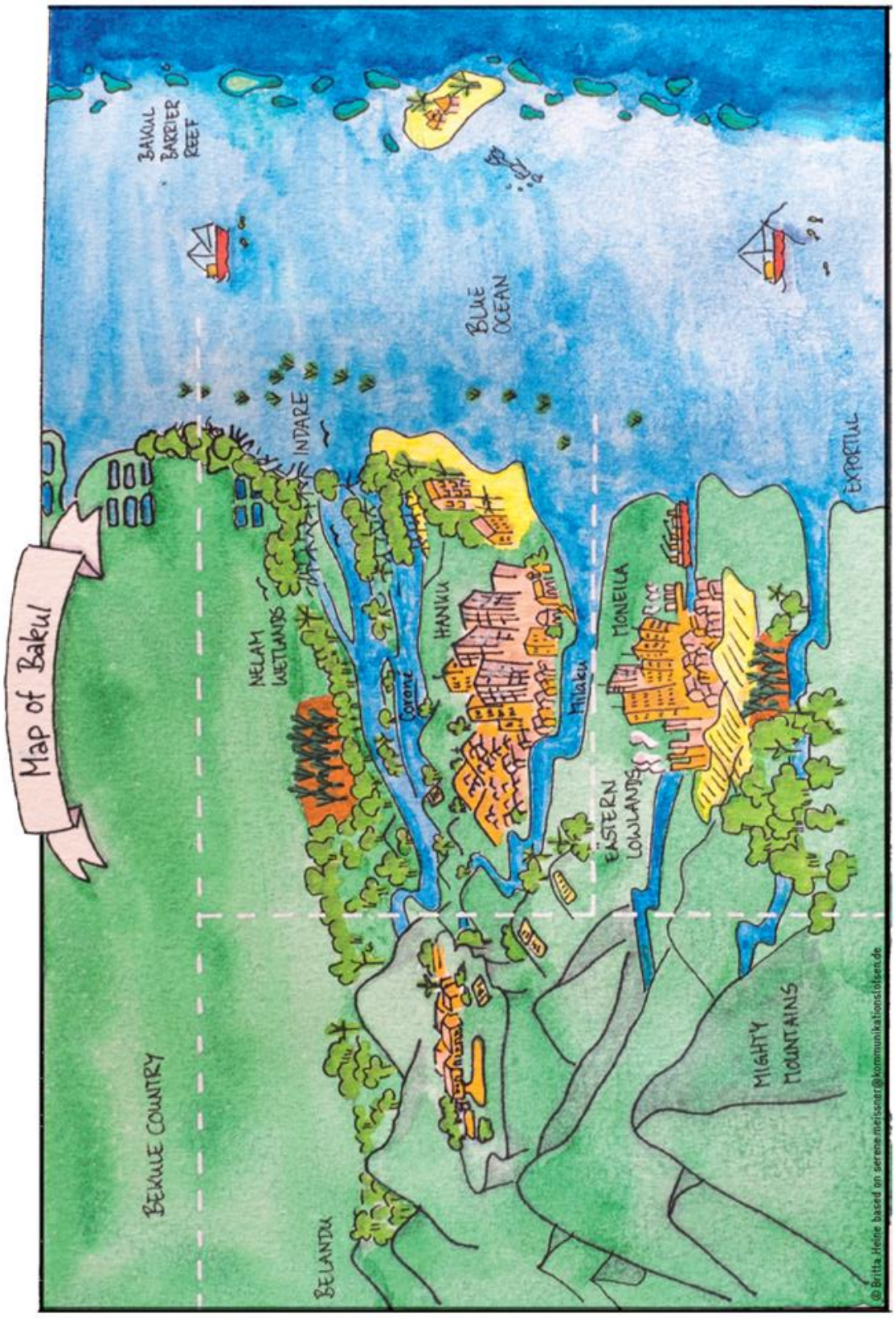
In the south of the province there is a national park named Reskul. It houses some of the country´s native plant species and has many endemic fauna species. Reskul National Park overlaps with parts of the ancient territory of the Bankas and Kulres. The protected area´s management plan restricts land-based activities in some areas and permits sustainable natural resource use in others. However, enforcement is lax and there is no clear definition of what exactly a sustainable natural resource use entails. Currently, there are plans to change the status of the national park to a biosphere reserve to enable a properly planned and defined mix of nature conservation and sustainable natural resource use. The protected areas authority has been having regular meetings with international donors and scientists to develop an action plan to change the Reskul National Park status.

The sad history of the Bankas and Kulres who live in an around Reskul is intertwined with the economic development of the province. In former times these groups were forced to work as indentured labourers on their own ancestral lands as they were gradually bought out by wealthy large-scale farmers who created cash-crop plantations. Permanent and seasonal outmigration to nearby cities has been historically high. Community members survive from subsistence agriculture and complement their incomes via seasonal employment in the big plantations and other menial jobs in the urban areas. Nevertheless, there are few decent job opportunities; work conditions and salaries both in the plantations and in urban areas are quite bad. The NGO *Save Our Heritage Bakul (SOH-Bakul)*, financed by the Environment Ministry and international donors, has recently been implementing pilot projects with the Bankas and Kulres to strengthen their own small-scale agricultural activities by converting to agro-ecological schemes, and in developing community tourism. This initiative aims to protect their land rights, ensure that they can have alternative sources of income and promote a localized form of development in line with nature conservation.

The national park´s ecosystems and local indigenous group´s access to land and livelihood alternatives are threatened by the provincial government´s plan to build a dam along the Tonkin River. This plan is perceived very positively by the Industrial Development Bureau, part of the Ministry of Economics, as there is a need to generate hydropower to cover the rising demand for electricity for new manufacturing investments, hotels and urban growth in the province´s capital. However, many environmental NGOs and scientists have pointed out that the dam would flood extensive areas within the National Park, destroying ecosystems. In recent months, there have been several demonstrations in Moneila centre and in the country´s capital, Hanku, for demanding a halt to the scoping work of the Industrial Development Bureau. Several local residents have reported repeated visits by government personnel accompanied by engineers to the proposed site for the dam.

In a nutshell: Key features of Bakul

Area	300,000 km^2 (a size similar to the Philippines, Ecuador or Ivory Coast)
Population	15 Million; with 55 % living in urban and 45 % in rural areas
Population Growth Rate	1.9% per year; mainly in urban areas due to continuing rural to urban migration and natural growth
Government	• Representative Democratic Republic • Three provinces: Indare, Exportul and Belandu with considerable autonomy, yet limited taxation powers
GDP per capita	US$5,195 (2016)
Composition of economy	• Market-oriented economy; tied to exports • Main export crops: **palm oil, fish and shrimp, rubber, timber** and, to a lesser degree, cacao and tropical fruits • **Small-scale fishing** and **subsistence agriculture** remain key pillars of the economy for more than 45% of the population living in coastal and rural areas • **Tourism** is gaining importance as the nations fastest growing industry in terms of revenue.
Human Development Index	0.723 (2016)
Portion of population living below national poverty line	31.3% of Bakul's total population is classified as poor, including 9.8% that is extremely poor.
Geography	Bakul is a tropical country with a great variety of ecosystems: • **Mighty Mountains:** a high-altitude belt (up to 2000 meters) running north south along the west of the country, large parts are still covered by forests with a mild climate all year round. • **Low-lying lands** to the east with a humid climate in the rainforest areas. • **Coastline:** Coroné Delta and the Nelam Wetlands (Endemic Bird Area) with its large Mangrove forest in the north and palm oil plantations and agricultural lands for cash crops in the south as well as many beaches and islands and the world-famous Bakul barrier reef including the Bakul Barrier Reef Protected Area.
Biodiversity	• The variations in elevation and climate lead to a wide diversity of ecosystems each with different vegetation types and species. • Bakul is one of 17 megadiverse countries in the world according to Conservation International, and it has more biodiversity per square kilometre than that of any other nation. • The current protected areas system (14 % of the country´s area) includes 6 national parks, 4 communal reserves and 3 ecological reserves, among others. Well-known areas include the Nelam-wetlands and Tabakalues reserve (Indare), the HANCER reserve (Belandu) and Reskul national park (Exportul).


Map of Bakul
BAKUL BARRIER REEF
BLUE OCEAN
INDARE
NELAM WETLANDS
HANKU
MONEILA
EASTERN LOWLANDS
EXPOETIAL
BEKULE COUNTRY
BELANDU
MIGHTY MOUNTAINS
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Exercise 5.a (group work):
Identifying Policy and Research Questions

The recent media coverage on pollution problems and the social protests against the development of infrastructure in Exportul have attracted the attention of the Ministry of Planning. During cabinet meetings and other reunions, the minister has been insisting that the links between citizen´s well-being, the economy and environmental quality should be better understood. How to do this remains an open question, particularly since economic growth is one of the main concerns of the national administration.

You represent one of the following environmental institutions:

1) The local NGO SOH Bakul (representing the civil society)

2) The Environmental Unit of the provincial government (representing the government)

3) The Environmental Research Institute of Exportul (representing academia)

With colleagues from your institution you find that the interest of the minister in the topic is a great opportunity since you are developing ideas on how to conduct an ecosystem service assessment that could integrate environmental issues and alternative measures into the current development plan of Exportul.

In order to design an assessment geared towards achieving policy change, answer the following questions with your environmental institution. Consider that the ultimate objective is to protect ecosystems but you are also aware that the province has many other problems. If you want your assessment to have an impact on policies, you must frame it according to the policy context of the province.

You can organize your answers in the matrix below. Select one person in the group, who will present the results in plenary.

1. ***Remember the policy issues identified during the last exercise. Choose one issue that, as representative of one the three sectors above, you find very important, and identify one or more policy questions (i.e. questions which address issues that policy makers need to decide on).***

   Identify a policy issue that you think is especially important for your stakeholder group and formulate related policy questions.

2. ***For one of these policy questions, identify two or more possible research questions that may be answered by means of an ecosystem service assessment.***

   Identify a few research questions that you think are important for your policy question.

3. ***Clarify who needs to be involved in addressing the research questions to ensure its relevance for decision-making.***

This question highlights the variety of stakeholders that are involved in solving the research questions. Their participation will also help to address the policy question and place the policy issue in the political agenda.

CHOSEN POLICY ISSUE:	
Policy question 1	
Policy question 2	
Research question 1	
Actors to be involved	
Research question 2	
Actors to be involved	

Guidance on policy and research questions

GUIDING QUESTIONS TO FORMULATE POLICY QUESTIONS:

What directions of an "issue" could be explored?

What are current challenges associated to an "issue"?

What future threats could be accrued to the "issue"?

What are the main impacts of the "issue"?

What is the general framework that around which the "issue" operates?

What are consequences to other parties / areas of the "issue"?

What are possible options to solve the "issue"?

GUIDING QUESTIONS TO FORMULATE RESEARCH QUESTIONS:

What is the underlying cause of an "issue" and what factors contribute to generating it?

Do these different factors influence each other? If so, how and in what way?

What are advantages and disadvantages (consequences) of choosing a specific scenario?

What are options to monitor and evaluate trends and conditions of an "issue"?

Who are relevant stakeholders?

What would be a desirable outcome for each stakeholder?

Does a win-win scenario exist? If yes, what does it look like and what would be required to achieve it? If no, what are "best possible" scenarios?

Exercise 5.b (role play): Preparing a Statement for a TV Interview

The local TV program “Good Evening Exportul” has taken the initiative to search for different expert opinions regarding critical aspects of the development plan and related policies. Since “Good Evening Exportul” has a tendency to show and discuss critical issues of the province´s development path, all the environmental groups involved in the topic (the local NGO SOH Bakul, The Environmental Unit of the provincial government and the Environmental Research Unit of Exportul) were asked to join in a short interview that will air the following week.

This is a great opportunity for your environmental institution to place the environmental issues of your interest on the political agenda. With your work group, think of key arguments to present at the interview with the aim of convincing others that your environmental issues should be strongly considered for the development plan. Build your arguments based on your policy and research questions. Select one person in the group who will represent your environmental institution in the interview.

During the interview, you will have a few moments to highlight the political importance of the environmental issue of your interest. Make sure to demonstrate the importance of your organization for addressing this issue.

Exercise 5.c (work group): Adjusting the Policy and Research Questions

After the interview, your environmental institution was not quite satisfied with the outcome and thought about improving the work you have developed so far. To do this, you and your colleagues will have the opportunity to adjust the policy and research questions, and to receive feedback from other teams.

Each of the groups will discuss what could be improved and write down their findings. Then, each group will rotate and complement/discuss the answers of the next group. Select one person who will explain your findings to the other participants, and who will present the results in plenary.

MODULE 3
GETTING STARTED WITH ESAV

Exercise 6 (work group): Defining the Scope in Exportul

The TV interview "Good Evening Exportul" has generated some interest in the province and a debate has arisen on the meaning of integrating environmental issues in the development plan. Nevertheless, the office of the Governor and the Minister of Planning support the current development plan and they are not fully persuaded that a revision is needed since this would generate additional costs in exchange for few tangible benefits.

Based on the identified policy issue that your environmental institution identified, you need to convince the Governor and the Minister of Planning of the importance of conducting an ESAV to support the sustainable development of the province. To do this, you should first conduct a scoping exercise to pinpoint exactly what might be the ESAV's purpose, target audience and expected results. You can organize your answers in the matrix below. Select one person in the group, who will present the results to the Governor.

1. ***Select one policy question and its respective research questions from the previous exercise and fine-tune the purpose of the ESAV (try to construct your purpose in a persuasive way: why would an ESAV be important?).***

   Be conscious of the stakeholders that you are representing. Try to think like them. The aim is to choose one policy issue and explain why an ESAV would be useful and in what way it could contribute to solving the problem.

2. ***What area(s) or region(s) would the ESAV include?***

   Look at the map of Exportul. As a group, identify areas or regions that could potentially be affected by the issue that you are researching. Make sure to think about the whole chain of services, not just about the area where the impacts are felt the most.

3. ***What kind of information do you need and what for?***

   Consider the target audience of your assessment and what you want to achieve with the assessment (go back to the purpose you chose). Reflect on the kind of change that you would like to propel with the whole process.

4. ***What initial scoping methods would you include?***

   Consider looking at the previous presentation to find different methods that you can use during scoping. Choose some methods that you think are more suitable for your assessment and explain why you selected them. Take some time to look at the inventory of methods (www.aboutvalues.net), particularly at the scoping tools and methods (www.aboutvalues.net/additional_tools/).

5. ***Who are the key stakeholders that need to be involved in the ESAV process and why?***

   Explain your selection of stakeholders. Think carefully about the dependence of stakeholders on ecosystem services. Some stakeholders may benefit while others may have to assume costs. Additionally, some stakeholders might be relevant as information and expertise providers; and others might need to be considered as they might not support the ESAV process. Look at the methods that focus stakeholder analysis (www.aboutvalues.net).

6. ***Who is the target audience of your ESAV and why? What type of results does your ESAV need to produce to inform/persuade your target audience?***

   Think about what kind of assessment you would like to conduct and who is your target audience. Then, reflect on which results you require. For example, the Ministry of Finance would find more useful the results of a social cost-benefit analysis of an infrastructure project to inform a decision on sustainable public budget allocation, while a protected area management team might be more interested in the results of an environmental impact assessment to understand the risks of an infrastructure project to the protected area.

Matrix for Exercise 6 (Defining the scope in Exportul)

Policy question:			
Research question (s):			
Purpose of the ESAV:			
Area or region	**Information needed**	**Scoping methods**	**Key stakeholders**
Target audience:			
Type of results that your ESAV need to produce to inform/persuade your target audience:			

Exercise 7 (autumn leaves and group work): Identifying and Prioritizing Ecosystem Services and Stakeholder Participation

Prioritizing ES for the ESAV

The scoping proposals presented by the environmental groups raised a great deal of expectations and worries from different ministries and other stakeholders in Exportul. Some of the questions stakeholders were raising included the following: What changes to the industrial development plans of the province are needed for more sustainable natural resource use? How can agriculture be supported if soils become less productive? Will Exportul maintain its touristic attractiveness? How can you ensure the livelihoods of people that rely on fishing as their main source of income?

It became clear that it was necessary to incorporate various actors at all stages of an ecosystem service assessment, as their knowledge, interests, needs and political influence can shape the results of such efforts. Because of this and to facilitate transparent discussions (in order to avoid losing the support of the public), the Governor decided to convene a meeting with some of the key stakeholders in Moneila´s Town Hall. It is expected that the outcomes of this meeting will help to better understand how important economic activities relate to the natural wealth of Exportul and how different stakeholders are dependent on or related to each other. The meeting should make the relationship between economic development, environmental sustainability and social well-being more tangible and visible.

You will now represent one of the stakeholders invited to the meeting. Split into five to seven groups and choose one autumn leaf with an activity on it. Prepare for the meeting by reading through the description and answer the following questions:

1. ***Which ES are relevant for the economic activity undertaken by your stakeholder group?***

   Make a brainstorming exercise to list ES relevant to the economic activity undertaken by your stakeholder group. You can use the list provided for exercise number 2 (main characteristics of ecosystem services and challenges). Also, consider what you have learned about Exportul so far.

2. ***Select appropriate criteria to prioritize the most relevant ES for the economic activity undertaken by your stakeholder group.***

   The criteria should be determined by considering the socio-economic context and interests of your stakeholder group.

3. ***Using the selected criteria, prioritize 3-5 ecosystem services from the list that you prepared for question 1.***

   Attempt to prioritize and rank different ES. The prioritized ES should be relevant to the activity of the stakeholders, and therefore relevant to their interests. Groups should also be encouraged to think in terms of long-term stability of ES. Use your own experience and make assumptions. This will make prioritizing the ES easier.

MODULE 4
RUNNING AN ESAV

Exercise 8 (group work):
Identifying Conditions, Trends, Drivers and Trade-offs

Assessing ecosystem services

Your environmental institution has been receiving phone calls from the governor´s office. There is suspicion that more children are getting sick from drinking water in schools although nobody has claimed responsibility. Also, there are looming protests by the Bankas who are demanding explanations about an upcoming dam project. The governor knows that your environmental institutions are addressing these issues and he would like to know about the preliminary findings of your ESAV.

Your group decides to perform a preliminary analysis on conditions, trends and drivers of change of some of the prioritized ecosystem services and present it to the governor. Guide your analysis by answering the following questions and organize your results as shown in the table below. Select one person in the group who will present the results.

Remember: as in real life, you probably will not find all information you need in the given material. So, whatever information you do not have handy, simply deduce it from the general trends of the province and country.

1. **Select one or two ecosystem services that you consider relevant for the ESAV you are conducting (look at your results in exercise 7) and identify the ecosystems that are generating each one of those ES.**

2. **For each one of the ES, assess the condition and main trends in the supply and demand as indicated in the matrix below**.

   Think about the current conditions of the ES and what could happen if current trends continue in the future. Be aware that many of the conditions and trends are going to be site specific, depending for example, on the land-use system. Consider upstream-downstream relationships in watersheds.

3. **Determine the direct and indirect drivers of degradation based on the economic activities related to the policy area chosen by your group. Also, specify related stakeholders for each one of the drivers.**

   Explain how each of the activities acts as a driver* of degradation (direct or indirect) of the analysed ES. For some of the drivers, identify at least one underlying cause** and the stakeholders related.

   **A direct driver is understood as an element that affects an ecosystem directly, and therefore, the provision of an ES. For instance: urbanization, land-use change for agriculture, overfishing, waste disposal.*
   ***An indirect driver (underlying cause) is a reason for a driver to exist and is an incentive for people to act the way they do*. For instance, market prices, subsidies, taxes, changes in taste and preferences across generations.

4. **Identify (two to three) trade-offs and the stakeholders involved.**

   Explain why the selected trade-offs and stakeholders are crucial for the analysis.

5. **Choose one or two cases where you can propose a policy and/or an instrument to solve the problem or reverse the underlying causes of ES degradation.**

   Use the information from previous modules to answer this task. Undertake a quick feasibility analysis (economic, social and political).

Matrix for exercise 8 (group work): Identifying Conditions, Trends, Drivers and Trade-offs

Recreate this matrix on a flip chart/panel for the 1-2 prioritized ES by your environmental institution.

Ecosystem service (ES)	**Ecosystem that generates the service**	**Current condition of the ES (++/+/-/--)**	**Trends in the provision of the ES (→ ↗ ↘)**		**Driver of degradation (For example, how does an economic activity cause a degradation in the ES?)**		
			Supply	**Demand**	**Activity 1**	**Activity 2**	**Activity 3**
Food Crops					Driver: Underlying cause: Stakeholders:		
Soil fertility							
Recreation							
Fresh water							
Food Fish							
Some of the main activities of the development plan: (1) Fishing, (2) Manufacturing, (3) Small scale Farming, (4) Cash Crops,(5) Hydropower, (6) Tourism, (7) Ecotourism.							

Exercise 9 (group work): Using the ValuES Method Navigator

Given the findings of your preliminary analysis, your environmental institution would like to select the most suitable method(s) to carry on with the ESAV. To support your search and find the most suitable methods(s) for your ESAV, you decided to use the ValuES Method Navigator *(www.aboutvalues.net/method_navigator).*

Follow the steps described below and answer the following questions. Select one person in the group, who will present the results.

1. ***Go back to the policy and research questions and purpose of the ESAV you formulated before (exercise 6) and focus on some key ecosystem services for further analysis.***

   Determining the assessment's purpose is important, since it defines the goals of the assessment more precisely. Use your own experience, apply what you have learned so far, and think about different aspects of the problem. Discuss amongst each other which ecosystems and ecosystem services you think will be impacted by the policy situation and why.

2. ***Use the ValuES Method Navigator to choose two or three methods for your ESAV.***

   Go to the methods navigator *(www.aboutvalues.net/method_navigator)*, and, according to the purpose of your ESAV, choose a policy area, a purpose and refine the search by focusing on types of methods and/or key ecosystem services.

3. ***Prepare an overview of the selected methods (look at short and long descriptions, top-tips and examples).***

   Prepare key information and requirements related to each one of the methods.

4. ***According to the chosen methods, what could be the type of findings for your ESAV?***

   Describe how the implementation of the method will contribute to fulfil the purpose of your ESAV.

5. ***Which stakeholders would you incorporate in the implementation of the methods and why?***

Exercise 10 (group work): Ecosystem Services Indicators

As part of the analysis, the environmental groups have been given the task to formulate indicators to gauge changes of ecosystem services, so that the impacts of different policy alternatives for the Development Plan of Exportul can be measured. Your group has chosen WRI´s (2010) indicator framework to develop the relevant indicators.

Choose one of the ecosystem services from the last exercise and answer the following questions. You can use the matrix below to organize your results. Select one person in the group who will present the results to the Governor and the Minister of Planning.

1. ***Define at least three indicators (from different categories) for your ecosystem service?***

   First, you need to identify three indicators for three different categories (you can choose from the categories that are defined by the indicator category framework, see figure below). Remember to think about **why you need an indicator**, **what you want to communicate to whom and why.**

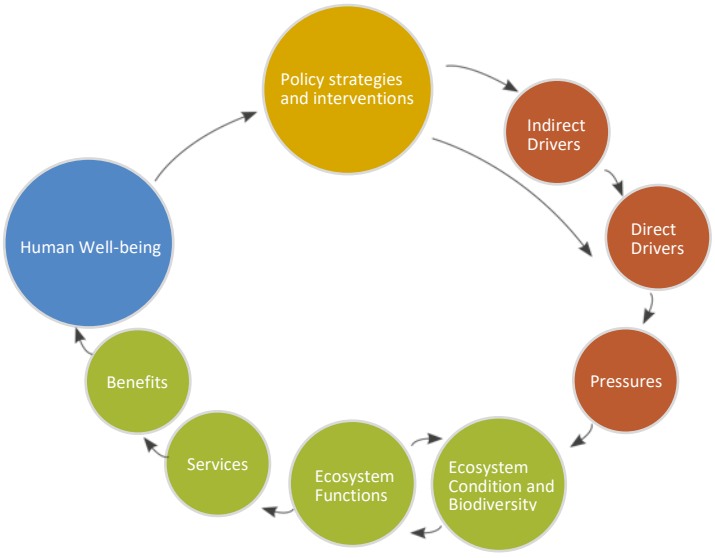
2. ***How is your indicator going to be measured (metrics)?***

   Decide on what exactly it is that you want to measure.

3. ***Who needs to be involved to build / improve / measure the indicator, and who is the target audience?***

   Think about the stakeholders involved in creating and monitoring your indicator. Also, think about the intended receiver of your indicator. The information that results from your indicator should be relevant to his or her interests.

ECOSYSTEM SERVICE INDICATOR CATEGORY FRAMEWORK



Overview of different categories relevant to the provision and benefits of services, for which indicators can be used as a means of measuring quantities (Source: WRI, 2010).

Matrix for exercise 10 (group work): Ecosystem Services Indicators

Key ecosystem service	Indicator category	Indicator	Metrics	Involved stakeholders	Target audience

Exercise 11 (group work): Ecosystem Services Mapping

Creating a clearer picture

Last week, the Ministry of Finance of Exportul received three proposals for Strategic Planning from the Agriculture, Tourism and Housing ministries, which have important projects near Reskul Protected Area. The proposals include a map indicating the most suitable sites, based on economic criteria, for increasing production in agriculture (palm production), livestock (pasture), ecotourism and tourism, as well as expanding urban areas. Nevertheless, before approving the proposals, the Minister would like to analyse them under the ecosystem services approach, including consideration of trade-offs. After all, the Governor has been really interested in the topic, and it might become an important approach in the future.

The Minister asked the Institute of Geography of the University of Bakul for some information. The Institute prepared some maps, but the Minister was not able to interpret them under the ecosystem services approach in order to reach relevant conclusions. The Minister of Finance is aware that your environmental institutions have been working with the government of Exportul in some ESAV for integrating ES in the development plan, so he asked for your support.

Your environmental team received the three maps provided by the Institute of Geography of the University of Bakul: a map of the watershed, a map of the land-use characteristics and a map that includes the places where the Ministries of Agriculture, Tourism and Housing want to implement their Strategic Plans.

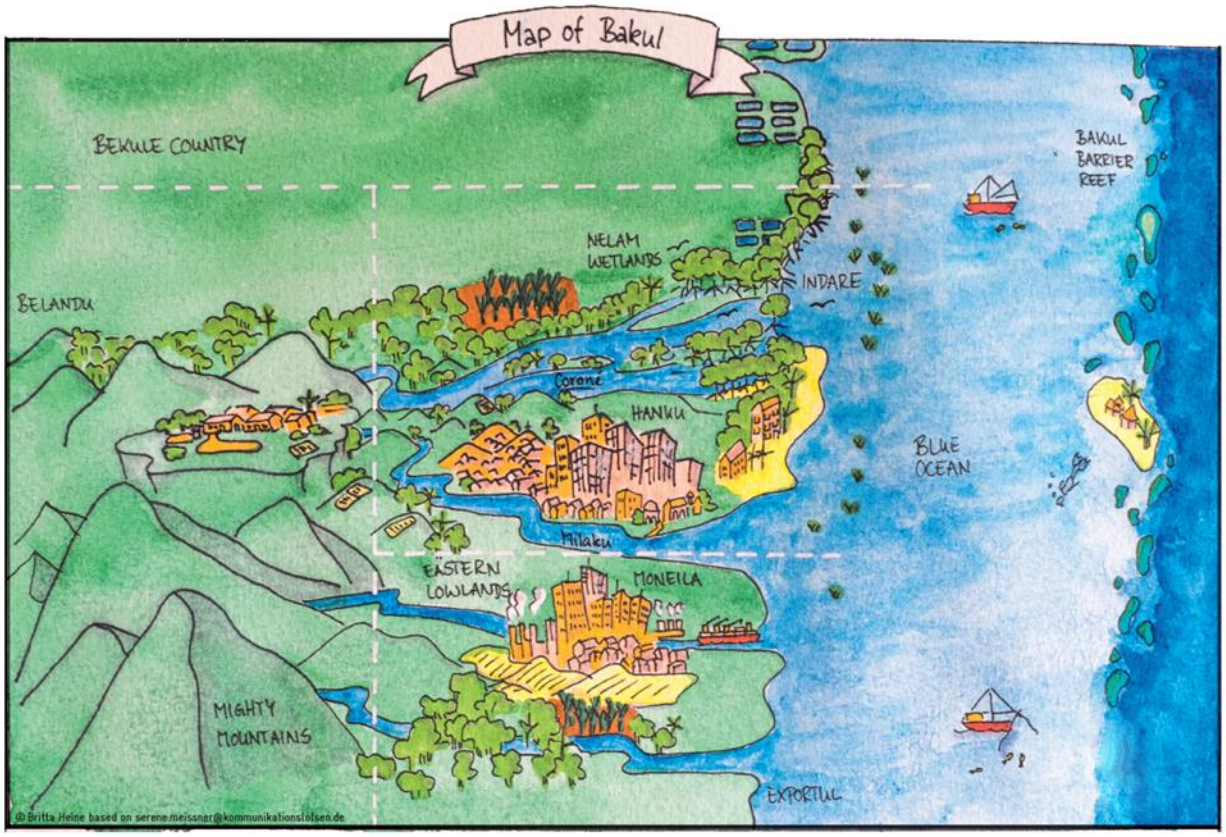
Your environmental group will analyse the information in the maps and answer the following questions. Select one person in the group who will present the results to the Minister of Finance.

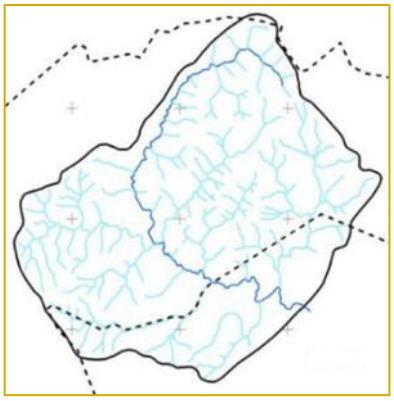
1. ***Identify the key ecosystem services provided in the area and the benefits for agriculture, tourism and housing.***

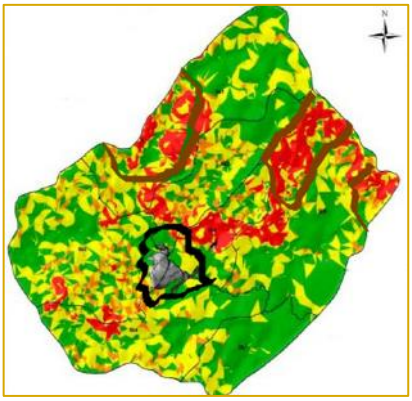
2. ***Identify the trade-offs associated with the implementation of the strategic plans in the area.***

3. ***Should the Minister of Finance approve the Strategic Plans of Agriculture, Tourism and Housing? If not, write down some key recommendations.***

Supplementary information for exercise 11 (group work): Ecosystem Services Mapping



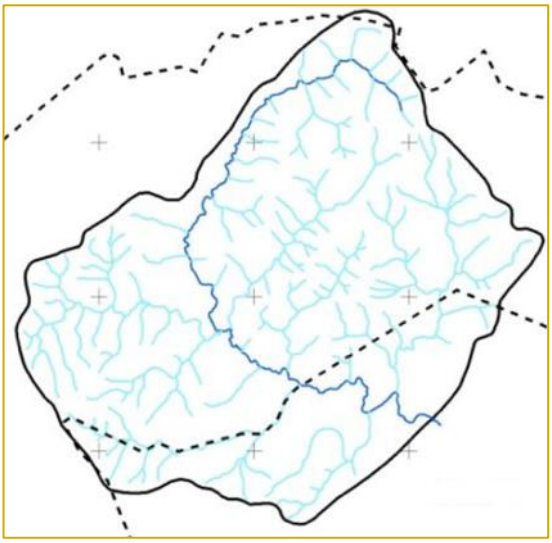




Note. Maps are based and modified from: Oliveira, L.F.C.; Calil, P.M.; Rodrigues, C.; Liemann, H.J.; Olivera, V.A. Potencial do uso dos solos da bacia hidrográfica do alto ria Meia Ponte, Goiás. Ambi-Agua, Taubaté, v.8, n.l., p 222-238, 2013.

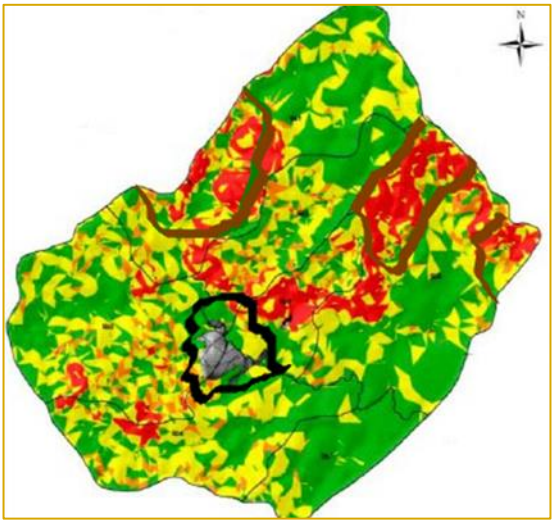
Vegetation cover

- RM – Remnant vegetation
- DV- Disturbed vegetation
- R/F Reforested areas
- PC – Pasture
- TA – Transitional agriculture
- AM – Mechanized agriculture
- Permanent protected area (30 meters from water bodies)
- Urban areas



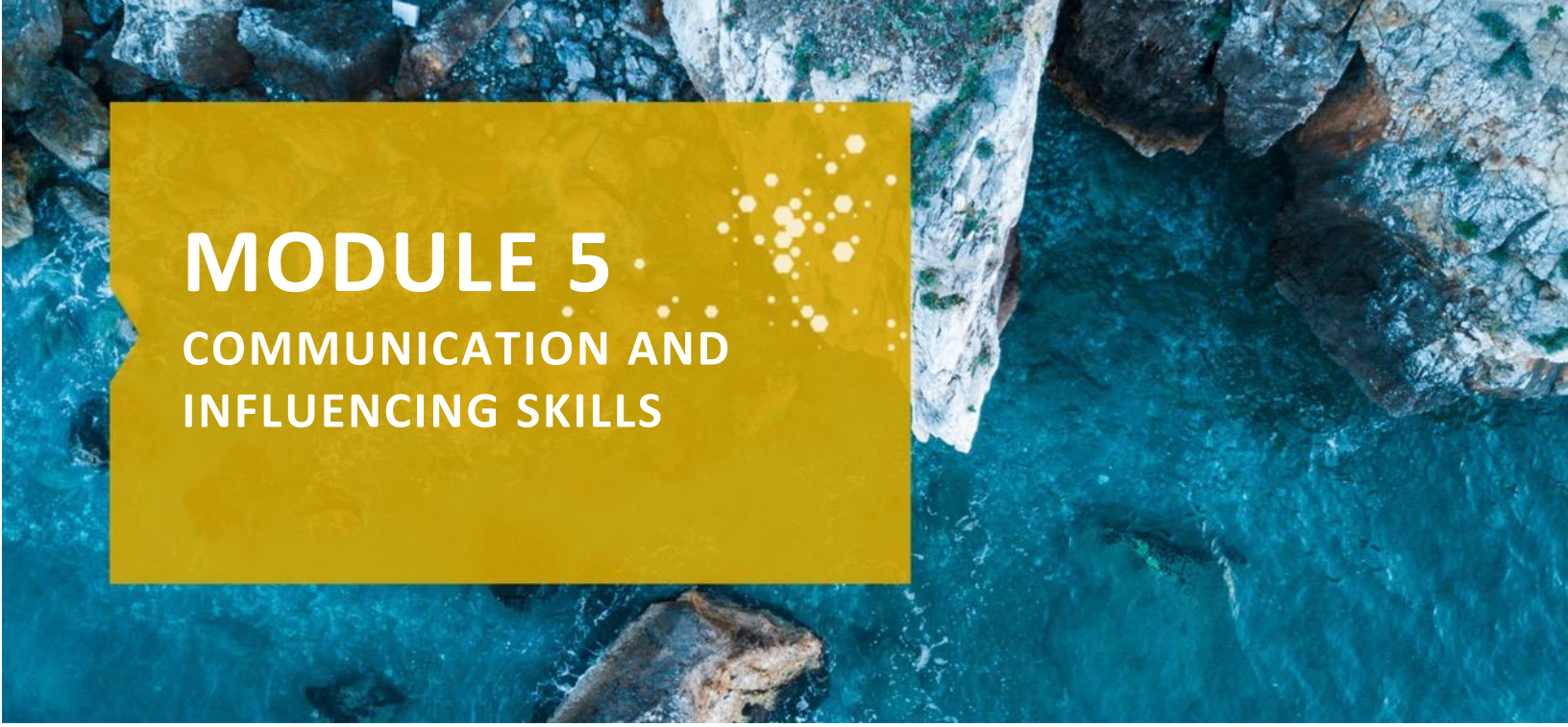
Watershed

- Perennial current
- Perennial river



Watershed

- A - Agriculture
- B + Pasture
- B – Ecotourism
- D – Tourism
- Increase in urban area
- Urban Area
- Property of Bankas and Kulres



MODULE 5
COMMUNICATION AND INFLUENCING SKILLS

Exercise 12 (group work and role play): Communication and Influencing Skills

Adapted from Céntrico Digital: empathic communication

After the environmental group´s presentations of the assessment methodologies and hypotheses of findings to the Governor of Exportul and the National Planning Minister, the TV program "Good Evening Exportul" has decided to host a special talk show titled "Our challenges for green development in Exportul!". During the talk show the provincial government´s ideas to revise some of the key development policies will be discussed. Some of the most skeptical government leaders, as well as representatives from the three environmental groups, have been invited to a live debate on the province´s development and its connection with nature. The invited leaders from the government include the Head of the Industrial Development Bureau, who is a strong supporter of the dam along the Tonkin River, as well as of developing a strong manufacturing base and tourism infrastructure in the region. The Minister of Agriculture and Fisheries has also been invited. From a wealthy family farming background, the Minister has supported the high-tech export-oriented agricultural transformation and large-scale fishing activities of Exportul. Both ministers are not familiar with the concept of ecosystem services and the jargon associated with it.

A representative from each of the three teams has been invited to the talk show. You will need to develop two or three messages which clearly reflect what you are trying to achieve with your assessment. Think of the pain points of your audience and adapt your messages so that they resonate with their perspective. Before the talk show begins, your team will have time (about 40´) to prepare. For your preparation, focus on the chosen policy issue from the previous exercises and focus on the following questions.

1. Who is your audience?

Try to understand whom you will be facing in the talk show (Head of Industrial Development Bureau, Minister of Agriculture and of course, anyone watching the TV show). Who are they or who is he/she? What are his/her main worries or concerns? Is he/she a decision maker or does he/she need to convince somebody else? If he/she is a decision-maker, does anyone have an influence over him/her? What are their main worries or fears? Identify the main "pain points" of your audience:

What are the three main **pain points** of my audience?	What emotions might he/she feel?
	Anger
	Frustration
	Fear, etc…

2. Define the what.

What do you want to communicate? Describe what your assessment intends to do in three short sentences. What makes it different? Define your own pain points and the emotions you feel.

Intention of the ESAV:

What are my/our own **pain points**?	What emotions do I/we feel?
	Anger
	Frustration
	Fear, etc…

3. Define the how: What are your key messages?

Develop three key messages related with your assessment and reflect on how your audience´s perspective was incorporated into these messages. Review your messages. Do they really touch on the emotions (fears, frustration, anger, etc.) that you defined previously? If not, try to adapt your messages.

Bring those messages with you to the meeting.

If you think it makes sense, come prepared with charts, graphs and pictures to prove your point.

ANNEX 1
SUPPLEMENTARY INFORMATION FOR EXERCISE 7

Identifying and prioritizing ecosystem services and stakeholder participation

1. Fishing Cooperative (small scale fishing)

Fishing has been an important traditional activity in Exportul. Common catches include molluscs, found mainly on reefs and rock formations near to the shore, crustaceans, such as shrimp, and other commercially viable fish species such as snappers, mackerel, sea bass, sharks and tuna. Some of these species are mainly consumed locally while many find their way to international markets. Recently, total fish catches of yellow fin tuna, shrimp and sharks, have decreased substantially. Some fishing cooperatives blame the decline on illegal vessels from neighbouring countries that have been spotted in Bakul's marine areas. Depletion of fish stocks is also due to a lack of adherence to fishing regulations (e.g. seasonal bans or off-limit areas are ignored), and to increasing pollution coming from the river, which have generated sudden massive fish deaths and algae growth in reef areas. The construction of infrastructure and tourism developments has given place to the destruction of mangrove areas along the coast and in estuaries, jeopardizing future fish stocks. Subsidies for fuel and equipment have also generated incentives for overfishing.

2. Industrial Park Developers (manufacturing)

Exportul is the centre of manufacturing in Bakul. There has been a significant increase in new direct investments due to newly created industrial parks and free trade zones around Moneila and the coast. During the last five years, the largest proportion of new job creation in the province can be attributed to a growth in this sector. Manufacturing activities are centred on textiles, electrical appliances and food processing. Textile and appliances are geared mostly to international markets while food processing caters largely to national markets with some exports to neighbouring countries. Many of these activities obtain their raw materials directly from Bakul (cotton and other fibres for garments, fruits and vegetables for food processing). The new industrial parks, however, lack sufficient infrastructure for the treatment of waste (particularly, residual waters and solid waste from textile production and food processing), which either end up directly in the NhaDu River or in open air waste dumps. This generates pollution of surface and underground water sources. Some industrial

park developers, however, have started improving their waste treatment facilities based on international standards. Nevertheless, the lack of provincial incentives and limited access to adequate public infrastructure, create problems once the residuals are transported out of the parks.

3. Bankas Indigenous Federation of Organic Producers (small-scale subsistence farming in Reskul National Park)

The indigenous Bankas and Kulres perform subsistence farming within and outside the Reskul biosphere reserve. Traditional farming practices are highly efficient and yield several grains, fruits and vegetables all year round. Production is for their own consumption, although some of it is sold in local small-scale markets. While the traditional practices relied only on natural soil fertilization and pest control methods, some farmers have recently introduced agrochemicals in their farms to increase production. In some cases, the excessive and inappropriate use of chemicals has polluted streams, decreased soil fertility and caused health problems. In recent years, however, due to promotional efforts from national and local NGOs, several producers have readopted agro-ecological practices and some have even gone organic. Local processing of farm products is also gaining importance as some cooperatives have received credits and technical assistance to build small food processing plants. Despite the higher labour intensity from organic farming, some farmers have obtained benefits from regional and international organic markets. One group, the Bankas Indigenous Federation of Organic Producers, has managed to tap into international markets for their delicious jams and dried fruits. Complaints and distrust between farmers who have adopted agro-ecological practices and those who have not, is increasing.

4. Agribusiness Chamber of Commerce (large-scale cash crop plantations)

Cacao, sugar cane, cotton, tropical fruits and the rise of palm oil for biofuel production are some of the main cash crops produced in Exportul. Most of the production is destined to international markets providing important export revenues for the country. The emerging textile and food processing industries are propelling domestic demand for cotton and tropical fruits. Extensive farming practices with an intensive use of agrochemicals dominate cash crop production, where average farm sizes are nearly 50 hectares. Farming activities are concentrated in the south of Moneila and in the Eastern Lowlands. The areas formerly occupied by dense forests have now been transformed into commercial plantations. Soil and land degradation, deforestation and pollution of water sources near farms are common. Moreover, in recent years, some farmers have witnessed massive bee deaths and a drying out of natural springs. This is an acute problem due to longer dry periods in the past 15 years. Farming practices have been increasingly under public scrutiny due to the alleged pollution of drinking water sources with agrochemicals. All of this has begun to generate a slow but persistent change in the perspectives of farmers. Some of them have noticed that having a functioning forest ecosystem, yields important benefits such as securing water sources, pollination and soil formation. Some, especially in the Eastern Lowlands (where some important forest patches still exist) have started voluntarily conserving forest in the form of private protected areas or entering into agreements with other farmers who still have some forested areas.

5. Industrial Development Bureau (hydropower plant)

New tourism developments, urban growth and industrial areas in Moneila, have risen the demand for electricity, which have prompted the government to look for new energy sources. An obvious

candidate is the generation of hydroelectricity from a dam on the Tonkin River. Estimates from engineers place hydroelectric capacity from such a dam at 300 MW, which would be more than enough to cover rising demand for at least the next ten years and even generate some surplus which could be sold to other provinces. According to the Industrial Development Bureau, this source of energy is considered highly-efficient, cost-effective, renewable and low-carbon. However, the flooding of ancestral lands and some parts of the Reskul protected area could generate habitat and livelihood losses. Some of these losses may be compensated by the introduction of commercial fish species in the new reservoir, an alternative that biologists consider outrageous due to the potential invasive behaviour of introduced fish species. Furthermore, decreased water flow would jeopardize coastal ecosystems and estuaries downstream. This, in turn, could affect the livelihoods of fishermen. Some scientists and NGOs are insisting that a proper cost benefit analysis should be carried out before an investment decision is made. This would ensure that social and environmental values, are properly accounted for.

6. Tourism Association (tourism)

The tourism sector is booming in Exportul. The beautiful white sand beaches, turquoise clear ocean waters and coral reefs have attracted local and international tourists of every sort. Many new hotels (from backpacker dens to luxury resorts) have been built along the coast. It is estimated that currently installed capacity is now around 45,000 beds and could duplicate in the next few years. This unprecedented expansion has generated several environmental problems. Poor water treatment facilities mean that highly contaminated discharges end up in rivers, estuaries and streams. Some tourists have begun complaining of bad odours in some beach parts. Lack of land planning has resulted in the clearing of some mangrove areas to give way to new hotels and resorts. This could jeopardize fish production in the long run and augment the risk of infrastructure damage from extreme events. Some coral reefs have also been damaged from careless divers and boat operators who anchor their vessels wherever they see fit. The new government, however, is pushing hard to develop a new development plan for the sector.

7. NGO SOH Bakul (Ecotourism)

Ecotourism is a new form of tourism in Exportul. It has developed in the surroundings of the Reskul protected area, although some hotels along the beach also claim to offer environmentally friendly facilities and field trips to nearby natural attractions. Ecotourism is primarily carried out by indigenous groups with the technical and financial support of the NGO SOH Bakul and certain government agencies. Facilities and activities include staying overnight in small lodges, trekking and hiking in protected areas, the possibility to harvest and cook together with local communities, and canoeing in the Tonkin River. Most of the food offered to tourists is produced locally and all profits from ecotourism are managed solely by the indigenous communities. However, recently there have been some problems with waste disposal in some small lakes and streams inside the protected area. The basic infrastructure needs to be improved too. On one occasion, a group of German tourists got lost for two days in the hilly parts of the reserve since the trekking paths were not properly marked. Luckily no one got hurt but this news received some rather unwelcome negative international attention. The NGO SOH Bakul and some of the more consolidated ecotourism organizations are urging all groups involved to set clear guidelines for the handling of waste and to improve infrastructure and security.

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