

An aerial photograph of a dense, green forest. A paved road winds through the trees, curving from the top left towards the bottom right. A small red tent is pitched on a clearing near the road. The background is a vast expanse of green foliage.

Integrating Ecosystem Services (IES) into Development Planning

Agrarian Landscapes

MANUAL FOR TRAINERS
Zentralistan

IMPRINT

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OVERVIEW OF THE IES APPROACH (SIX STEPS)

The stepwise IES approach aims to provide practitioners with a practical and policy-relevant framework for integrating ecosystem services into development planning, **emphasizing the case of economies where agriculture plays a major role**. The table below summarises these steps. They are described in detail in the IES manual.





STEP	SUMMARY	EXPECTED OUTCOME	GUIDING QUESTIONS
<p>STEP 1: Defining the scope and setting the stage</p>  <p>STEP 1</p>	<p>Step 1 involves undertaking the groundwork that is required to get the IES process started. The main tasks are: defining the objective(s), outlining the scope of work and identifying main stakeholders to be involved. At the end of Step 1, the design and next steps in the IES process should be defined, including the division of tasks and responsibilities. The availability of the necessary human and financial resources and other inputs should also be clarified as far as possible.</p>	<ul style="list-style-type: none"> • Clear definition of management challenge or issues to be addressed • Documented and agreed objective, scope and expected outcome of the IES process. • Documented and agreed work plan, including resource requirements. • Stakeholder map and engagement plan. • Communications plan. 	<ul style="list-style-type: none"> • What are the main development and management issues that the IES process needs to address and for which purpose? • Who are the relevant stakeholders and how should they participate in the IES process? • What are the milestones and expected outcomes of the IES process? • What staff, funds and other inputs are required to carry out the IES exercise? • How will key messages be communicated to target groups?
<p>STEP 2: Screening and prioritizing ecosystem services</p>  <p>STEP 2</p>	<p>At the end of Step 2 priority ecosystem services will have been identified. The main task is to screen the development plan so as to identify its ecosystem services risks and opportunities.</p>	<ul style="list-style-type: none"> • Matrix showing ecosystem service dependencies and impacts in relation to the development plan (including economic activities, with emphasis in agriculture). • Agreed list of priority ecosystem services. • Summary of potential areas of conflict or competition, which may result in trade-offs. 	<ul style="list-style-type: none"> • How does the development plan (including associated economic activities and livelihoods, with emphasis in agriculture) depend and impact on ecosystem services? • Which stakeholders stand to be affected by the development plan and by changes in ecosystem services? • What costs and benefits are associated with these changes and how will they be distributed between different groups? • Do potential areas of conflict, competition or synergies emerge? • Which are the most important ecosystem services for the development plan (including associated economic activities and livelihoods, with emphasis in agriculture), and why?
<p>STEP 3: Identifying conditions, trends and trade-offs</p>  <p>STEP 3</p>	<p>Step 3 looks at the cause-and-effect relationships that operate between ecosystem services and the development plan (including associated economic activities and livelihoods, with emphasis in agriculture). The status and main trends in the supply and demand for ecosystem services are analysed. Drivers of ecosystem change, and key stakeholders are also identified. A particular</p>	<ul style="list-style-type: none"> • Information on ecosystem services conditions and trends. • Overview of the main drivers of change, related stakeholders. • Analysis of ecosystem services synergies and trade-offs in the context of the development plan. • Key messages for different audiences. 	<ul style="list-style-type: none"> • What information and evidence on ecosystem service conditions and trends exists and what are the main information gaps? • What are the current conditions and likely future trends in ecosystem service demand and supply? • What are the main drivers of change? • What trade-offs might arise between development goals and ecosystem services and how will these affect different stakeholders?

STEP	SUMMARY	EXPECTED OUTCOME	GUIDING QUESTIONS
	concern is to identify where there may be synergies and trade-offs between the different groups, goals or services.		
<p>STEP 4: Appraising the institutional and cultural framework</p>  <p>STEP 4</p>	<p>Step 4 complements the information that has been gathered in Step 3. It appraises institutional, policy, legal and cultural characteristics, and identifies the resulting incentive structures in relation to ecosystem services and the development plan (including associated economic activities, with emphasis in agriculture). These factors mediate and influence how people manage, use and impact on ecosystems and their services, and may act as drivers of either positive or negative ecosystem change.</p>	<ul style="list-style-type: none"> • List of key institutional, policy, legal and cultural characteristics and the resulting incentive structures (that influence how people manage, use and impact on ecosystems and their services). • Identification of underlying causes and drivers of ecosystem degradation • Overview of stakeholders' positions, interest, needs, values and rights. • Information on existing and possible areas of conflict or cooperation related to ecosystem use, management and incentives. 	<ul style="list-style-type: none"> • Which organisations and institutions govern ecosystems and their services? • Who participates in decision-making and in what role? • Which policies, regulations and incentives influence ecosystem use and management? Who or what do they target? How are they enforced? • Are there conflicts or inconsistencies between different institutional, policy, legal and cultural frameworks and associated incentive systems? • Which other needs, interests, values and rights drive ecosystem management choices?
<p>STEP 5: Preparing better decision-making</p>  <p>STEP 5</p>	<p>Step 5 summarises and analyses the information that has been gathered in the previous steps. Based on this information, risks and opportunities for the development plan are investigated. It suggests policy options which can serve to maintain or increase the flow of ecosystem services and identifies suitable entry-points for guiding or influencing decision-making.</p>	<ul style="list-style-type: none"> • Analysis of risks and opportunities associated with the development plan (economic activities, with emphasis in agriculture). • Shortlist of policy-options and corresponding entry-points into decision-making. • Communications messages on policy options. 	<ul style="list-style-type: none"> • What are the ecosystem service-related risks and opportunities to the development plan (economic activities, with emphasis in agriculture)? • Could economic valuation be useful? If so, how? • What are the most feasible policy options and entry points for reducing or avoiding risks and capturing ecosystem service opportunities? • How can policy measures, instruments and interventions build on existing experiences?
<p>STEP 6: Implementing change</p>  <p>STEP 6</p>	<p>Step 6 involves developing a strategy to operationalise the policy recommendations generated in step 5. It involves preparing a work plan, as well as a stakeholder engagement and communication strategy for the implementation of measures to integrate ecosystem services in the development plan (economic activities, with emphasis in agriculture).</p>	<ul style="list-style-type: none"> • Implementation strategy and operational work plan. • Communication strategy specifying target audience, key messages and possible champions and allies to encourage and operationalise the required changes. 	<ul style="list-style-type: none"> • Are the proposed policy options realistic, feasible, acceptable and consistent with the development plan? • Are the necessary financial, technical, human resource and institutional capacities in place to deliver the policy options? • Who will be involved in implementing the policy measures and in what role? • How will the impacts of the policy measures be monitored? • How will learning be generated, shared and communicated?




ECOSYSTEM SERVICES AND THEIR SYMBOLS

Adapted from FAO (2018), MEA (2005) and TEEB (2010). Copyright of ecosystem services illustrations: Jan Sosse. For more information please write to teeb@ufz.de

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



	Food	<p>Ecosystems provide the conditions for collecting, hunting, harvesting and growing food in wild habitats (like fish, honey, mushrooms, wild fruits) and in managed agroecosystems (like maize, rice, meat, etc.).</p> <p>Agroecosystems require additional external inputs to grow food, such as human seed dispersal, fertilizers, irrigation, livestock management, etc.</p>
	Raw materials	<p>Ecosystems provide a great diversity of materials for construction and fuel (for example, timber, biofuels, oils, etc.), or as inputs for other products (for example, fibres like cotton and wool).</p> <p>Agroecosystems require additional external inputs to provide raw materials, such as human seed dispersal, fertilizers, irrigation, livestock management, etc.</p>
	Fresh water	<p>Ecosystems provide surface and groundwater.</p> <p>Only when adequately managed and, in comparison to uncovered soils, agroecosystems and grasslands can maintain water retention capacity.</p>
	Medicinal resources	<p>Ecosystems provide many plants that can be collected to be used as traditional medicines and as input for the pharmaceutical industry, for example, honey, eucalyptus, mushrooms, algae, quinine, etc. When grown in agroecosystems, medicinal resources require external inputs to be produced.</p>

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	<p>In vegetation-covered-ecosystems, trees remove pollutants and absorb toxic gases from the atmosphere. They also decrease diurnal variations in temperature and humidity.</p> <p>When agroecosystems change the vegetation cover by deforestation, they decrease the capacity of local climate and air quality regulation. Nevertheless, some crops also have a potential to clean the air. Moreover, when maintained in agroecosystems, trees benefit crops' productivity by absorbing pollutants and regulating the temperature.</p>
	Carbon sequestration and storage	<p>In vegetation-covered-ecosystems, as trees and plants grow, they remove carbon dioxide from the atmosphere and effectively lock it away in their tissues.</p> <p>When agroecosystems change the vegetation cover by deforestation, they decrease the capacity of carbon sequestration and storage. Nevertheless, improved agricultural practices allow plant biomass and soil to store carbon. Also, when maintaining trees, the fallen leaves in the fields allow accumulation of carbon in the soil.</p>
	Moderation of extreme events	<p>Ecosystems and living organisms create buffers against natural hazards such as floods, storms, landslides and droughts.</p> <p>When agroecosystems change the vegetation cover by deforestation, they decrease the capacity of moderation of extreme events. Nevertheless, adequately managed agroecosystems and grasslands can maintain a vegetation control, protecting the crops and reducing risks of droughts and floods due to the maintenance of water retention capacity.</p>

 Waste-water treatment	<p>Micro-organisms in ecosystems' soil and root systems in trees, decompose human and animal waste, as well as many pollutants. When agroecosystems change the vegetation cover by deforestation, they decrease the capacity of waste water treatment. Moreover, agricultural effluents and livestock are a big source of water pollution. Nevertheless, agricultural systems can be designed to decrease waste water and water pollution.</p>
 Erosion prevention and maintenance of soil fertility	<p>Vegetation cover in ecosystems helps avoiding soil erosion, which is a key factor in the process of land degradation and desertification. When agroecosystems change the vegetation cover by deforestation, they decrease the capacity of erosion prevention and maintenance of soil fertility. Soil degradation leads to a decrease in farming productivity, nevertheless, agricultural systems can be managed to restore and maintain the soil.</p>
 Pollination	<p>Ecosystems provide habitat for insects, birds and bats, that transfer pollen, allowing fertilization of crops. In agroecosystems, pollinators are crucial for 87 out of the 115 leading global food crops. Yet, pollination is under stress due to habitat destruction, intensification of agriculture and pesticide misuse. Nevertheless, agricultural systems can adopt practices to maintain pollinators.</p>
 Biological control	<p>Ecosystems are important for regulating pests and vector borne diseases. By being more complex and diversified, ecosystems provide the conditions for parasites and predators to decrease populations of pests and diseases. Pests, diseases and weeds limit crop production. Diversified agroecosystems provide better opportunities of biological control than monocultures by, among others, providing food and habitat to parasites and predators of plagues and pests.</p>

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	<p>Ecosystems provide everything that an individual plant or animal needs to survive. Migratory species need habitats along their migrating routes. When agroecosystems change the vegetation cover by deforestation, they decrease the habitat for species. Nevertheless, adequately managed agroecosystems can try to recreate natural ecosystems' diversity and habitats. This can also allow higher yields and long-term production.</p>
 Maintenance of genetic diversity	<p>Ecosystems provide genetic diversity to distinguish different breeds or races, providing the basis for locally well-adapted agroecosystems and a gene pool for further developing commercial crops. Managing agroecosystems to maintain the genetic diversity and the interactions between different species, allows productivity increase, adaptation capacity of the crop and reduction of pests and diseases.</p>

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

 Mental and physical health	<p>Ecosystems provide natural landscapes and urban green spaces which play an important role for maintaining mental and physical health. When agroecosystems change the vegetation cover by deforestation, they can decrease spaces useful for encouraging mental and physical health. Nevertheless, when adequately managed, agroecosystems and grasslands can host spaces for encouraging mental health benefits and sports.</p>
 Outdoor recreation	<p>Ecosystems provide natural landscapes which provide opportunities for recreation, leisure and enjoyment. When agroecosystems change the vegetation cover by deforestation, they can decrease spaces useful for recreation. Nevertheless, some</p>

	agrarian landscapes can also offer farm tourism due to the natural beauty of some plantations.
 <p>Aesthetic appreciation and inspiration for culture, art and design</p>	<p>Language, knowledge and appreciation of the natural environment provided by ecosystems, have been intimately related throughout human history.</p> <p>Agricultural landscapes and agropastoral systems have high cultural values for many societies. Even many cultivars are maintained for ceremonial purposes of communities.</p>
 <p>Spiritual experience and sense of place</p>	<p>Nature is a common element of all major religions; natural landscapes also form local identity and sense of belonging.</p> <p>In agroecosystems, some cultivars are central for many religions, and world views of communities. Agricultural practices and livestock create a sense of belonging in many societies and are a crucial pillar of many aspects of social significance.</p>

PART I. INTRODUCTION TO THE IES TRAINING

Integrating Ecosystem Services into Development Planning in Agrarian Landscapes

A practice-oriented training based on the Harvard Case Methodology

Nature is the source of life. Human wellbeing depends largely on the benefits that ecosystems provide. Services such as water purification, soil fertility, pollination and erosion prevention – to name just a few – are essential for food production, climate change adaptation and the protection of infrastructure and human settlements from extreme weather events. Yet society and policies often fail to recognize the value of nature's services, meaning that they are under-emphasised or even ignored altogether in decision-making. As a result, biodiversity and ecosystems are being degraded worldwide, jeopardizing their capacity to render key services. Restoring ecosystems or substituting their natural services is expensive or, in many cases, impossible.

A better ability to assess and value the benefits of ecosystem services can help development planners to understand in which ways human actions depend on and impact ecosystem services, consider the trade-offs among options, and choose policies that are able to sustain such services. An ecosystem services focus promotes the implementation of environment-friendly measures and policies, and helps consider the value of ecosystems and biodiversity across different sectors and stakeholder groups. As such, it offers an important tool for mainstreaming biodiversity into decision-making.

Agrarian landscapes

The importance of the agricultural sector is widely recognized. More than 3 billion people live in rural areas, and near 2.5 billion derive their livelihoods from agriculture (FAO, 2013). Also, by 2014, agriculture and its related activities accounted for near 30% of the global employment (World Bank, 2018). Moreover, agriculture uses near 11% of land surface for production (FAO, 2011). Even though the development of the sector is crucial for meeting the demand of food for a growing population, there are multiple challenges associated to its use of resources and impacts. For example, agricultural production accounts for 70% of freshwater withdrawals (FAO, 2011) and is responsible for near 80% of deforestation worldwide (FAO, 2017). When inadequately planned, the use of ecosystem services for agriculture implicates a decrease of availability in quantity and quality of those crucial to other activities and stakeholders, and more importantly, in the long term, for the agricultural sector itself.

Even though agriculture accounts for 4% of the global GDP, in some developing countries the sector accounts for 30% of the economy or more (World Bank database, 2017). In these countries, the lack of recognition of the importance of ecosystem services for the sector poses even more significant risks to their population and their livelihoods. Accounting for the contributions of ecosystem services, minimizes the risks and increases the long-term opportunities for agriculture, other economic activities and the population.

Our approach

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) developed a guide for development planners and policymakers on Integrating Ecosystem Services (IES) into Development Planning. The present training builds on this guide and advocates a stepwise approach through which it is possible to recognize, demonstrate and capture the value of biodiversity and ecosystem services for development planning in economies where agriculture plays a major role. This training combines

the theoretical and practical elements of the IES stepwise approach, with a focus in agrarian landscapes, and guides through the application of each step:

1. **Defining the scope and setting the stage** – What are the main development and management issues that the IES process needs to address and for which purpose? Who are the relevant stakeholders and how should they participate in the IES process?
2. **Screening and prioritizing ecosystem services** – How does the development plan and current agricultural practices depend and impact on ecosystem services?
3. **Identifying conditions, trends, and trade-offs** – What are the current conditions and likely future trends in ecosystem services demand and supply? What are the main drivers of change and which trade-offs are foreseeable?
4. **Appraising the institutional and cultural framework** – Which organizations and institutions govern ecosystems and their services? Who participates in decision-making and in what role?
5. **Preparing better decision making** – What are ecosystem-related risks and opportunities and how can they be factored into decisions?
6. **Implementing change** – Are the proposed policy options realistic, feasible, acceptable and consistent with the development plan? Who will be involved in implementing the policy measures and in what role?

Objectives

The training course introduces the theoretical and practical starting points of integrating ecosystem services into development planning in economies where agriculture plays a crucial role. The objective of the training is to recognize the correlation between ecosystem services and development activities, with emphasis in agriculture, as a crucial factor for development planning. Specific objectives include:

- Provide an overview of the IES approach, its applicability in development planning and potential outcomes.
- Learn how to recognize the linkages between ecosystem services and development activities, accentuating those related to agriculture, and understand related risks and opportunities.
- Become familiar with tools and methods for assessing, valuing and integrating ecosystem services into development planning.
- Learn key factors for the analysis of the legal, institutional and cultural framework in which related stakeholders make decisions that affect ecosystem services, and for the identification of drivers.
- Reflect on policy options and instruments to promote policies that integrate ecosystem services.
- Ground the approach in the context of partner countries and identify and agree upon steps for implementation.

Methodology

The training course utilizes a mixture of interactive lectures, open discussions, groupwork, case studies and real-world examples. During the group discussions, participants can share their knowledge and learn from each other's experience.

Also, the training is based on the Harvard Case Methodology, which conveys teaching messages mainly through interactive practical work by participants. The training exercises are based on the fictitious country of Zentralistan, a case portraying situations closely related with real development

challenges. In this training, a closer look is taken to one of Zentralistan provinces, Egana, which economy highly depends on agriculture.

All modules follow a similar sequence, including the following elements:

1. The **introduction** to the module, given by the trainer with the help of a power-point presentation or other visual aids, covers the theoretical background of the module and introduces participants to the case study and the exercises. For this training, the module introductory slides (PowerPoint) align with the training manual and handouts. Their basic message should not be changed, but it can be extended with, for instance, regional case examples that fit better to participants experience and understanding.
2. The **exercises** based on the case study, give participants the opportunity to work through different aspects highlighted in the theoretical background. During the exercises, participants typically work in groups and adopt the role of ‘case study experts’ or involved stakeholders in charge of a specific task.
3. In the **presentation of results**, work groups present their findings to the plenary. The presentation should highlight major findings and/or questions from the case work. It is important that this step is introduced as a chance to share experiences and for mutual learning instead of a ‘test’. Trainers ask probing questions and can offer alternatives and corrections when necessary.
4. During the **reflection**, participants reassume their own real-life position. They reflect on their experiences during the exercise and link them to their own work and context.
5. **Recap** of the **key messages** of the previous presentations and link it to the next module/presentation.

Target audience

The training is targeted to government staff in different levels (national, regional, local), non-governmental organizations and groups, private sector managers and staff, advisors and consultants, researchers and academics, practitioners and technical staff, who are working in the process of designing, implementing and/or changing instruments and/or policies associated to development planning with a special focus in agriculture, and would like to integrate the ecosystem services approach.

A maximum of 20 participants is recommended for each training course.

Duration

The course can be adjusted to the individual needs of participants and lasts between 2 to 4 days. The longer the training course, the more of the topics of the course can be covered.

Training materials

The complete working material for the application of the course includes the following:

- Course description
- Agenda
- Annotated agenda of the course
- 6 PPT presentations, corresponding to each one of the theoretical modules
- Workbook for participants, which include the exercises and background information
- 3 Maps of Zentralistan printed in large scale (to fit in a pinboard)
- IES Manual

- This manual

All of these materials can be found in the electronic supplement to this guide. It is crucial to have the PPT presentations at hand when revising this manual.

Participants will work most of the exercises in three different groups. All the groups will work with the case study of Egana (province of Zentralistan), focusing on different issues. Each participant of the three groups will receive the corresponding **workbook** that contains an introduction to Zentralistan (including baseline situation, context, challenges, map, etc.), exercises, exercises' instructions, information on institutional set-up and other relevant background information. The workbooks can be distributed once the three groups are formed, before starting exercise number 1.

Trainers

Number of trainers

The amount of work necessary for designing, preparing and implementing the IES training requires to have minimum two experienced trainers. Trainers have different characteristics, which are perceived, accepted and appreciated differently by participants. Being a trainer is very demanding and intensive. It requires phases of rest and reflection. While one trainer guides the group process, the other may reflect on the program details or the group dynamics and prepare the next steps. Often, new materials are needed, cards have to be distributed or collected, discussion items need to be written down or several working groups require to be supervised. If there is not a possibility to have a co-trainer, it is important to insist on having at least an event assistant who supports on all the logistic aspects throughout the entire training.

Qualifications of the trainers

The trainers need to have substantial knowledge about ecosystem services, about political decision- and advisory processes. Moreover, some experience in agriculture and ecosystem services is an advantage. Trainers must be able to perfectly understand and relate to the whole content and perspective of the training, so that they can accurately guide the learning process of participants.

Also, trainers should be able to design and implement an interactive training. The training should not be perceived from participants as a series of lectures and presentations. The training should be acknowledged as a learning process, based on practical exercises, real-case examples, experience sharing, discussions and reflection. For this, the trainers should facilitate and moderate the learning process, be able to communicate concepts in the most practical and less complicated manner and guide participants to achieve the objectives of the training. For more on the roles and skills of the trainer, go to the module “Implementing an interactive training” below.

Fulfilling the required qualifications of the trainers is crucial, since without it, there is a risk of providing participants with incorrect information on the whole background, principles and applications of the IES approach.

Training structure

The training consists of six modules, which include six exercises corresponding to the six-step approach.

Module 1. Introduction to Ecosystem Services and IES approach

Module 2. Defining the scope, screening and prioritizing ecosystem services (Step 1 and 2)

Module 3. Ecosystem services assessments: Identifying conditions, trends and trade-offs (Step 3)

Module 4. Governance of ecosystem services: Appraising the institutional and cultural framework (Step 4)

Module 5. Preparing a better decision-making and valuation of ecosystem services (Step 5)

Module 6. Capturing the value of ecosystem services in policy tools (Step 5)

Before each one of the exercises there is a presentation with necessary concepts, tools and examples to understand each one of the steps, as well as an introduction to the background information of each exercise. After the exercises there is a presentation of results in plenary and reflection of key messages. In addition to the lecture presentations and the exercises, there are some other elements to be included in the agenda:

Welcoming and introduction of trainees and trainers

The individuals, organization or project organizing the workshop should introduce the training, welcome the participants and explain its purpose. This is important, as it vests the ownership of the training in the host. It also helps to clarify the workshop goals and describe its relationship to the participant's current work.

Afterwards, the organizers should introduce you as the facilitators. Once you give a short welcome, ask the participants to introduce themselves. There are several ways of doing this. The easiest way is just to request participants to introduce themselves one by one and state what are their interests and/or expectations for the workshop.

Recommendations on how to introduce participants

A more vivid way of doing it is to ask the group to stand in a circle. Then take a ball (or something similar), introduce yourself and throw it to a participant. Ask this participant to introduce him or herself (name, institution/ background and what their interest in the training is) and then to throw the ball to the next one. Continue doing this until everyone has introduced himself/herself to the group.

Another interesting and time-effective way for introductions is to ask the group to stand up and cluster around different topics. You can ask them to form groups according to educational background (typically social and natural sciences, engineering and law). After this, you can ask them to imagine that the room is a country or world map and ask them to stand on the country, city or region where they come from or where they work. You can also ask them to form a line according to their experience with ecosystem services, with "no experience" on one end and the "experts" on another end. Be sure to walk around and ask some of the participants why they are standing where they are. By using this method, you also get a good idea of the group composition in terms of technical background and expertise.

Introduction to the course

After the welcome and introduction, present an overview of the training. This includes the background, rationale, objectives, methodology, target audience, duration and agenda (see previous sections of this manual).

You may visualize the information about the course in an abbreviated form on a flipchart or PPT.

Working rules

When introducing the training, elaborate with the participants the working rules to follow during the training. Write them on a flipchart as they come up during the discussion. Some examples of working rules can be:

- Listen and learn from each other (horizontal learning).
- Participate in an active way.
- Ask whenever something is not understood.
- Don't use laptops or mobile phones during the sessions.
- Start on time and end on time.
- Have fun.

It is important to note that as a trainer, you should also commit to certain working rules – and be subject to those agreed for the participants. Not only should the rules extend to the trainers, but it is also a way of showing equality and good will - that the trainers do not somehow consider themselves superior to the participants or 'above' the rules.

Expectations of participants

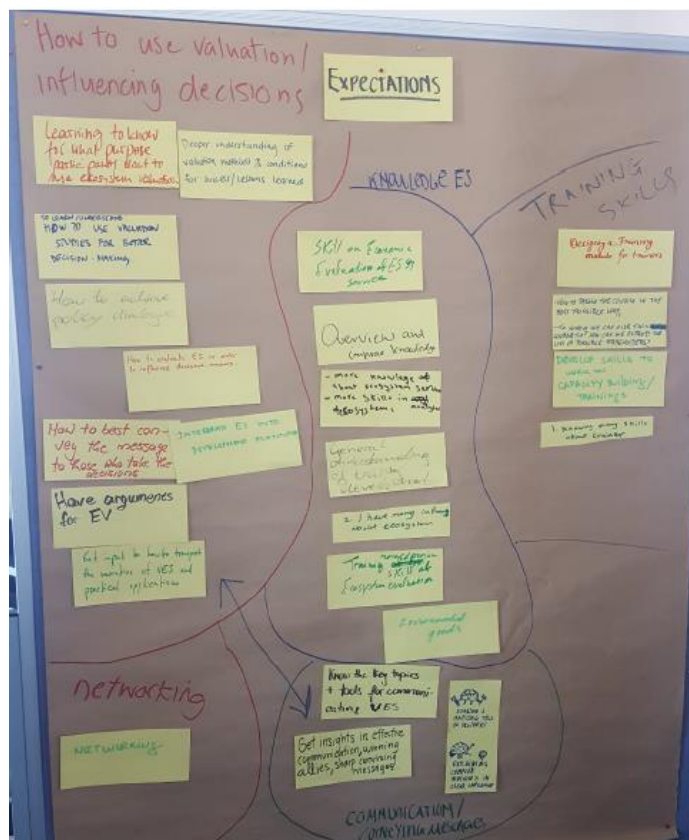
Asking the participants about their expectations is a good way to make them know whether the training will fulfil their prospects. Also, when possible, knowing participants' expectations before the training can help to adapt the content to their needs. Reacting to expectations increases the training's value.

Expectations can be collected before or at the beginning of the training. When collected before the training, you should read all the expectations, write them down in cards, classify and place them in a pinboard. In case the expectations are not collected before the training, ask participants to write their expectations at the beginning of the training (in one or two cards). As the participants finish, classify the cards and place them in the pinboard.

When presenting the expectations, explain which expectations can be fulfilled and to which extent. Also, clarify which expectations cannot be fulfilled and why.

Recap of the previous day

At the start of each training day (except the first day), it is useful to have a session where participants are asked to recall the most important aspects and lessons learnt of the previous day. This is a way of reinforcing and internalising the learning. Ask them, for example, "What was good and important for



you yesterday?” and “Which questions are still unanswered and should be considered?”. Another way of doing this would be to assign two participants each day to present the recap of the previous day to the entire group. It is left to the creativity of participants on how they will structure this recap. They can, for example, use the flipcharts to visually summarize some of the key concepts of the previous day, or they could hold a quiz where they ask the other participants about some of the most important aspects of the previous day. Essentially, the participants can come up with their own creative way of presenting a recap.

Conclusions and closing remarks at the end of the day

At the end of each training day (except the last day), it is useful to give some time to wrap up all the key messages of the day. This also helps reinforcing the learning process and introducing participants for the topics to come the next day.

Course evaluation



At the end of the training, you may want (or be required to) conduct a course evaluation. This is always good practice, because it gives the participants a chance to feedback their views and feelings and is also a way for the trainers and organizers to learn how to conduct their courses better in the future. There are different ways of doing this. You can do a verbal evaluation in the plenary, where you ask the participants what they learned and liked or what they missed and disliked. You can refer back to the participants’ expectations collected on a board during the training and discuss whether they have been fulfilled. Also, you can ask them to write what they liked and what they disliked in cards of different colours.

Additionally, or instead of the verbal feedback, you can conduct a simple query using a smiley-face matrix, where the trainees can evaluate different

components of the training. Prepare a blank matrix, with the components to be evaluated, and the various levels of satisfaction. The components can include: presentations/theoretical inputs, case work, facilitation, time management, location, logistics, atmosphere, etc. Use 3 to 5 smiley faces for the evaluation. The components can be evaluated by the trainees according to whether they were very happy, happy, satisfied, unhappy, very unhappy.

Explain the meaning of the smiley faces to the trainees. Then turn the matrix away from the group so that participants can vote privately. Give each participant one voting dot per component to be evaluated or give them a marker. Ask participants to vote one by one.

In case the evaluation is written, it is important to show it to the participants. In case it is necessary, some clarifications can be discussed.

Where do we go from here?

This session can be held on the last day of the training, after finishing with all the exercises on the IES approach. The objective is for participants to foresee where they can apply the IES approach in their own work context. This can be facilitated in a plenary discussion or in working groups. Also, you can give some time for participants to present their own cases, in which they see potential to apply the approach, and get peer advice from the rest of the group. In this case, some participants could shortly present their cases to the rest of the group and then, create teams in which other participants could give advice on specific questions. To get more information on the format in which peer advice can be implemented, revise Annex II.

When the course is a training of the trainers...

Include time for presentations and exercises on adult learning, methods for interactive participatory trainings, facilitation of learning, group processes and training design (for a more detailed description, see Part II: Implementing an Interactive Training).

Agenda

The general time frame depends on the number of working groups, the time spent on the lecture slides and the presentation and discussion of exercises' results. The training will probably have to be adapted to the general framework, the audience and the time available for the course. The overall time required for the whole course can vary between 2 and 4 days. It is important to notice that some content and exercises may have to be omitted if the training is to be delivered in less than four days.

The agenda can be adapted to the participants' interests and needs. Below, find some suggestions on how to adapt the agenda for fewer training days. Agree with the organizers which are the most important modules for participants to achieve the learning objectives.

It is strongly suggested to write the agenda in a pinboard with cards and place it in a visible place in the training room. This allows to discuss changes with the trainees and adjust the content accordingly.

Agenda for 4 days

Time	Day 1	Day 2	Day 3	Day 4
9:00	Welcome and introduction	RECAP	RECAP	RECAP
	Presentation on the course Participants introductions and expectations	P3: Methods Navigator (Interactive presentation)	P5: Valuation of ecosystem services (PPT)	P6: Policy Tools to capture the value of ecosystem services (PPT)
10:30	BREAK	BREAK	BREAK	BREAK
	P1: Introduction to Ecosystem Services (PPT)	Exercise 3: Where the story begins Step 3	Cont. P5: Valuation of ecosystem services (PPT)	Exercise 6: Putting the pieces together Step 6
	Exercise 1: Getting familiar with Zentralistan Step 1 and 2		Exercise 5: Applying economic valuation Step 5 <i>Option: field trip</i>	
12:30	LUNCH	LUNCH	LUNCH	LUNCH
	Exercise 2: Where the story begins		Cont. exercise 5: Applying economic valuation	Where do we go from here?

	Step 2	P4: Stakeholders and governance of ecosystem services (PPT)	Step 5 <i>Option: field trip</i>	Course evaluation
				Thanks and close
15:30	BREAK	BREAK	BREAK	
	Cont. exercise 2: Where the story begins Step 2	Exercise 4: Stakeholder meeting at the Town Hall Step 4	Cont. exercise 5: Applying economic valuation Step 5 <i>Option: field trip</i>	
	P2: Ecosystem services Assessments (PPT)			
18:00	Conclusions and closing remarks	Conclusions and closing remarks	Conclusions and closing remarks	

As illustrated in the 4-day agenda, there is a possibility of applying exercise 5 in a field trip. This would allow participants to have an overview of the application of the IES approach and economic valuation of ecosystem services in a real-life case study (for detailed information on how to plan a field trip, see: Application of exercise 5: Applying economic valuation in Egana, step 5).

Agenda for 3 days

Time	Day 1	Day 2	Day 3
9:00	Welcome and introduction	RECAP	RECAP
	Presentation on the course Participants introductions and expectations	Exercise 3: Where the story begins Step 3	Exercise 5: Applying economic valuation in Egana Step 5
10:30	BREAK	BREAK	BREAK
	P1: Introduction to Ecosystem Services (PPT)	Cont. exercise 3: Where the story begins Step 3	Cont. exercise 5: Applying economic valuation in Egana Step 5
	Exercise 1: Getting familiar with Zentralistan Step 1 and 2	P4: Stakeholders and governance of ecosystem services (PPT)	P6: Policy Tools to capture the value of ecosystem services (PPT)
12:30	LUNCH	LUNCH	LUNCH
	Exercise 2: Where the story begins Step 2	Exercise 4: Stakeholder meeting at the Town Hall Step 4	Exercise 6: Putting the pieces together Step 6
15:30	BREAK	BREAK	BREAK
	P2: Ecosystem services Assessments (PPT)	P5: Valuation of ecosystem services (PPT)	Where do we go from here?
	P3: Methods Navigator (Interactive presentation)		Course evaluation
18:00	Conclusions and closing remarks	Conclusions and closing remarks	Thanks and close

Agenda for 2 days

Time	Day 1	Day 2
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9:00	Welcome and introduction	RECAP
	Presentation on the course Participants introductions and expectations	P4: Stakeholders and governance of ecosystem services (Interactive presentation)
10:30	BREAK	BREAK
	P1: Introduction to Ecosystem Services (PPT)	P5: Valuation of ecosystem services (PPT)
	Exercise 1: Getting familiar with Zentralistan Step 1 and 2	Exercise 4: Applying economic valuation in Egana Step 5
12:30	LUNCH	LUNCH
	Exercise 2: Where the story begins Step 2	Cont. exercise 4: Applying economic valuation in Egana Step 5
		P6: Policy Tools to capture the value of ecosystem services (PPT)
15:30	BREAK	BREAK
	P2: Ecosystem services Assessments (PPT)	Exercise 5: Putting the pieces together Step 6
	Exercise 3: Where the story begins Step 3 (in plenary)	Where do we go from here?
		Course evaluation
18:00	Conclusions and closing remarks	Thanks and close

Adapting the training to your audience

It is not only possible, but actually suggested, to tailor the agenda, presentations and exercises to the specific needs and interests of the participants. We recommend, before making any modification, to agree with the course organizers on which are the main objectives and key messages that participants should take for their everyday work. Based on that, you can modify the agenda, presentations and exercises as it fits best. For example, you might want to change the main export-oriented crops of the case study or might also want to tailor the course and examples to a particular country, or site.

Presentations

When it comes to changes in the presentations, make sure that the information that remains from the original presentation is always cited (the reference should state the presentation is modified from the original, and must include the complete citation of the original presentation). This should include all the examples used, where the full reference to the publication upon which the case study is based should always be given. Also, specify when modifications were made on the original slides.

Remember that the idea of the training is to present concepts in the easiest language as possible. If you will add or modify something, make sure that it will help the participants to achieve their goal and that will give aggregated value to their learning process. Also, remember that you should avoid making very long and heavy presentations with technical language, as this could be counterproductive in terms of attention and learning.

The original presentations already have some examples, but it is ideal, and we actually encourage you, to CHANGE them according to the participants' interests and needs. To do so, make sure that the example you are giving is relevant for the topic and that it is rightfully cited. If you use the original examples in the presentations, read the complete case study to explain it appropriately and cite it accordingly.

Also, many times the participants already have some real-life case studies which enclose key messages of the training. In such case, we recommend giving some time for them to present in plenary, so the rest of the group can learn from those experiences. In such cases, try to highlight the key messages in the framework of the training, so that participants can take it as a lesson learned that they can apply to their own work/cases.

Change to exercises and case studies

It may also be necessary to change the case studies and the exercises. Before doing so, agree with the organizers of the training on the main changes to be made, based on the learning objectives you want the participants to achieve. When changing/adapting the case studies, make sure to include the elements for participants to learn the key messages.

Changes can be made in certain aspects of the economic, political and environmental context of the case study to fit a specific learning objective, or you could also change the crops, type and scale of agriculture of the work cases to make them more useful for the participants. Just take into account that the background information throughout all the exercises is associated, therefore, if you want to make changes to, for example, the Zentralistan context, modifications will need to be made in the additional information sections of the following exercises. Watch out, since changes made in the context may also require changes in the Zentralistan and Egana map!

It is also possible to use real-case studies relevant to the organizers or the participants and apply the exercises to these specific contexts. In this case, we suggest the cases to be organized in a similar way as the original ones, so that participants can count on the background information they need for solving the exercises. You can also divide the group in three or four working teams, who can work in different or similar cases, but remember that it is not recommendable to have groups with more than 7 people, since it would be counterproductive for the learning process of the participants. It is highly recommended to have a map on the area of the case study and print it in a size and resolution that allows to show it in the plenary. You might even want to have one printed map for each one of the working groups.

When changing the exercises and the questions, be careful to formulate or modify them in such a way that the key messages and learning objectives are adequately transmitted.

In the case participants are working in ongoing real case studies, and they would like to obtain some feedback, you can plan a session for peer reviewing in the last day of the training. These participants can present their case studies in plenary and divide in groups to receive feedback and recommendations, based on what the group learned throughout the training. A recommendation of the format of a peer-review session can be found in the Annex II.

Whichever change done to the case studies or/and exercises should be cited and clarified accordingly (the reference should state the exercise is modified from the original and must include the complete citation of the original exercise).

About this manual

This manual is a guide for trainers on how to implement the training. It is important to mention that it does not provide theoretical information in detail, since it is expected that the trainers already have experience in ecosystem services, policy advising and agriculture. Instead, it clarifies the GIZ perspective on the ecosystem services approach and the key messages to consider its integration in decision-making and agricultural planning. Nevertheless, it provides some references and sources for consultations, in case of required.

In the first section, the manual includes some basics on how to “be a trainer” and how to implement an interactive training. It also gives tips and recommendations on the application of the training exercises and contains each one of them with examples of the answers. Remember that these examples, represent one of many possible outcomes: they are not the only possible answers.

PART II. IMPLEMENTING AN INTERACTIVE TRAINING

The responsibility to deliver a successful training course falls in large-part on the trainer. Being a trainer implies to be a facilitator of learning and create all the necessary conditions for participants to make the most out of the training. In order to do so, trainers require to take into account different aspects that can increase the quality of participants' learning process: adult learning, methods for an interactive participatory training, roles and functions of a trainer, management of group processes and training design. In this section, there is a brief description of each one of these aspects as well as some recommendations for increasing the trainings' learning experience.

How adults learn?

Part of being an effective trainer involves understanding how adults learn best. Compared to children and teenagers, adults have special needs and requirements as learners.

Principles of adult learning

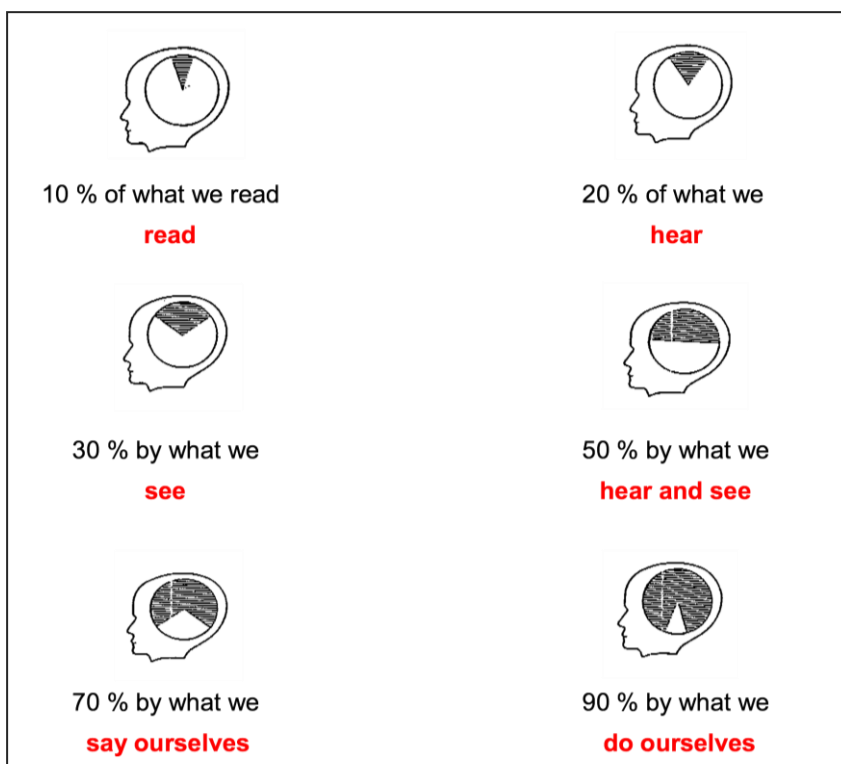
- **Adults already know a lot.** Adults have accumulated life experiences and knowledge. In order to ensure that they retain and use the new information, they need to be able to integrate new ideas with what they already know. The trainer's job is to mobilize the participant's knowledge first, before adding new information, and subsequently to provide opportunities to discuss and reflect on new knowledge and insights, and to adapt it to individual circumstances.
- As with all learners, **adults need to be shown respect.** Trainers must acknowledge the wealth of experiences that adult participants bring to the training. These adults should be treated as equals in experience and knowledge, and should be allowed to voice their opinions freely in the group.
- **Adults are autonomous and self-directed.** They need to be free to direct themselves. Trainers have to act as facilitators, guiding participants to explore their own knowledge rather than supplying them with ready-made facts. They must facilitate the participants' own learning process and actively integrate the interests of the participants in the design of the training. They should allow participants to assume responsibility for presentations and group leadership.
- **Adults are goal-oriented.** Upon enrolling in a training course, adults usually know what goal they want to attain. Therefore, they appreciate a learning programme that is well organized and has clearly defined objectives and elements. Trainers must show participants how the training will help them to attain their goals.
- **Adults are relevancy-oriented.** They must see a reason for learning something. For learning to be valuable for them, it has to be applicable to their work or other responsibilities. They may not be interested in knowledge for its own sake. Therefore, trainers need a sound understanding of the participants' motivations and must continuously try to harmonize the training content and design with the life and work context of the participants. They should make participants think about the practical application of the newly acquired knowledge at their work place.

What do adults remember?

In general, adults remember only about 10% of what they **read** (e.g. in newspapers, in power point slides - if information is not presented in a spoken manner as well). They remember twice as much of what it's **said**, and 50% of what it's **said and seen**. Adults also remember 70% of what they **say** themselves, but they remember best what they **say and do**!

Moreover, when it comes to information assimilation, some adults prefer visual methods, while others remember better with auditory or kinaesthetic methods.

As a consequence, it is important to make use of methods that address different ways of learning. Instead of just giving a lecture, it is recommended to facilitate the learning process with reading materials, good visualization aids, encouraging group work and discussions, and most important, letting participants work with and plan their own cases and projects. For example, ask participants to turn to their neighbour after a lecture and let them talk about what they remember. This will allow them to absorb a much higher percentage of the new information.



Methods for an interactive participatory training

There are many different methods that can be chosen to maximize the learning processes during a training. Below is a list of some of the most common methods and tools. Successful participatory training courses typically draw upon a combination of some of them.

Method	Key characteristics and uses
Group work	<ul style="list-style-type: none"> Consists of small groups receiving a specific task or problem that they need to solve or accomplish. Highly participatory; all group members share knowledge and delve into the subject matter in greater depth. Advisable to let group members assume different roles during group work (moderator, time-keeper and presenter) to ensure a smooth process.

Expert lecture	<ul style="list-style-type: none"> • Consists of a traditional classroom-type lecture where audience assumes a passive role and listens to presenter. • Top-down technique, useful for levelling the knowledge base among participants and delivering information that may not be well-known among participants. • Can be made interactive by asking questions or inviting participants to make questions.
Guided discussion	<ul style="list-style-type: none"> • Consists of a debate or dialogue guided by questions from the facilitator that are answered by the audience. • Typically, at least one question is developed for each specific learning objective.
Role play	<ul style="list-style-type: none"> • Consists of single participants or small groups assuming a given role and then interacting with other “actors” in a pre-defined fictitious setting. • Enables participants to become aware/be sensitized of actors’ different positions and interests in discussions or negotiations.
Brainstorming	<ul style="list-style-type: none"> • Consists of a relatively unstructured collection of ideas and insights on given topics. • A facilitator moderates the discussion and writes down participants’ inputs. • Useful for gaining new insights and viewpoints that can then be used to deepen discussions/reflections.
Games and dynamics	<ul style="list-style-type: none"> • Consists of a wide array of group and individual tasks in a relaxed and potentially highly active atmosphere. Usually, groups or individuals get a task that they need to solve or represent. • Useful as ice breakers or energizers when interest or energy is dwindling, or to gain insights and lessons learned on specific issues. • Should be used appropriately and at the right times (when, for instance, energy is low such as after the lunch break): too many games can cause the event to lose seriousness and credibility, while not enough games may result in distraction and boredom.
Case study	<ul style="list-style-type: none"> • Consists of participants applying learned content and insights to solve problems based on a specific situation, which can be real or fictitious. • Enables participants to understand and apply knowledge in a dynamic setting. • Useful to draw attention to and analyze specific topics. • Fictitious cases aid in generating non-emotional engagement with real life-like situations.

Harvard Case Method¹

One main method used in this training is the **Harvard Case Method**. This is a tested approach for practice-oriented, interactive learning. Its application includes the combination of different methods, such as group work, case study, role play and guided discussion. It was developed in the context of university teaching, where it is largely based on the intensive exploration and discussion of a particular case relevant to the teaching objectives. This method stimulates the trainee's active exploration and conclusion development, rather than providing ready-made teaching messages. It also conveys teaching messages through **interactive practical work by participants**.

The five golden rules for a Harvard Case trainer

Rule 1: Do not 'explain' the message of the case directly. Let the trainees find the conclusions themselves. Guide them through the questions.

Rule 2: Provide enough time for the wrap-up phase, where the messages and conclusions are intensively discussed by the participants.

Rule 3: Be precise with your instructions for the case work. The trainees should start the case work with a clear vision of what they have to do.

Rule 4: Limit presentations. Do not talk for more than 15 minutes (except the introductory lecture). If necessary, split lectures into several shorter inputs.

Rule 5: Always invite the trainees to reflect on how the lessons learnt relate to their day-to-day work or to what extent the training approaches need to be adjusted.

The Case Method has been adapted to the particular requirements of this training programme, which means that compared to the university teaching context, trainees play an even more active role, while the role of trainers is less dominant. For example, trainers explore the case study in a group work format while trainers assist, as needed, with guiding questions — in the university context, the teacher guides his/her students through the case with the help of questions.

Materials, preparation and other prerequisites

The Case Method requires intensive preparation prior to the course/training workshop. **The exercises on this training are based in a case of a fictitious country, Zentralistan, and more specifically in one of its provinces, Egana (which economy highly depends on agriculture and livestock). The materials and exercises are already developed and included in the corresponding modules of this manual, as well as in workbooks that must be delivered to the participants.**

Fictitious or real case?

The particular value of having a fictitious case study is that everybody can relate easily, and everybody has the same knowledge. Zentralistan has most of the relevant features needed in order to simulate the whole process of integrating ecosystem services into development planning, and to take a closer look on such process in an economy where agriculture plays a major role.

One could argue that real-world cases would be better, as they are real challenges that training participants could realistically face. The tricky thing, however, is that there are no 'neutral cases' and participants may be biased or hampered in one way or another

¹ Adapted from: Integrating Climate Change Adaptation into Development Cooperation - A Practice-Oriented Training Based on the OECD Policy Guidance. Trainer Handbook. GIZ 2011.

by learning in this manner. Real cases may also provoke unproductive discussions about the reliability of data being used.

Furthermore, it is important to make clear that even in a real case, we would never have all the information we would like to have and dealing with logically drawn assumptions is part of planning for change.

Roles and skills of a trainer

Apart from their knowledge, trainers need specific facilitation skills. The success of a training course greatly depends on skilful and creative facilitation. Good facilitators bring a group together by developing and balancing the group's potential without dominating the discussion, and they are knowledgeable about the issues being discussed but do not force this knowledge on participants.

Trainers should master a variety of techniques to enhance group dynamics and facilitate the learning process of participants. Some of the most important trainer skills are summarized below.

Active listening

There are five key elements to active listening.

1. *Pay attention.* It means to recognize that non-verbal communication also "speaks" loudly.

- Look at the speaker directly.
- Avoid being distracted by environmental factors, such as background noises or people moving.
- Pay attention to the speaker's body language.
- Refrain from side conversations when listening; give the speaker your undivided attention.

2. *Show that you are listening*

- Use your own body language and gestures to convey your attention.
- Nod occasionally.
- Encourage the speaker to continue with small verbal comments like "yes" and "uh huh".

3. *Provide feedback.* Personal filters, assumptions, judgments, and beliefs can distort what is heard. As a listener and facilitator, the trainer needs to understand what is being said and reflect on it. This may require asking certain questions for clarification.

- Reflect what has been said by paraphrasing. "What I'm hearing is ..." and "Sounds like you are saying ..." are great ways to reflect back.
- Ask questions to clarify certain points. "What do you mean when you say ..." "Is this what you mean?"
- Summarize the speaker's comments periodically.

4. *Defer judgment.* Interrupting is a waste of time. It frustrates the speaker and limits full understanding of the message. Therefore, allow the speaker to finish and do not interrupt with counter arguments.

5. *Respond appropriately*

- Be candid, open, and honest in your response.
- Assert your opinions respectfully.
- Treat the other person as you would want to be treated.

Asking good, precise and intelligent questions

Experience and knowledge are made explicit through questions. During training courses, the group learning process should be encouraged by asking carefully formulated questions. It is advisable to test the questions and potential answers amongst the trainer team beforehand.

Basically, there are two types of questions: **closed-ended** and **open-ended questions**.

- Closed-ended questions are designed to recall factual information. These questions are usually answered with short sentences, or a yes or no. Closed-ended questions usually start with “Is”, “Are”, “Can”, “Do”, “Does”, and modal verbs such as “Would”, “Could”, and “Should.”
- Open-ended questions are designed to elicit more ideas and more elaboration from the person responding. It may seek to reflect or draw a conclusion. This is a preferred type of question to be asked when initiating a discussion or for promoting team spirit. Open-ended questions allow for a deeper understanding of the group’s objectives and draw out a person’s knowledge level. They usually start with “What”, “Why” and “How.”

An effective facilitator does not just stop to ask effective questions. Proper timing and accurate delivery are also important. For good and effective question asking, the **APPLE technique** might be useful. APPLE is the acronym for:

- **A**sking the question,
- **P**ausing to allow the participants to comprehend the question and think of an answer,
- **P**icking a member to provide an answer,
- **L**istening to the answer provided, and
- **E**xpanding or elaborating on the answers provided.

Examples of types of questions²

Type of question	Use	Example
Question about the context	<ul style="list-style-type: none"> • Give information on facts and figures regarding a particular situation. 	<ul style="list-style-type: none"> • How many people work in your department? • How often do you facilitate training workshops?
Differentiating questions	<ul style="list-style-type: none"> • To clarify a vague response. • To clearly state differences. 	<ul style="list-style-type: none"> • For whom is the problem greater? • On a scale of 0 – 100, how big is XXX?
Questions for probing reasons and evidence	<ul style="list-style-type: none"> • Test the validity of a reason. • Put evidence on solid ground. 	<ul style="list-style-type: none"> • Why is that happening? • Are these reasons good enough? • What do you think causes XXX? • What evidence is there to support what you are saying?
Questions for probing implications and consequences	<ul style="list-style-type: none"> • To discover unexpected effects. • To discover alternatives that were possibly overlooked. 	<ul style="list-style-type: none"> • What are the consequences of that assumption? • What are the implications for XXX?

² Adapted from: Integrating Climate Change Adaptation into Development Cooperation - A Practice-Oriented Training Based on the OECD Policy Guidance. Trainer Handbook. GIZ 2011.

		<ul style="list-style-type: none"> • How does XXX fit with what we have learned before?
Hypothetical questions	<ul style="list-style-type: none"> • To think about given boundaries. • To think outside of the box. • To explore possible consequences. 	<ul style="list-style-type: none"> • If we speculate: If you were to do XXX, what would be the effects? • If you wanted to change the training approach in your organization, how could this be possible?
Questions about the future	<ul style="list-style-type: none"> • Open the mind to look beyond what the situation is like today. 	<ul style="list-style-type: none"> • What are your intentions once this difficult situation is over? • Where would you like to be two years from now?
Circular questions	<ul style="list-style-type: none"> • Change the perspective. • Introduce other perspectives. 	<ul style="list-style-type: none"> • If I asked your colleagues about what made the situation so difficult, what would they say? • What are some alternative ways of looking at this? • If you had invited a representative from civil society to your meeting, what would have been different?
Questions about behaviour	<ul style="list-style-type: none"> • Help to understand what is happening without passing judgment. • Gain a more detailed perception about the behaviour of others and reframe. • Clarify your own contributions to a situation. 	<ul style="list-style-type: none"> • What exactly happens, when nobody takes responsibility for XXX? • How exactly do you react when the team XXX?
Assessment questions	<ul style="list-style-type: none"> • To step back and use hindsight. • To draw lessons from a particular experience. 	<ul style="list-style-type: none"> • What have you learnt from XXX? • What was encouraging for you? • If you started again, what would you do differently?

Visualization skills

Trainers should possess drawing and good handwriting skills, as well as a sense for arranging space, structure, colours and other moderation or presentation elements to create an attractive learning environment. To make better use of visual written aids, it is important to consider the following rules:

- Use key words and phrases – visualization supplements an explanation but doesn't replace it.
- Structure and message must be clear and understandable.
- When using moderation cards, observe writing rules:
 - print words; do not use cursive
 - write big enough so that the content can be read from a distance
 - be creative in using colours, sizes and shapes of cards
 - one idea per card in no more than three lines
 - use the thick end of the marker

Participation skills

Trainers should attempt to bring out the best in a group by means of cumulative learning, which is generated through the contribution of all the participants. Good trainers make participants feel that “nobody knows everything, but everybody knows something”. They set the tone of the event, trust in other people’s intellectual and creative potential, avoid a sense of winners and losers in a group, and respect the ideas and opinions of others.

Flexibility and dramaturgic skills

Trainers arrange an event to alternate between suspense and thrill, group and plenary sessions, experience-sharing and reflection. Trainers need to be able to adapt and modify sequences of steps, moderation and visualization methods according to the group’s dynamics and needs, time, space, and other conditions that influence the training design.

Trainers should be seen less as a teacher or expert and more as a **facilitator of a learning process**. This fits very well with the trainer sharing his/her knowledge and experiences (e.g. through presentations and insights) as part of an interactive learning design and not in a way that places the trainer’s knowledge and experience in the spotlight.

Making the training come alive!

As mentioned before, it is crucial that the training is not perceived by the trainers as a lecture or a conference. Participants should not think of the trainers as teachers and the sessions should not be perceived as a one-sided task. The trainer’s energy and attitude can set the tone for the whole group. Remember: the whole idea of the training is not to give a lecture, but to facilitate the learning on how to inform a better decision making by integrating the importance of ecosystem services.

For encouraging an active training, it is crucial to:

- Make theoretical presentations as short and concise as possible, avoiding the use of jargon and complex academic concepts.
- During presentations, try to involve participants as much as possible. Make of the presentation a conversation with the group: ask questions, ask for participant’s experience in the topic being presented, etc.
- Mix methods and create a good workshop flow through proper sequencing. It also means mixing intellectual (cognitive), emotional and physical impulses. A day full of lectures and “always-the-same-style-working-groups” can be painful for both sides. Mix input/lecture, group work, discussion, brain-storming, mind-maps, buzz groups, games, role plays, among other techniques. But keep in mind: form follows function, which means that you should first think about the learning objectives and adapt appropriate methods to reach them.
- Never use time from the coffee breaks for making presentations or group work longer.
- Always allocate precise and enough time frames for group work or other tasks.
- Use real life examples, which are relevant to the participants in terms of their background, application context, region, challenges and interests.
- When participants present their work-group, encourage them to do it in the most creative and concise way as possible. Give them feedback when necessary.
- From time to time, certainly every morning, provide an overview on where you are in the training programme. Recall the last topics or last steps in the learning process and provide a look ahead to the day’s programme.

Designing a training

This section provides an overview of what needs to be taken into consideration when designing a training programme.

Clarify objectives and major themes and topics

The first question the trainers must raise to the organizers of the training is regarding the **objectives** that they want to achieve. Discussing the objectives should also include a clarification on the expected outcomes and the desired impact of the training programme. In order to define learning objectives, it is helpful to go to the very end of the learning process by answering the following question: “**What should participants be able to do differently/better after the training course?**”

The trainers and the organizers also need to agree on the approach and discuss how the training programme should be structured. The following questions are helpful in this respect:

- Will the training consist of a single event or are follow-up modules necessary?
- Based on the agreement on the participatory orientation of the training programme, what approach will be taken for the training, e.g. case method, real-case studies?
- On which levels should the training workshops take place, e.g. country, regional, sub- regional, supra-regional?

By clarifying the points above, the trainers should ensure that a training programme is the right way to achieve the organizer’s objectives. Eventually, the trainers may suggest other capacity-building measures going beyond the trainers’ mandate, such as peer-to-peer coaching, network creation or technical advice.

Learn about participants and their needs

The organizers should also provide information regarding who will participate in the training. In case guidance is required, you can discuss with them regarding the criteria to make a proper selection of participants. Some questions that have to be taken into consideration when defining the participants group for a training are:

- How many participants should be in the training? What is the maximum and minimum number?
- What mix of participants is optimal in terms of experience, professional backgrounds and institutional affiliations?
- How can a gender-balanced group be achieved?
- What are the assumptions about the participants’ openness towards a participatory training approach?
- What is the time availability of potential participants?

Once the participants are selected, they need to be asked what they expect from the training programme. As a trainer, you will certainly have assumptions about the participants’ needs and expectations, and these need to be cross-checked with their actual expectations. This feedback is valuable for helping in the design of the training programme.

Clarify logistics (venue and materials)

This is a decisive milestone in the design process because it entails negotiations with the organizers about what is needed to reach the training programme’s objectives. In most cases, this is a difficult

balancing act. The organizers might push for increasing the number of participants per training workshop while trainers need to explain that learning objectives cannot be reached in a group of 30 instead of 20 participants.

Another critical parameter is ‘duration’. The normal reaction of the organizers with a tight budget is to cut down on the days for a training event and to increase the number of participants. It is crucial for trainers at this stage not to accept responsibility for achieving certain learning objectives if the duration and number of trainees are not adjusted in such a way that these learning objectives can be achieved.

Location is also an important issue. Choosing a location can be tricky. Being in a windowless room in a hotel close to an airport may seem like a good idea with respect to costs and transport, but it may backfire. Therefore, it is important for trainers to lobby for a suitable venue. A good venue provides working rooms with sufficient light and space, away from the daily life of busy organizations, but not too remote. In case of being unfamiliar with the selected venue, trainers should check whether it is suitable for a participatory workshop. Things to consider are:

- A workshop room with space available to seat the 20 participants plus 5 people (trainers and resource personnel) in a “U” shape, and to fit flipcharts and pinboards. In the same room, there should be extra space for participants to break out in 3 permanent working groups with a table each. The room should not be cramped: people should be able to move freely. There should not be obstructive pillars.
- The room must have enough natural light and windows, as well as an adequate temperature.
- It should be possible to tape the results of the exercises on walls.
- The location of the venue should allow participants to arrive on time and should be close to places where to have lunch (in case catering is not included).
- It should be possible to leave materials in the room through the night.
- The venue must count on electricity, internet, chairs, tables, screen and binder, extension cables and necessary infrastructure (toilet, parking lots, etc.).

It is a good practice to take a look at the room where the training will take place before it begins. Trainers should aim to arrive at least the day before of the start of the training to have enough time to check the venue, make adjustments and prepare the room(s).

It is also necessary to share the venue requirements and a list of the materials required with the organizing team from the beginning (when the organizers contact you for implementing the training).

Develop a script of the training workshop

Based on the workshop structure, the trainers need to get together to work out a detailed day-to-day script of the training. Working on such a script enables the trainers a feeling of what is feasible with a particular group of participants in a limited time. A script may be structured as a table with the following information.

Time	Activity	Methods / Techniques	Materials needed / Observations	Responsible Trainer
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Documentation and reporting

In consultation with the organizers of the training, trainers need to decide how the results and the process of the training workshop are to be documented, and when such documentation will be sent to the participants. In case a photo-documentation or report will be handed to participants, let

participants know at the beginning of the training so that they can focus on the discussion rather than taking notes. A suggested content of a report would include:

- A short summary of the content of the theoretical inputs and exercises
- A summary of the discussions in the plenary (main statements)
- Photos of the visualized material (definitions, illustrations, exercise results)
- Photos of the participants (including a group photo)
- A list of participants with their contact information
- An agenda of training
- All presentations in pdf-format

In this case, it will be ideal to count with an extra assistant to take pictures of the many flipcharts and boards generated throughout the training, and of the participants while they are working. Pictures are important, since it is the best way for participants to remember their group work and main ideas. This person could also take notes during the plenary discussions.

You also need to decide what they want to offer participants — in addition to the workshop documentation — in order to support their learning transfer. This support might include handouts, technical articles, case studies or a handbook, just to give a few examples.

Further information on how to implement interactive trainings

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PART III. TRAINING ON IES – AGRARIAN LANDSCAPES

Module 1. Introduction to ES and IES Approach

In this first module of the training, participants learn about the IES-6 step approach and all the necessary concepts for applying it. This presentation is given right after the review of expectations of participants and before the application of the exercise 1.

Objectives

- Learn (and/or refresh) basic concepts: biodiversity, ecosystems, agroecosystems and ecosystem services.
- Discuss the importance of ecosystem services for wellbeing and economic activities, with focus on agriculture.
- Learn why is it important to integrate the value of ecosystems in decision making.
- Have an overview of the IES 6-step approach.

Key messages

- The current paradigm acknowledges the social, economic and environmental spheres as separated elements. Neglecting the environment in politics, economic activities and aspects of wellbeing is unsustainable and accentuates the unequal distribution of resources, which leads to poverty and social conflicts.
- Ecosystem services are the benefits that people obtain from ecosystems. Ecosystem services provide benefits in different spheres of socioeconomic systems, and therefore, they contribute differently to the livelihoods of a variety of stakeholders.
- Decisions on the management of natural resources and land use have an impact on the provision of ecosystem services, and on their different beneficiaries. Not considering the contributions of ecosystem services and the impacts on them, risk their provision and in turn, the socioeconomic systems.
- Agriculture depends on and has impacts on ecosystem services. Even though some ecosystem services can be maintained or increased in agroecosystems, many others decrease in quality and quantity.
- Understanding the relationship between ecosystems, agroecosystems and well-being, is crucial for promoting the sustainable production and productivity in agriculture and other sectors.
- The application of the ecosystem services approach provides important information to integrate the value of ecosystem services in decision making, which promotes more sustainable decisions and a more equitable distribution of costs and benefits among associated stakeholders.

Overview	Presentation 1. Introduction to Ecosystem Services and the IES approach
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Presentation 1. Introduction to Ecosystem Services and the IES approach

This is the first theoretical presentation of the training course and is crucial for participants to understand the concepts necessary to apply the IES-6 step approach.

It might be the case that many participants have already experience with agriculture and ecosystem services. In such cases, remind the group that it is still necessary to level the knowledge and to agree in the concepts to be used throughout the training. If you think it is required, adapt the presentation to the level of knowledge of participants.

Remember to try to make the presentation as interactive as possible, encouraging the group to participate and provide inputs from their own experiences.

Before the presentation, you must prepare a pinboard with the scheme of the IES 6-step approach. Besides helping you with this presentation, having the diagram visible in the training room will allow participants to revise it whenever they need to. It will also help you to easily recap the key messages of each step.

Content covered in presentation 1

- Basic concepts: biodiversity, ecosystems, agroecosystems and ecosystem services.
- Ecosystem services in agrarian landscapes.
- The ecosystem services approach.
- Ecosystem services and agriculture in the international initiatives.

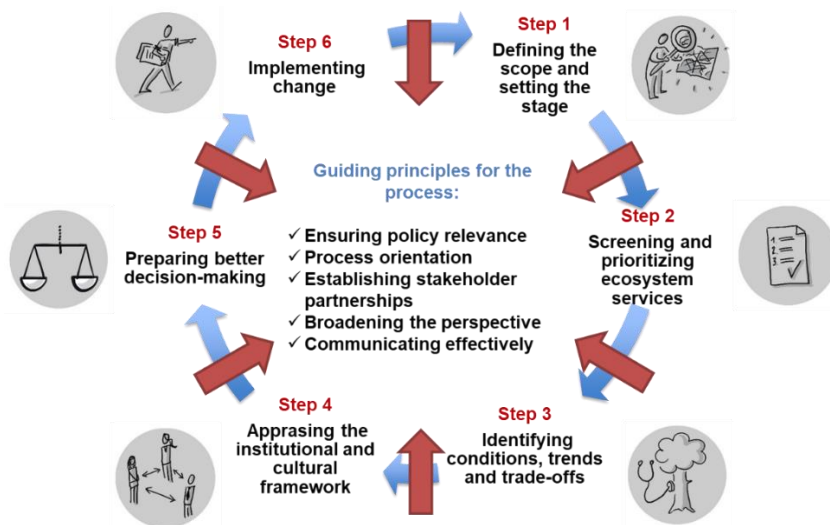
Main presentation points and notes for the presenter

- ✓ The presentation starts by reflecting on the paradigm of development, in which the economic, social and environmental spheres are seen as separated elements. Clearly, this paradigm is not sustainable, and we need to transit to a logic in which the economic and social spheres operate safely within the environment sphere. This presentation uses the image on the sustainable development goals by Rockström and Sukdhev (2016), but you can use any image you consider relevant to exemplify this paradigm. One way of presenting this is to show the image to the participants and ask them about its interpretation. Then, request them to discuss in buzz groups: why do they think that environment is often not recognized? what are the consequences of that? And, who is affected by it?
- ✓ The point of this discussion is to understand that neglecting the environment in politics, economic activities and aspects of wellbeing is unsustainable and accentuates the unequal distribution of resources, which leads to poverty and social conflicts. Under this scenario, it is clear that a change of paradigm in which ecosystems values are considered in politics and economic activities, is crucial. The question is: how to integrate the value of ecosystems in decision making?
- ✓ Before starting to answer the question, mention to participants that they will reinforce/learn the crucial concepts to use throughout the training: biodiversity, ecosystems, agroecosystems and ecosystem services.
 - When discussing how biodiversity and ecosystems are related, mention that even though this is still a subject for debate, there is evidence that the function of ecosystems is tied to the species richness (Balvanera et al., 2015).
 - When discussing ecosystems and agroecosystems, first ask participants about the general differences (for example, requirement of external inputs, capacity of self-regulation, net productivity, species and genetic diversity, trophic interactions, habitat heterogeneity, nutrient cycles and stability) and then, ask them about how those differences change according to the scale of agriculture, the type of crop, the management type (and use of inputs: fertilizers, pesticides, herbicides, etc.), etc.
 - Before presenting the concept of ecosystem services, show some pictures that represent them. Ask participants about what they see in the pictures, and once they have mentioned some of them, introduce the concept. Explain that ecosystem services arise from complex functions of the ecosystems and they are considered ecosystem services only when humans benefit from them (it is an anthropocentric concept). The key idea is that ecosystem services provide benefits in different spheres of socioeconomic systems (economic activities, but also wellbeing), and therefore, they contribute differently to the livelihoods of a variety of

stakeholders. Emphasize that socio-economic systems do not only depend, but also generate changes in ecosystems (and ecosystem services) through different drivers of change. Not considering the contributions of ecosystem services and the impacts on them, risk their provision and in turn, the socioeconomic systems. Also, remind participants that the classification provided by TEEB is only one option among many.

- Practice the concept of ecosystem services with the illustrations provided in the presentation. For the same landscape, under different management regimes, participants should identify the changes in ecosystem services and their beneficiaries. It is important to accentuate which stakeholders depend and impact on the ecosystem services, and how the costs and benefits are distributed under different scenarios of decision making on land uses. The key message is that people's decisions on the management of natural resources and land use, have an impact on the provision of ecosystem services, and therefore, on their different beneficiaries. In case you consider it necessary, you can also use other examples to practice these key messages.
- For discussing the ecosystem services in agroecosystems, you can use the scheme taken from TEEB for Agriculture and Food (2015).
 - Before showing the image, discuss with participants which are the main ecosystem services that agriculture depends on, and which ones it impacts.
 - Then show the image of TEEB (2015). Start by pointing out that there are benefits that agriculture receive from the ecosystem (ecosystem services), for which there are no payments. These include soil creation, nutrient recycling, genetic variability, pollination, water purification, etc. But also, the same agricultural activity (when integrating manmade inputs, such as work, pesticides, fertilizers, etc.), generates the loss of the same and other ecosystem services, such as habitat and soil erosion.
 - Clarify that, even though some ecosystem services can be maintained or increased in agroecosystems, many others decrease in quality and quantity. Some ecosystem services that are increased or maintained are food, carbon sequestration and inspiration of culture. Some that are lost are soil fertility, nutrient cycles, etc. Of course, the maintenance or loss of ecosystem services also depends on the intensity? of agriculture, the management practices, type of crop, inputs, etc. For example, pollination with the misuse of pesticides, soil creation when practicing monocultures, etc. Ask them to give you some examples. For more information on this, revise Power (2010).
 - Remind participants that, the fact that agriculture increases provisioning ecosystem services like food and forage, doesn't mean that all stakeholders are benefited from this, since other ecosystem services crucial for the livelihoods are also impacted, for example, recreation waste filtration, fresh water and moderation of extreme events.
 - Don't forget to talk about cultural heritage, which is a very relevant ecosystem service generated in agroecosystems. Ask participants to give more examples based on their experiences!
 - In one step further, discuss with participants the ecosystem services related to the supply chain of the crops.
 - Try not to take too much time for discussion, since this topic will be further discussed with the example of the case study, Zentralistan and Egana, in exercise 1.

- ✓ **Encourage** the discussion and ask participants why it is important to integrate ecosystem services in decision making. Conclude that the application of the ecosystem services approach provides important information to integrate the value of ecosystem services in decision making, which promotes more sustainable decisions and a more equitable distribution of costs and benefits among associated stakeholders. Moreover, understanding the relationship between ecosystems, agroecosystems and well-being, is crucial for promoting the sustainable production and productivity in agriculture and other sectors. For more arguments on the discussion on making the case for integrating ecosystem services into development planning, look in the IES Manual (Kosmus et al, 2017).
- ✓ Explain that there many proposals and methods on how to integrate the value of ecosystem services in decision making. One of them is the IES-6 step approach (proposed by the GIZ). To present it, use the pinboard with the IES approach scheme (prepared beforehand). Just give a quick review on each one of the steps (do not spend too much time in explaining each one of them) since each step will be further analyzed and discussed throughout the training. For more on each one of the steps, look at the description of each step at the beginning of this publication.



IES 6 step approach

- ✓ Also, mention the guiding principles to be considered throughout the application of the steps:
 - Ensure policy relevance: The process should be closely linked to concrete policy issues, development and/or planning initiatives and decision making.
 - Process orientation: Outcomes are important, but the process is key because it creates ownership for the outcomes. The IES is not a blueprint and always needs to be adapted to the context and specific needs.
 - Establish stakeholder partnerships: Engage stakeholder and interest groups, share responsibility, foster ownership, empower local governance and avoid creating parallel structures.
 - Broaden the perspective: Working with the ecosystem services approach requires bringing together knowledge and expertise from social, natural and political science. Most importantly, local and traditional knowledge should try to be integrated.

- Communicate effectively: Communication is the link to stakeholders: trust, respect, transparency and openness towards other perspectives and standpoints are essential. Also, depending on the target audience, adapting the language might be necessary.
- ✓ In case you consider it is necessary for the training, present the relevant initiatives for ecosystem services and agriculture. The presentation includes: the Convention on Biological Diversity (CBD) and the Strategic Plan 2011-2020 (20 Aichi Targets and those relevant for agriculture: 7,8 and 13), the Millennium Ecosystem Assessment (MEA) and its chapter 8 dedicated to Food and Agrarian Landscapes, The Economics of Ecosystems and Biodiversity (TEEB) and publications on Agriculture, and the International Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES) and the reports with sections dedicated to ecosystem services and agriculture.
- ✓ Right after the discussion and reflection of the presentation on ecosystem services and the IES approach, give an introduction to the case study Zentralistan and apply the exercise 1 and 2 (participants will solve exercise 1 and exercise 2, one after the other). In the next module, find the description of the case study, exercises 1 and 2, a step by step guide for the application and discussion of both exercises and some example answers.

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Module 2. Defining the scope, screening and prioritizing ecosystem services (Steps 1 and 2)

In this module, participants learn about the Steps 1 and 2 of the IES-6 step approach by answering the exercises 1 and 2 with the case study, Zentralistan. In this case, there is not a formal presentation of the content of steps 1 and 2. Instead, participants learn about their application by discussing the key messages during the reflection of the exercises.

Objectives Exercise 1 (Steps 1 and 2)

- Clarify the concept of ecosystem services.
- Discuss the links between ecosystems, agroecosystems, ecosystem services, and development and wellbeing. A closer look is taken to the ecosystem services associated to agriculture in different scales.
- Get familiar with the case study, Zentralistan.

Objectives Exercise 2 (Step 2)

- Assess the links between development objectives and aspects of wellbeing, and ecosystem services.
- Prioritize the ecosystem services that will be further analyzed in the IES process.

Key messages

- The first step of the IES approach consists in defining the scope of the process, which requires to determine the geographical focus, and consider the social, environmental, political, cultural and economic aspects of the context.
- Step 1 is also about defining the objectives of the application of the 6 steps and the instrument/policy in which ecosystem services will be integrated, identifying the relevant stakeholders and how they will be involved in the process, as well as clarifying which are the requirements for staff, funds and other inputs. At the end of step 1, there should be a clear plan of how the process will proceed.
- The second step of the IES approach assesses the links between the ecosystem services and development goals (economic activities, including agriculture and aspects of wellbeing), and prioritize the most important ecosystem services to integrate in the process.
- Prioritization is necessary because not all ecosystem services are equally crucial for encouraging a better decision making, and not all of them can be assessed in further steps due to limited resources (financial, personnel, time, etc.).
- The fact that diverse economic activities and aspects of wellbeing depend and impact on the same ecosystem services, generates synergies and or conflicts (tradeoffs), which implies risks for the achievement of development goals and therefore, the livelihoods of stakeholders.
- Trade-offs imply costs and benefits to different stakeholders. Depending on their dependence and impact on ecosystem services, stakeholders can receive benefits, but can also bear costs at the same time.
- The IES approach suggest a prioritization through the dependency/impact criteria. This helps to understand the risks and opportunities of the development plan in terms of ecosystem services trade-offs.
- Dependency and impact are not the only possible criteria for prioritization. Depending on the process and the socio-political context, such criteria can also be political and in terms of feasibility for undertaking the assessment.

- The IES approach is about making tradeoffs explicit in order to inform a better decision making: encourages a minimization of negative tradeoffs and a maximization of positive tradeoffs.

Overview	Introduction to the case study: Zentralistan Exercise 1: Getting familiar with Zentralistan (Step 1 and 2) Exercise 2: Where the story begins (Step 2)
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Application of Exercise 1: Getting familiar with Zentralistan (Step 1 and 2)

Exercise 1 – Getting familiar with Zentralistan (Step 1 and 2)	
Preparation	<ul style="list-style-type: none"> • Write the exercise objectives and questions on a flip chart. • Prepare the workbooks for the participants. • In case of applying the exercise in plenary, have ready a map of Zentralistan in a pinboard and several copies of the symbols of ecosystem services. Also, prepare some cards and markers. • In case of applying the exercise in working groups, distribute a big map of Zentralistan to each team, with a pinboard, cards and markers. • Prepare a flipchart with the concept of trade-off (will be discussed in the reflection session). • It is important for you to know very well the information on Zentralistan and the case studies, so you can clarify all the questions. It is recommended for you to solve the exercise before giving the training.
Objectives	<p>Participants identify the links between economic activities, ecosystem services and stakeholders. This will help them to clarify the term “ecosystem services”, and to grasp their importance for economic development and well-being. A closer look is taken to the ecosystem services associated to agriculture in different. During this exercise, participants also get familiar to the case and training method.</p>
Instructions and recommendations	<p>Option 1. Exercise in plenary</p> <p>After the presentation “Introduction to Ecosystem Services”, make a short introduction to the case study of Zentralistan in plenary. Use the map to narrate to participants the main characteristics of the country. Then, explain the objectives and instructions of exercise 1. After this, distribute the workbooks and allow participants to go through the information of Zentralistan and its provinces. Also point out that for additional information on ecosystem services to answer exercise 1, they can refer to the description included in the workbook in page 9. Give no more than 10 minutes for reading.</p> <p>After participants finished reading, bring the map of Zentralistan and a pinboard to the front of the plenary and start discussing the questions of the exercise with participants. Ask your co-moderator to help you write down the contributions of participants in the pinboard. Do not spend too much time on this exercise. The goal of the exercise is for participants to get familiar with the concept of ecosystem services and with the case study, Zentralistan.</p>

	<p>First, ask participants to name the economic activities in the country, and where they are located. Ask your co-moderator to write the activities in cards and pin them in the map of Zentralistan. When participants name agriculture, ask them to be more specific about the scale and type of crop, and list it separately from the other economic activities in a group.</p> <p>Then, ask them to name the ecosystems services and ecosystems related to each one of the economic activities. Ask your co-moderator to place the corresponding ecosystem service symbol in the map as the participants make their contributions. Encourage the group to emphasize which type of agriculture requires which ecosystem services and identify the ecosystems that provide them.</p> <p>Request participants to make a quick scan and revise if some activities and some types of agriculture rely on the same ecosystem services. Ask them: which economic activities rely on the same ecosystem services and how? which economic activities have an impact on ecosystem services that are important for another economic sector? how do economic activities compete for the same ecosystem services? what may be the long-term result of such competition? (if you consider it necessary, revise the concept of trade-off by using the prepared flipchart).</p> <p>Point out which activities depend on the same ecosystem services. For example, livestock, agriculture of monocultures (cotton and wheat) and small-scale agriculture depend on the soil fertility. Then, pick an activity and identify the ecosystem services it impacts, and whether such impact affects other economic activities and their stakeholders. For example, large scale agriculture of cotton (monoculture) impact water quality, which impacts the small-scale farming and fisheries, and therefore, the livelihoods of farmers and fishermen. Once they analysed this, encourage participants to identify which stakeholders are involved and if they are benefited or bearing costs of the current situation.</p> <p>Now, if it hasn't rose in the discussion, focus in the types of agriculture. Pick one example of a crop in the study case and analyze with the participants the ecosystem services it depends on, the necessary man-made inputs it requires, and finally the impacts it has in the same or other ecosystem services. Which are the trade-offs? Which stakeholders are affected? Is there an equal distribution of costs and benefits regarding the use of ecosystem services? For example, the monoculture of cotton depends on fresh water, erosion prevention and maintenance of soil fertility, but at the same time, it impacts fresh water, maintenance of genetic diversity, which affects the production of small farms, the provision of water for domestic uses in the communities downstream, and in the long term, the monoculture itself. Point out that stakeholders can win and lose at the same time with a trade-off.</p> <p>Additionally, ask participants about the relation between the functioning of industries for processing cotton, and ecosystem services.</p> <p>Option 2. Exercise in working groups</p> <p>After the presentation "Introduction to Ecosystem Services", make a short introduction to the case study of Zentralistan in plenary. Use the map to narrate to participants the main characteristics of the country. Then, explain the</p>
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	<p>objectives and instructions of exercise 1. Once you explained the exercise, make three working groups and distribute the workbooks.</p> <p>When participants are gathered in teams and have their workbooks, allow them to go through the information of Zentralistan and its provinces. Also point out that for additional information on ecosystem services to answer exercise 1, they can refer to the description included in the workbook in page 9. Give no more than 10 minutes for reading. Dedicate some moments to answer their questions about the instructions.</p> <p>Ask participants to choose a person of their team, who will have 5 minutes to present their results in plenary.</p>
Hints on carrying out the exercise	<p>In this first exercise, participants: 1) reinforce the concept of ecosystem services, 2) understand why ecosystem services are important for economic activities, specifically agriculture, and stakeholders associated, and 3) clarify why it is crucial to integrate them in decision making.</p> <p>During the exercise, keep in mind that in comparison to some participants, others have probably already worked or dealt with ecosystem services and agriculture. Therefore, make sure to explain any questions that more unexperienced participants may have regarding definitions. Also, in case of applying the exercise in work groups, encourage those with more knowledge to integrate in the discussion to those with less experience.</p> <p>Remind participants that the “government” is a stakeholder, but there are different sectors inside the government with different interest, political agendas, powers and mandates. Therefore, when listing stakeholders, ask participants to be concrete and refer to the segment of sector of the government.</p> <p>Many participants may bring up the fact that they would like to have more information on the study case to solve the exercise. This is the moment to suggest them to establish assumptions close to their own experiences. Remind them that this will not only be the case for most the exercises in the training, but also it is one of the most common challenges that practitioners face in real life.</p> <p>There might also be the case that discussion on agriculture and ecosystem services is focused in the impacts of agriculture. If this is the case, indicate that the idea is not only to focus in impacts, but also in the dependencies that the sector has on ecosystem services. Integrating ecosystem services in decision making in agriculture and development, means to also acknowledge for their contributions.</p> <p>This exercise brings up the concept of trade-off, which is analysed with more detail in the following steps. In case that participants need clarification, explain the concept (using the flipchart you prepared beforehand) and some examples.</p> <p>Remind participants that it is not only the economic activities, including agriculture, which depend on ecosystem services. There are many aspects of well-being like traditions, religion, education, health, etc. and stakeholders associated which depend on the provision in quantity and quality of ecosystem services.</p>

	<p>Remember that this exercise should be carried as a quick overview on ecosystem services, their links to economic activities and trade-offs. If participants try to get deeper into the magnitudes of dependencies and impacts, clarify them this will be further analysed in following steps. In general, do not make a deep analysis or spend too much time in discussions that will be covered in the next exercises.</p> <p>If applying the exercise in work groups, give participants enough time so they can get used to their group dynamics. Also, try to go around the groups and listen to the discussions of each of them. In case there is the need of guidance and correction, intervene, but never suggest an answer. If teams do not need guidance, let them work and discuss among themselves.</p> <p>Remember that in this step, participants are applying the step 1 (defining the scope and setting the stage), and part of the step 2 (screening ecosystem services). Indicate that for the sake of this training, the scope is already given. Nevertheless, when applied in real-life cases, participants need to define the scope of the process, which requires to consider the social, environmental, political, cultural and economic aspects of the context. Also, they need to define the objectives of the application of the 6 steps and the instrument/policy in which ecosystem services will be integrated, identify the relevant stakeholders and how they will be involved in the process, as well as clarify which are the requirements for staff, funds and other inputs.</p>
Presentation of results	<p>Option 1. Exercise in plenary</p> <p>There is no presentation in plenary. The exercise is solved in plenary.</p> <p>Option 2. Exercise in working groups</p> <p>Give no more than 5 minutes to each group for their presentation.</p> <p>After the presentation, other groups can ask questions and provide feedback.</p>
Reflection	<ul style="list-style-type: none"> • Open discussion in plenary. • Encourage participants to contribute with their knowledge to the discussion. • Write important points, ideas, and questions on flip charts or on cards. • Use the exemplary answers of the exercise to encourage discussion on different results and to ask questions that have not been raised during the reflection. <p>Possible guiding questions for reflection:</p> <ul style="list-style-type: none"> • Have you had prior working experience with ecosystem services? • What are some advantages and disadvantages when working with the concept of ecosystem services? • Why is it important to identify the trade-offs? • Why is it important to integrate ecosystem services in the planning and decision making in the agricultural sector? Why is it important for development planning? Why is it important for stakeholders? • In case the participants worked in groups: what were the main highlights of the discussions in your groups?

	<ul style="list-style-type: none"> • Do you have any real-life examples, focused in agriculture cases, that contribute to the discussion? • Looking at your findings, what might be the implications for the next step in the IES process?
Key messages	<ul style="list-style-type: none"> • The first step of the IES approach consists in defining the scope of the process, which requires to determine the geographical focus, and consider the social, environmental, political, cultural and economic aspects of the context. • Step 1 is also about defining the objectives of the application of the 6 steps and the instrument/policy in which ecosystem services will be integrated, identifying the relevant stakeholders and how they will be involved in the process, as well as clarifying which are the requirements for staff, funds and other inputs. At the end of step 1, there should be a clear plan of how the process will proceed. • Even though the scope is determined in Step 1, as the process takes place, it might reduce or expand, and more stakeholders might be required to be engaged. Just remember that the broader the approach, the more resources are required for implementation. • The essence of the IES approach is that it is participatory. A common understanding among stakeholders can contribute towards creating alliances and fostering solutions. • Therefore, the identification and engagement of stakeholders, as well as a communication strategy, are crucial for the transparency and credibility of the process. While the necessary involvement of some groups may be obvious, other might be less obvious, but equally important. Stakeholders can be categorized depending on their level of involvement and consultation. • The links between ecosystem services and economic activities give place to possible conflicts and/or synergies between the stakeholders associated. • Stakeholders can receive benefits, but can also bear costs at the same time, depending on their dependence and impact on ecosystem services. • For the case of agriculture, integrating ecosystem services in decision making does not only mean adopt practices to decrease the impact on them, but also make sure to account for their contributions.

Introduction to the case study: Zentralistan

Zentralistan

Zentralistan, officially the Republic of Zentralistan (Zentani: Tushkistat szati Zentralistan) is a developing country covering an area of 400.000 km². It became independent in 1998 and was established as a democratic Republic. Administratively, Zentralistan is divided into three provinces: Nishtak, Egana and Warif. The three provinces have considerable autonomy, as well as limited taxation powers.

Demographics

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

Since its independence, Zentralistan has seen a gradual immigration, especially from Sunnystan and other neighbouring countries.

- As of 2016, the total population is 10 million, with 30% living in urban areas and 70% in rural areas.
- According to 2016 data, 31.3% of its total population is classified as poor, including 9.8% of extremely poor.
- Zentani is the primary language of the country.

Economy

Zentralistan is a developing country with a market-oriented economy. Its economy is dominated primarily by agriculture, dairy and cattle farming, which accounts for 25% of the GDP, 30% of exports and employs 70% of the population. 83% of farmers practice small-scale agriculture, and 17% work on middle to large-scale farms. Arable land suitable for crop production is around 22% of total agricultural land. The remaining 78 % of agricultural land is mostly pasture.

Even though agriculture is the most important sector in the country, output and efficiency is still considered low as irrigation infrastructure and machinery are in poor conditions. Therefore, Zentralistan still relies on imports of corn, wheat, fruits and other crops for meeting its increasing food demands.

Presently, the main production crops are cotton and wheat. Most of the cotton, which is also the main export product in Zentralistan, is produced in large-scale farms, occupying near 50% of arable land. Even though cotton and wheat have always been subsidized by the national government, recently, the authorities have been encouraging private and foreign investments to increase the land used for cotton production and raise the productivity of the sector. On the other hand, subsistence agriculture, (mainly of potatoes, vegetables, fruits and rice), small scale fishing, wild berries and nuts harvesting (and storage) and pasture-based cattle breeding, remain the backbone of the economy of most population living in rural areas. Traditional forms of nomadic pastoralism are still practiced by many breeders in the east part of the country, and for many small-scale farmers, cattle keeping is also a way of investing or saving money.

Generally, four types of agrarian units can be distinguished in Zentralistan:

- a) irrigated croplands mainly used for cotton and wheat production (monocultures, in the eastern part of Warif Province and western part of Egana Province);
- b) rainfed agriculture producing potatoes, rice, vegetables, etc. (wetlands of Siul and Erosh River watershed, and south of Egana Province);
- c) rangelands for livestock and dairy breeding (large scale all over the western part of the country and in smaller units in the northern lands of Egana Province) and
- d) mountain agroecosystems, characterized by fruit tree plantations and use of non-timber forest products (harvest of wild berries, nuts and medicinal plants) (in the Nishtak Province and northern parts of Egana Province, in the adjacent areas of the Siul Reserve).

Important industrial sectors are the cotton processing and textile industry, coal mining, and to a lower extent, food processing. Textile industry has been constantly growing. It utilizes 40% of the

Republic of Zentralistan

Capital:	Capitalska (3 Million)
Population:	15 Million (2016 estimate)
Total Area:	400.000 km ²
Official Language:	Zentani
Independence:	1998

national cotton production and produces mainly for export. Recently, foreign investors have increased their interest due to the low costs for labour in Zentralistan. In response to this, the national government is planning to ease credits and paper work to increase the investments and the number of factories along the Siul River. The few food processing factories are oriented towards serving the domestic markets but since income per capita is quite low, this market has not had growing perspectives for the forthcoming years.

During the last years, tourism has been gaining economic importance. Until now, national tourism has been increasing in the Mighty Mountain region, but ecotourism in the Tuklak, Katakir and Siul Reserves is attracting more and more foreign tourists. Nevertheless, infrastructure is still not adequately developed to meet the demands of the visitors.

Geography

Zentralistan is a landlocked country. It is divided into three provinces: The Nishtak Province, the Egana Province and the Warif Province. The country is characterized by plains of steppe and grasslands in the west, forests in the central region and mountain ranges that form Zentralistan's border to Sunnystan in the north. The Mighty Mountains (6000 m) are a high-altitude belt running east-west along the north of the country. In winter, much of the region is covered under a snow blanket. The east of the country is characterized by the watersheds on the two main rivers, Siul River and Erosh, and fertile lowlands. Siul and Erosh rivers arise in the Mighty Mountains and end in the Ursi Lake.

Climate

The climate can be characterized as continental with very cold winters and hot summer. But due to the geographical features of the country there is a great variety of climate zones, largely determined by altitude. Temperatures across most of the steppes follow a gradient from north to south. Winters (from December to February) are severe in the northern parts of the country averaging as low as -20°C in January, covering crop and pasturelands with snow. Further south, conditions become milder, but average midwinter temperatures seldom rise above zero. Summers (from June to August) are long and bring above-zero temperatures throughout the country, with an average of up to 25-30°. In general, low rainfall combined with sudden extreme precipitation, heat and cold spells are major challenges for people living in Zentralistan.

Biodiversity and environment

Mountains above 3000 meters cover 40% of Zentralistan. The variations in elevation and climate lead to a wide diversity of ecosystems each with different vegetation types and species. Zentralistan is one of 17 "mega biodiverse" countries in the world according to Conservation International. Spectacular red tulips (*Tulipa micheliana*) display the beauty of some of the spring vegetation. One very rare type is the Zentani wild tulip, the national symbol of Zentralistan. The diversity of fauna is equally rich and includes threatened species such as snow leopards, Siberian ibex, Bukhara urial, and numerous birds, fishes, reptiles and amphibians. The current National Park System (NPS) comprises 5% of the country's area. The three most important protected areas are the Katakir Reserve (Nishtak Province), and the Siul and the Tuklak Reserves in the Egana Province.

Land conversion, deforestation, soil degradation, desertification and water pollution are some of the main environmental problems the country is facing.

An increase in agricultural land for cotton and grazing land for cattle have led to a major land conversion and deforestation in Zentralistan. Moreover, a large number of landholders still have some administrative problems to secure their lands. Such insecurity regarding property rights, together with difficulties to access credits for their cash crop production, pressure them to accept conditions and credits from private investors to produce cotton.



Some other landholders who used to practice small scale agriculture also face difficulties to access investment and extension services to increase their productivity and generate more income by ensuring a supply chain for their products. This, combined with a constant decrease in soil fertility, has led them to change their subsistence crops to export-oriented crops, which are financially supported by the national government.

There is also the case of landholders that have no experience in farming, which only leaves them the option to lease their land for monoculture production or for livestock grazing. Most of the times, their land is given back completely degraded, which forces them to look for jobs in the textile industry or in the city, and in some other cases, to migrate to Sunnystan.

For some years now, the water of the Siul river have presented a dramatic increase in pollutants. After some cases of illness, the population in the Egana Province have stopped drinking water from the tap and is desperately trying to have reserves of bottled water. Many citizens blame it on the uncontrolled discharge of waste water by agriculture and the overgrazing of livestock near the rivers. Others insist that the textile industries upstream of the rivers do not meet the water discharge regulations, while others are convinced that the city's infrastructure for water purification is obsolete or non-functional.

Finally, during the last few decades frequency of meteorological hazards in Zentralistan has increased. While river floods and landslides have been more frequent in the mountain and foothill areas (mainly occurring in the spring and summer), droughts have been increasing in the Warif and Egana Provinces (with 20-25% deficit in seasonal precipitation).

The national environmental authority, the Ministry of Environment (created in 2004), has lobbied for complex regulations on water discharges, and for promoting an update on the land planning of the provinces with a sustainable focus. Unfortunately, resources allocated to the Ministry are insufficient and enforcement of environmental regulations is lacking. Key tasks of managing and monitoring natural resources have been delegated to local communities like pasture users' associations, forest users associations or water user associations. While decentralization is generally being welcomed, the recent situation shows that local communities are not (yet) capable of managing ecosystems in a sustainable way, with the main reasons being the lack of managerial and financial resources as well as other development priorities. International development assistance supports the country in strengthening the forestry sector and improving sustainable agriculture practices. In the recent past, international donors have financed important conservation efforts, particularly the creation of the National Park System (NPS).

Governance and administration

The political history of Zentralistan has been turbulent. During nine decades, Zentralistan (at that time, “the Great Stan”) was a one-party governed country. Since the removal of the government in 1998 numerous political turnovers marked its way to a democratic republic. Despite its steady and successful development process, the coherence and enforcement of national laws and international treaties through the central government is still weak. For example, Zentralistan counts with a law on soil and pastures management, as well as an agrarian reform and a plan for sustainable use of biodiversity. Nevertheless, the responsibilities of enforcement and monitoring are not clear, and the Ministry of Agriculture and Environment are confused due to a possible overlapping of functions. This has also led them to strong discussions in terms of budget allocation. This situation has favoured a strong presence of development organizations supporting the country, mainly on governance issues.

As previously indicated, Zentralistan is divided into three provinces: Nishtak, Egana and Warif.

Warif Province

The Warif Province is characterized mostly by dry steppe vegetation. The huge, mostly state-owned plantations of cotton and wheat are located in the eastern part of the Province. Both crops are highly promoted by the government and depend on irrigation. Irrigation water is provided mainly by the Siul River.

Dropping water level (e.g. due to inadequate management of the Siul watershed) and old irrigation infrastructure and machinery present a growing problem for cotton and wheat production. The irrigation infrastructure comprises an interconnected irrigation system of canals and drainage collectors, with freshwater and drainage (return) water flows. Cotton and wheat production areas are highly affected by salinization due to irrigation and use of fertilizers and pesticides from agriculture lands in both, Warif and Egana provinces.

Unsustainable practices of agriculture, stockbreeding and dairy farming have accelerated the process of desertification in the Warif Province. That is the reason why many of the private investors are starting to look for new lands and opportunities for cotton production in the neighbouring Egana Province.

Nishtak Province

The highland Nishtak Province is well-known for its beautiful Mighty Mountains. The highest peaks are up to 6000 meters and are snow covered year-round. The mountain areas are sparsely populated, giving home to some small-scale farmers living from subsistence agriculture. Up to 3000 m the mountain landscape is characterized by deep valleys and moist northern slopes. The southern slopes are drier and covered by a mountain steppe or forests in lower altitudes.

Highland vegetation can be found between the upper forest line (up to 2700m) and the permanent snow line (~5200m). There is a high pressure on forests as farmers from Egana and Warif Province are increasingly migrating to Nishtak Province. The uncontrolled firewood extraction and grazing livestock has started to severely degrade and erode the buffer zones of the Tuklak Reserve, near to the border with Egana Province.

The small ski resort, Skitja, and the Katakir Reserve are very popular local recreation destinies for habitants of Capitalska, the vital and steady growing capital of the country, situated at the foothills of the Mighty Mountains.

Egana Province

The Egana Province is the economic heart of the country and includes the majority of Zentralistan's population. The lands next to the two main rivers, the Siul and the Erosh, are the most arable. Both rivers cross the province from North to South, ending in the Ursi Lake.

In the last years, most of the original vegetation cover of the province has been depleted for cotton and wheat production. Such intensive crops are mainly situated in the west of the province, next to the Siul river, which eases the access of water for irrigation. Mostly financed by the private investors and subsidized by the provincial government, these farmers seize the easiness for changing land uses as well as the subsidies in inputs like pesticides and fertilizers. Also, they will be beneficiaries of the credits offered by the provincial government, who is promoting the creation of a value chain of cotton by facilitating the permits and public services for building the necessary infrastructure for new textile industries.

After years of intensive use, these lands start to face similar problems as the cotton production in the Warif province: soil degradation and salinization. Some lands have reduced their soil nutrients to the point of being sold or abandoned. This has pushed investors to try to find new land for growing cotton. Since there is no more available land for agriculture, their options consist in leasing the land from small scale farmers situated in the north of the province or in the downstream from the Siul river.

In the northern area of the province, small farmers have fruit plantations and harvest and storage nuts and medicinal plants from the forest of the Siul Reserve. Nevertheless, they cannot access funding and extension services for creating value chains that increase the value of their products. This, together with the deforestation and the pressure from investors, has encouraged some of them to change their production to cotton and some others to lease their lands.

Some other farmers in the northern area of Egana are cattle breeders and produce dairy for subsistence and for the national market. The livestock owners in this region created a cooperative that has allowed them to work in a more organized way and has created a community sense. Nevertheless, the lack of adequate livestock management has led to overgrazing and the degradation of land. In search of new pasture lands, cattle farmers are moving towards the North, leading to illegal grazing in the adjacent lands of the Siul Reserve, causing forest degradation. Moreover, the grazing of cattle next to the Siul river has contributed to water pollution, which has affected agriculture, fishing and habitants downstream. Recently, given the demand from international tourists to visit the Siul Reserve, these farmers have also been providing touristic services for visiting the area and the northern forests of the province. Tourists love the combination of forests with high altitude mountains. However, tourism infrastructure and services are still poorly developed. Electricity, clean water and waste treatment plants and roads are still needed to increase to meet the demands of the rising number of visitors.

Lately, the NGO Zentralistan Nature Conservation (ZNC) has been pressuring the provincial authorities to allocate budget for the preparation of a management plan for the Siul Reserve and its buffer zones, which allows sustainable activities, such as the harvest of non-timber products and ecotourism. Without it, it is more difficult to legally protect the forest and the livelihoods that depend from it from deforestation caused by the increasing pressure of cotton expansion and grazing pastures.

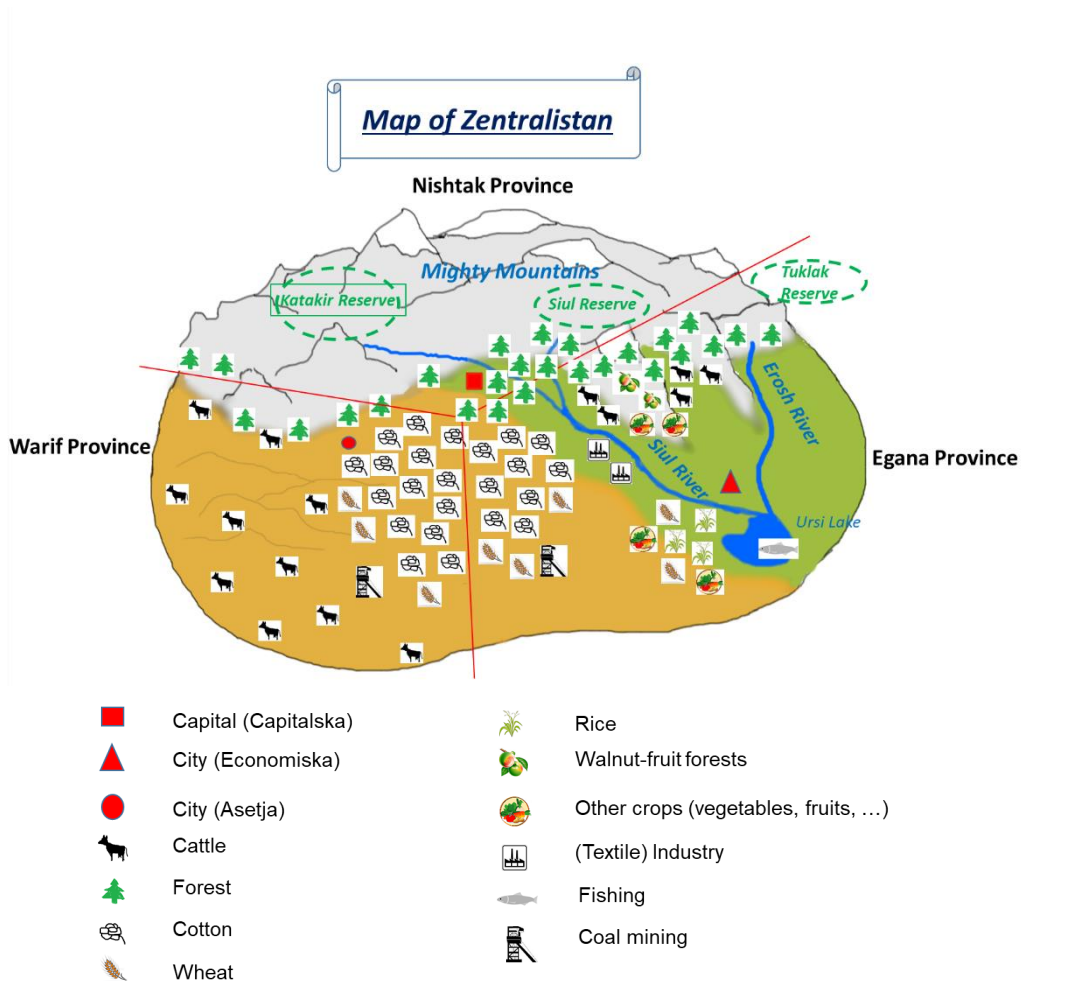
In the south of the province, west from the Siul river, small farmers produce rice, vegetables and potatoes for local commercialization and self-consumption. Most of them do not have financial means to acquire the expensive agrochemicals to support their production, which has made them

vulnerable to pests and diseases. Due to low profit margins and difficulties to access credits and extension services for production and distribution, some have decided to change their crops to wheat, which receive financial support from the government. Some others, who don't have experience and lack capacity development, have leased their land to the large-scale farmers. The rice produced by these farmers is not only for self-consumption but is also sold in the whole province. Together with the rice imports from Sunnystan, production in this area of Egana is vital to meet the demand requirements of the whole province. Also, rice produced by the small-scale farmers is crucial for the diet of the people throughout the province. It is a main ingredient in the internationally known traditional dishes of Egana: Dschaze and Plauv.

Lately, the NGO ZNC, financed by the Provincial Environment Unit and international donors, has been implementing pilot projects with these farmers to strengthen their agricultural activities by converting to agroecological schemes, and helping them to design a value chain for rice. 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.

There is mounting evidence that water quality of the Siul river and the Ursi Lake has been decreasing, especially during longer dry seasons. Recently, a study commissioned by the Provincial Agriculture, Livestock, Forestry and Fisheries Unit, had found evidence of serious water contamination resulting from the misuse of agrochemicals in crops, overgrazing close to the river and water discharges of the industries upstream. Not only is the water pollution a problem, but the water extraction for cotton production and processing in Warif and Egana, has also led to an alarming decrease of water availability during the last years. Failing irrigation systems and lack of maintenance has also aggravated salinization and water pollution. This situation has decreased the productivity of small-scale farms downstream and the livelihood of the communities along the river. The local authorities tried to keep it a secret, but the story has turned into a national scandal after some of the population in the communities downstream got serious illnesses after drinking tap water. Moreover, algae and eutrophication have increased in the Ursi Lake, reducing fish availability and affecting fishermen livelihoods. Even though there are regulations on water discharges, agrochemical uses in agriculture and livestock management, there is no clarity on who whether it should be the Provincial Agriculture Unit or the Provincial Environment Unit who enforces such regulations. The Provincial Environment Unit has declared their willingness to do so, but they have no budget for enforcement. The fish cooperative and small-scale farmers downstream have been voicing their discontent over this situation and have been pressing the development committee of the province to look into this problem.

Currently, the government is analysing the option of building water purification plant along the Siul river. This would provide better water quality for the communities along the river, agriculture and Economiska. Nevertheless, the water company, a semi-public enterprise, has no available funding. Moreover, the water purification costs are continuously increasing, and the construction of the plants would also mean higher tariffs.



Exercise 1. Getting familiar with Zentralistan (Step 1 and 2)

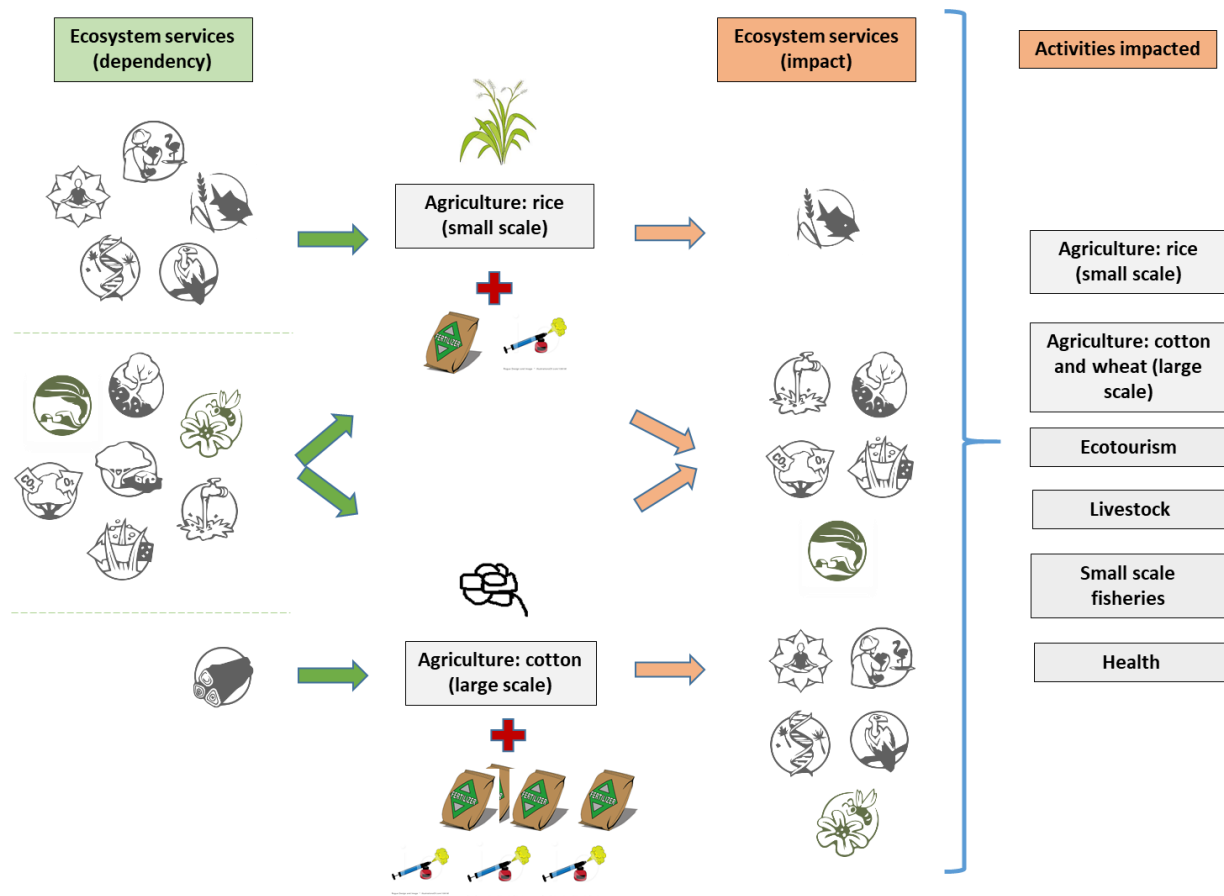
This exercise comprises a plenary discussion with following questions as guide.

1. What are the main economic activities and trends in the country? What are the main types and scales of agriculture?
2. Which ecosystems and ecosystem services are most important for the economy and well-being of the inhabitants of Zentralistan? Which ones are the most important for the different types and scales of agriculture?
3. Can you identify possible trade-offs between economic activities, types/scales of agriculture and ecosystem services?
4. Which main stakeholder groups are involved and who is winning, and who is losing from the current development patterns?

Example of answers to exercise 1. Getting familiar with Zentralistan (Step 1 and 2)

Option 1. Exercise in plenary

Example for analysis on types of agriculture:



Option 2. Exercise in working groups

Economic activity	Related ecosystems and ecosystem services	Stakeholders	
		benefits	looses
Agriculture: cotton production in Warif and Egana	<i>Forests and grasslands (conversion to agricultural land)</i> <ul style="list-style-type: none"> • Food provision • Medicinal resources • Local climate and air quality • Carbon sequestration and storage • Moderation of extreme events • Erosion prevention and soil fertility • Pollination • Biological control • Habitat for species • Maintenance of genetic diversity • Outdoor recreation • Aesthetic appreciation and inspiration for culture • Spiritual experience and sense of place • (...) 	<ul style="list-style-type: none"> • Agribusiness: cotton investors and textile industry • Public sector: Agriculture • International markets • (...) 	<ul style="list-style-type: none"> • Small-scale farmers (decrease of land and forests for harvesting, as well as other ecosystem services for their production such as water quality and sense of identity) • Population along the Siul river and in Economiska because of water quality and other ecosystem services • Fishermen in the Ursi lake (water quality) • Public sector: Agriculture (competition between large and small-scale agriculture), Environment, and Health (water pollution) • (...)
	<i>Rivers (Siul)</i> <ul style="list-style-type: none"> • Fresh water • (...) 		
	<i>Agroecosystems</i> <ul style="list-style-type: none"> • Food provision • Soil fertility • Erosion prevention and soil fertility • Pollination • Biological control • Spiritual experience and sense of place • (...) 		

Economic activity	Related ecosystems and ecosystem services	Stakeholders	
		benefits	looses
Agriculture: wheat production in Warif and Egana	<p><i>Forests and grasslands (conversion to agricultural land)</i></p> <ul style="list-style-type: none"> • Food • Medicinal resources • Local climate and air quality • Carbon sequestration and storage • Moderation of extreme events • Erosion prevention and soil fertility • Pollination • Biological control • Habitat for species • Maintenance of genetic diversity • Outdoor recreation • Aesthetic appreciation and inspiration for culture • Spiritual experience and sense of place • (...) <p><i>Rivers (Siul river)</i></p> <ul style="list-style-type: none"> • Fresh water • (...) <p><i>Agroecosystems</i></p> <ul style="list-style-type: none"> • Food • Erosion prevention and soil fertility • Pollination • Biological control • Spiritual experience and sense of place • (...) 	<ul style="list-style-type: none"> • Agribusiness: wheat investors • Public sector: Agriculture • International markets • (...) 	<ul style="list-style-type: none"> • Small-scale farmers (decrease of land and forests for harvesting, as well as other ecosystem services for their production such as water quality and sense of identity) • Population along the Siul river and in Economiska because of water quality and other ecosystem services • Fishermen in the Ursi lake (water quality) • Public sector: Agriculture (competition between large and small-scale agriculture), Environment, and Health (water pollution) • (...)
Subsistence agriculture: rice in sotuherh Egana	<p><i>Forests and grasslands (conversion to agricultural land)</i></p> <ul style="list-style-type: none"> • Food • Local climate and air quality • Carbon sequestration and storage • Moderation of extreme events 	<ul style="list-style-type: none"> • Small-scale farmers (food security and sense of identity) • Population of Egana and Zentralistan (food security and sense of identity) 	<ul style="list-style-type: none"> • Cotton and wheat agribusiness • Textile industry • Fishermen in Ursi lake (water quality)

Economic activity	Related ecosystems and ecosystem services	Stakeholders	
		benefits	looses
	<ul style="list-style-type: none"> • Erosion prevention and soil fertility • Pollination • Biological control • Habitat for species • Spiritual experience and sense of place <p><i>Rivers (Siul river)</i></p> <ul style="list-style-type: none"> • Fresh water • (...) <p><i>Agroecosystems</i></p> <ul style="list-style-type: none"> • Food • Pollination • Erosion prevention and soil fertility • Biological control • Spiritual experience and sense of place • (...) 	<ul style="list-style-type: none"> • Public sector: Agriculture (food security, employment) • (...) 	<ul style="list-style-type: none"> • Public sector: Agriculture (competition between large and small-scale agriculture), Environment, and Health (water pollution) • (...)
Subsistence agriculture: fruit trees in northern Egana	<p><i>Forests (conversion to agricultural land)</i></p> <ul style="list-style-type: none"> • Food • Medicinal resources • Local climate and air quality • Carbon sequestration and storage • Moderation of extreme events • Erosion prevention and soil fertility • Pollination • Biological control • Habitat for species • Maintenance of genetic diversity • Outdoor recreation • Aesthetic appreciation and inspiration for culture • Spiritual experience and sense of place • (...) 	<ul style="list-style-type: none"> • Small-scale farmers (food security and sense of identity) • Public sector: Agriculture (food security, employment) • (...) 	<ul style="list-style-type: none"> • Cotton and wheat agribusiness • Livestock breeders (land) • Textile industry • Public sector: Agriculture (competition between large and small-scale agriculture) • (...)

Economic activity	Related ecosystems and ecosystem services	Stakeholders	
		benefits	looses
	<p><i>Rivers (Siul river)</i></p> <ul style="list-style-type: none"> • Fresh water (...) <p><i>Agroecosystems</i></p> <ul style="list-style-type: none"> • Food • Pollination • Local climate and air quality • Carbon sequestration and storage • Moderation of extreme events • Erosion prevention and soil fertility • Biological control • Habitat for species • Spiritual experience and sense of place (...) 		
Livestock breeding in Egana	<p><i>Forests and grasslands (conversion to pasture)</i></p> <ul style="list-style-type: none"> • Food • Medicinal resources • Local climate and air quality • Carbon sequestration and storage • Moderation of extreme events • Erosion prevention and soil fertility • Biological control • Habitat for species • Maintenance of genetic diversity • Aesthetic appreciation and inspiration for culture • Spiritual experience and sense of place • (...) <p><i>Rivers (Siul River)</i></p> <ul style="list-style-type: none"> • Fresh water 	<ul style="list-style-type: none"> • Livestock owners (income and sense of identity) • Incipient dairy industry • Public sector: Agriculture (food security, employment) • (...) 	<ul style="list-style-type: none"> • Agribusiness: cotton and wheat (water quality) • Small-scale farmers (water quality and land), as well as nut collection because of forest degradation through breeding. • Tourists in the north of Egana (recreation) • Textile industry • Population along the Siul river and in Economiska because of water quality and other ecosystem services • Fishermen in the Ursi lake (water quality)

Economic activity	Related ecosystems and ecosystem services	Stakeholders	
		benefits	looses
	<ul style="list-style-type: none"> (...) <p><i>Agroecosystems (conversion of crops to pasture)</i></p> <ul style="list-style-type: none"> Food Erosion prevention and soil fertility Pollination Biological control Spiritual experience and sense of place (...) 		<ul style="list-style-type: none"> Public sector: Agriculture (competition between large and small-scale agriculture), Environment, and Health (water pollution) (...)
Textile sector along the Siul river	<p><i>Watersheds (Siul river)</i></p> <ul style="list-style-type: none"> Food Fresh water Habitat for species Local climate and air quality Aesthetic appreciation and inspiration for culture Spiritual experience and sense of place (...) 	<ul style="list-style-type: none"> Agribusiness: cotton investors Factory owners Employees in the textile industry Public finance sector (...) 	<ul style="list-style-type: none"> Population along the Siul river and in Economiska because of water quality and other ecosystem services Fishermen in the Ursi lake (water quality) Provincial Environment Unit Health sector (water pollution) (...)
Ecotourism in North Egana	<p><i>Mountain ecosystems</i></p> <ul style="list-style-type: none"> Food Fresh water Local climate Habitat for species Mental and physical health Outdoor recreation Aesthetic appreciation and inspiration for culture Spiritual experience and sense of place (...) 	<ul style="list-style-type: none"> Livestock breeders who also work as guides for tourists National and international tourists Public sector: Tourism Tourism investors and ski resort owners (...) 	<ul style="list-style-type: none"> Livestock breeders Agribusiness: cotton and wheat Small-scale farmers (land use) (...)
Artisanal Fisheries in Ursi Lake	<p><i>Lake ecosystems</i></p> <ul style="list-style-type: none"> Food (fish) Fresh water 	<ul style="list-style-type: none"> Artisanal fisherman (food security, and income) Public sector: Fisheries 	<ul style="list-style-type: none"> (...)

Economic activity	Related ecosystems and ecosystem services	Stakeholders	
		benefits	looses
	<ul style="list-style-type: none"> • Moderation of extreme events • Spiritual experience and sense of place • Habitat for species 	<ul style="list-style-type: none"> • (...) 	

Application of Exercise 2: Where the story begins (Step 2)

Exercise 2 – Where the story begins (Step 2)	
Preparation	<ul style="list-style-type: none"> • Write the exercise objectives and questions on a flip chart. • Distribute flipcharts, a pinboard, cards and markers for groups to take notes and visually represent their group work. • It is important for you to know very well the information on Zentralistan and the case studies, so you can clarify all the questions. It is recommended for you to solve the exercise before giving the training.
Objectives	Participants assess the links between the development objectives and ecosystem services. They prioritize the most relevant ecosystem services for further analysis, based on impact/dependency criteria.
Instructions and recommendations	<p>After the discussion and reflection of exercise 1, introduce the background of exercise 2. Explain the objectives, give the contextual information of the case study and clarify the instructions. Ask participants to gather in three working groups (and if they already made exercise 1 in groups, they can gather with the same team) and allow them to go through the exercise information and instructions in their workbooks. Give them some time and dedicate some moments to answer their questions about the instructions and the exercise.</p> <p>Once they are gathered in teams, clarify they development objectives that each team will work with:</p> <ul style="list-style-type: none"> - Consultancy A: <ul style="list-style-type: none"> a) Promote textile industry by encouraging private sector participation (cotton production and construction of more processing plants). b) Improve food security by supporting small-scale farms (rice production, southern Egana). c) Improve the quality and quantity of water flows through the construction of a water purification plant for the Siul River. - Consultancy B: <ul style="list-style-type: none"> a) Increase investments in livestock and dairy industry. b) Improve food security by supporting small-scale farms (fruit production, northern Egana). c) Promote fishery support services for increased productivity and income. - Consultancy C: <ul style="list-style-type: none"> a) Promote textile industry by encouraging private sector participation (cotton production and construction of more processing plants). b) Enhance conditions for non-timber products production and develop the supply chain for increasing exports c) Increase investments in livestock and dairy industry. <p>Remind participants that to answer this exercise, they need to take into account the information on the study case of Egana.</p>

	<p>Ask participants to choose a person of their team, who will have 5 minutes to present their results to the “development committee”.</p>
<p>Hints on carrying out the exercise</p>	<p>In case participants did exercise 1 in plenary, this will be the first exercise they do in teams. Therefore, give participants enough time so they can get used to their group dynamics.</p> <p>Make sure to clarify the questions regarding how to assess the links between the development goals and the ecosystem services. Remind participants that this is just a suggestion on how to quantitatively assess the links, but there can be many other ways of doing so (qualitative assessment) that can be discussed in the reflection session.</p> <p>Participants should be specific about the ecosystem services and their areas of provision and impact. For example, when talking about agriculture, it must be clear whether this is of large or small-scale, of cotton, wheat, rice, etc. The manual includes suggestions on specific areas and crops, but you may give the working groups the option to distinguish between different crops and regions when it comes to ranking the impacts.</p> <p>Participants might ask you whether they should include positive and negative impacts. Ask them to include both and mark down whether the impact is positive or negative. They should not sum up or subtract according to the kind of impact, though. The sum helps to prioritize the ecosystem services that are most important, whether they receive negative impacts, or they represent opportunities for the development plan.</p> <p>Also, remind participants that the analysis should be made by assuming that the development goals would be undertaken under the current development patterns. For example, the enhancement of cotton production would be made by supporting with subsidies to pesticides, fertilizers and credits. Make sure that during this exercise, participants pay attention to the political, economic, social and environmental background of the case. In case they consider there is not enough information in the materials, they can establish their own assumptions.</p> <p>It is common for participants to, in this step, already try to make policy recommendations and changes. Remind them that this is just the first step of the process and the idea of the IES process is to analyze all the relevant aspects to come to the point of giving a policy advice or changing decision making.</p> <p>Recommend participants to keep in mind that they need to adjust the language and the messages when they present their findings to the “development committee members”. They should not forget that they are trying to convince them on integrating the value of ecosystem services in the development plan, and that depending on their knowledge, views and interests, this may be understood (or not) and well received (or not) by the committee members.</p> <p>If there is not enough time to run the exercise, request participants to make a quick preselection of 10 ecosystem services of the list, and then assess the impacts and dependencies to prioritize 6 of them. You can also ask them just to focus in two development goals.</p>

	<p>Try to go around the groups and listen to the discussions of each of them. In case there is the need of guidance and correction, intervene, but never suggest an answer. If teams do not need guidance, let them work and discuss among themselves.</p>
Presentation of results	<p>Each group will present their findings in a meeting organized by the development committee. You and your co-trainer can play the role of members of the committee. Give no more than 5 minutes to each group for their presentation.</p> <p>After the presentation, other groups can ask questions and provide feedback.</p>
Reflection	<ul style="list-style-type: none"> • Open discussion in plenary. • Encourage participants to contribute with their knowledge to the discussion. • Write important points, ideas, and questions on flip charts or on cards. • Use the exemplary answers of the exercise to encourage discussion on different results and to ask questions that have not been raised during the reflection. • Try to place the pinboards with the results of each team next to one another, so you can make comparisons and point out the differences between their work. <p>Possible guiding questions for reflection:</p> <ul style="list-style-type: none"> • Do you think prioritization of ecosystem services is important in the process? Why? • Which information can you read from the matrix? How can you identify the trade-offs? • Which development objectives depend and impact more in ecosystem services and which ones less? Which are the main stakeholders affected? How are the costs and benefits distributed? Can you identify potential conflicts and synergies? • What are the advantages and disadvantages of using the dependencies/impacts criteria for prioritizing ecosystem services? Which other criteria could you use to prioritize ecosystem services? • What do you think are the challenges of assessing the impacts and dependencies of development goals on ecosystem services? • Do you think results change according to who undertakes the prioritization exercise? • How do the dependencies and impacts change according to different scales of agriculture and/or different crops? • What were the main highlights of the discussions in your groups? • Do you have any real-life examples, focused in agriculture cases, that contribute to the discussion? • Looking at your findings, what might be the implications for the next step in the IES process?
Key messages	<ul style="list-style-type: none"> • At the end of Step 2, there should be a clear understanding of the ways in which the development plan depends on and impacts ecosystem services. Also, the most relevant ecosystem services should be prioritized.

	<ul style="list-style-type: none"> • Prioritization of ecosystem services is a relevant exercise for the integration of ecosystem services process. Prioritization is necessary because not all ecosystem services are equally crucial for encouraging a better decision making, and not all of them can be assessed in further steps due to limited resources (financial, personnel, time, etc.). • Prioritization through the dependency/impact criteria help to understand the risks and opportunities of the development plan in terms of ecosystem services trade-offs. The trade-offs can be identified by comparing the assessment on impacts and dependencies on ecosystem services for each activity. For example, the promotion of cotton highly depends and impacts fresh water, which is crucial for the production of small-scale farmers. Or the impact in the sense of identity by the promotion the textile industry, affects the high dependency on this ecosystem service by the small-scale farmers. • Trade-offs imply costs and benefits to different stakeholders. The idea is also to analyze those implications in order to promote a more equitable distribution. • There are some development goals, like those related to promotion of cotton, wheat and/or livestock (and their supply chains), represent high trade-offs with less impacting activities. This does not mean yet that they should not be developed. This means that a further analysis needs to be done in order to know the implications of such trade-offs, and whether or not they can be managed. This will follow up in the next steps of the IES approach. • Dependency and impact are not the only possible criteria for prioritization. Depending on the IES process and the socio-political context, such criteria can also be political (as “political momentum”, “relevance for decision-makers agenda”, etc.) and in terms of feasibility for undertaking the assessment (“availability of information”, “systematization of data”, etc.). • One clear disadvantage of the use of dependency/impact criteria, relies in the fact that a higher ranking is usually given to provisioning ecosystem services. This responds to the fact that, in general, they are more tangible and their links to economic activities are easier to assess. • Different scales of agriculture and crops have different magnitudes of impacts and dependencies on ecosystem services. When assessing such impacts and dependencies, it is crucial to analyze the social, environmental and political aspects of the context. • When applied in real life cases, most information required to identify and score ecosystem services dependencies and impacts can be gathered through a combination of literature review, data analysis and expert/stakeholder consultation. Nevertheless, due to lack of data and knowledge about ecosystem processes, interactions and causality, there will inevitably be many evidential gaps in the matrix. Always be transparent on the uncertainties with the stakeholders. • As much as sound and scientific information is used when undertaking the prioritization exercise in real life, it has a subjective component. Therefore, the results of the prioritization will also depend on who is undertaking the exercise. That is why being as inclusive as possible in consultations is crucial. Make sure that opinions and perceptions are well-balanced. • Main messages that groups should include in their presentations can be:
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	<ul style="list-style-type: none"> ✓ Development goals strongly depend on one or more ecosystem services. ✓ Development goals have significant impacts on ecosystem services. ✓ Trade-offs between development goals mean a competition for ecosystem services. ✓ Achieving all development goals might be at risk. ✓ Extreme events will become more frequent and more intense because of climate change. This adds up to the current risks. ✓ Development agenda depends on ecosystems and it needs to be articulated. ✓ Human well-being depends directly or indirectly on functional ecosystems. ✓ Political opportunity to develop a “green” agenda. • As an introduction to the next module, ask participants which the next step in the IES approach would be. Go back to the diagram and synthesize the key messages of step 1 and step 2. C
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Exercise 2: Where the story begins³ (Step 2)

The last months have been especially hard for the province of Egana. The dry season has lasted longer than usual, and the Siul River almost dried out. Agriculture, fishermen, communities, population of Economiska and industries depending on the Siul river suffered from water scarcity.

During a meeting of the **Egana Province Development Committee**, several members expressed their serious concern about these recent events. They proposed to revise at least part of the development plan in light of these devastating trends. Among other issues, the government’s **5-Year-Development-Plan** prioritizes the promotion of cotton and wheat production, the textile industry, the construction of water purification plant for the Siul river, support the development of fisheries, ensure food security in the province, increase investments in the livestock and dairy industry as well as the enhancement of the production of non-timber products.

One representative from the Provincial Environment Unit stated that, “the region’s ecosystems are already under stress, especially from the combination of agricultural and livestock expansion. People are not aware that the consequences of this trend go far beyond its local impacts. Costs and benefits will ripple throughout the region and society in unexpected ways. We need to show very clearly the choices that are at stake.”

EGANA DEVELOPMENT COMMITTEE MEMBERS

1. **Chair:** Governor of Egana
2. **Vice-Chair:** Director of Provincial Development Unit
3. **Permanent Secretary:** Director of Provincial Rural Development Unit

PERMANENT MEMBERS

- All governors of districts and communes
- Director of Provincial Commercial Unit
- Director of Provincial Economic and Financial Unit
- Director of Provincial Water Resources and Meteorological Unit
- Director of Provincial Agriculture, Livestock, Forestry and Fishery Unit
- Director of Provincial Tourism Unit
- Director of Provincial Environment Unit
- Director of Provincial Health Unit
- Director of Provincial Public work and Transport Unit
- Representatives of the Farmers Association of Egana
- Representatives of the Livestock Breeders Association of Egana
- Representatives of NGO

³ Text partially adapted from WRI (2008): Ecosystem services. A Guide for Decision makers. Washington D.C.

Another committee member replied that the economic gains from the agricultural expansion, as well as the promotion of the dairy industry, were clear. There would be more and better jobs in the city and clear gains for farmers, which would also avoid a massive migration.

The representative replied, “I agree with you, but we should not forget that in this process there will be also stakeholders that will lose. Small-scale farmers, fishers and communities along the Siul river will suffer the consequences. We should learn from the social and environmental costs associated with the development pattern in the Warif province. The price of food will probably increase, harming the poorer sectors of society. We are going to have longer drought periods and higher costs for water purification. Uncontrolled expansion of monocultures will actually strengthen unsolved social and environmental problems, which could have a negative impact even on the success of the business itself.”

“We already have a lot of problems with the agribusiness companies; more cotton and wheat plantations are going to be even more difficult as international demand is high and a lot of money is involved. Some of our people have already talked about leaving their lands and if this trend continues, we are going to lose our forests and homes,” said one of the representatives of the Farmers Association.

This was the beginning of a long and intense discussion...

Finally, the Committee decided to revise the development plan. With funding provided by an international development agency, they organized a call for proposals in order to get a rapid assessment regarding the connections between the development plan and the environment. The ultimate objective is to understand the risks and opportunities that the development plan poses to the sustained provision of ecosystem services and subsequently foster policy changes to address these issues. The following development objectives were selected for an initial assessment:

1. Improve the quality and quantity of water flows through the construction of a water purification plant for the Siul River.
2. Promote textile industry by encouraging private sector participation (cotton production and construction of more processing plants).
3. Improve food security by supporting small-scale farms.
4. Increase investments in livestock and dairy industry.
5. Promote fishery support services for increased productivity and income.
6. Enhance conditions for non-timber products production and develop the supply chain for increasing exports.

EGANA'S 5-YEAR-DEVELOPMENT-PLAN

Vision:

A hub of international trade driven by a highly productive, diversified, knowledge based, private sector-led economy, steered by morally-upright, visionary and competent leaders alongside law-abiding and self-reliant citizens living in an environmentally-community.

Development concerns and challenges:

- High rural unemployment and low wealth creation
- Inadequate spatial, physical and economic integration
- Low agricultural productivity
- Low export performance

Major objectives:

1. Improve the standard and access to basic education.
2. Improve quality and quantity of water flows through the construction of a water purification plant for the Siul.
3. Promote textile industry by encouraging private sector participation (cotton production and construction of more processing plants).
4. Improve food security by supporting small-scale farms.
5. Increase investments in livestock and dairy industry.
6. Promote fishery support services for increased productivity and income.
7. Enhance conditions for non-timber products production and develop the supply chain for increasing exports.
8. Prevent crime and launch anti-criminality campaign.

Your task:

You are a consulting team that wants to submit a proposal to revise the development plan of Egana. The objective of the first part of this assessment is to review the viability of selected development objectives/measures considering their dependency and impacts on ecosystem services.

1. Identify the linkages between two or three development objectives and ecosystem services (trainers will indicate which development objectives each team will analyze). The linkages are based on two dimensions: the development measures either depend on or have an impact on different ecosystem services. These dependencies and impacts can be strong or weak. Consider if there is competition for ecosystem services among the different development measures. Use the table below to record your findings.
2. Based on the ranking you come up with, select up to six priority ecosystem services.
3. Is the current scope of assessment (Province of Egana, administrative boundaries) appropriate for the revision of the development plan? You can make suggestions.

Summarize your results in order to present it to the Development Committee during the next meeting. Agree on one or two spokespersons from your group. You will have 5-10 minutes for your presentation. Try to be brief and work hard on sound and convincing arguments (both technical and political!) in order to get the contract for a detailed assessment of the ecosystem services you identified.

Matrix for identifying impacts and dependencies

Ecosystem service <i>List ALL ecosystem services here</i>	Development objectives/ measures						Sum of scores
	No. 1		No. 2		No. 3		
	D	I	D	I	D	I	
Sum of scores							

D = Depends on the respective ecosystem service.

I = Impacts on the respective ecosystem service.

2 = Moderate to strong relevance

1 = Weak relevance

0 = Not relevant or connected

Note: Each row corresponds to an ecosystem service, while each column relates to a key development goal or activity from Egana's development plan. Assigning a score to each of the cells according to dependence/impact (0 = neutral, 1= weak relevance, 2= moderate to strong relevance) is a way of prioritizing the most important ecosystem services. The rows with the highest aggregate score show those ecosystem services that are of key importance due to various sector's dependence on them and how much they are impacted by different activities This prioritization helps zoom into ecosystem services that are more crucial and hence allow you to focus the subsequent, more detailed, analysis. The highest aggregate score of the columns provide you with information on development issues and stakeholders that are more dependent or are having the greatest impact on ecosystem services.

Example of answers to exercise 2. Where the story begins (Step 2)

Consultancy A

Ecosystem service <i>List ALL ecosystem services here</i>	Development objectives/ measures								Sum of scores
	Promote textile industry (cotton production)		Promote textile industry (processing plant)		Improve food security by supporting small-scale farms (rice production, southern Egana)		Improve the quality and quantity of water flows through purification plant for the Siul River		
	D	I	D	I	D	I	D	I	
Food	0	2	0	2	2	2	0	0	8
Raw materials	2	2	2	2	1	2	0	0	11
Fresh water	2	2	2	2	2	1	2	0	13
Medicinal resources	0	1	0	1	0	1	0	0	3
Local climate and air quality	1	2	1	2	1	1	0	0	8
Carbon sequestration and storage	1	2	0	2	1	1	0	0	7
Moderation of extreme events	2	1	2	1	2	1	2	0	11
Waste-water treatment	2	2	1	2	2	1	0	2	12
Erosion prevention and maintenance of soil fertility	2	2	0	2	2	1	2	0	11
Pollination	1	2	0	2	0	2	0	0	7
Biological control	2	2	0	1	2	1	0	0	8
Habitat for species	0	2	0	2	0	1	0	0	5
Maintenance of genetic diversity	1	2	0	2	2	1	0	0	8
Mental and physical health	0	2	0	2	0	1	0	0	5

INTEGRATING ECOSYSTEM SERVICES INTO DEVELOPMENT PLANNING – AGRARIAN LANDSCAPES

MODULE 2: DEFINING THE SCOPE, SCREENING AND PRIORITIZING ECOSYSTEM SERVICES (STEPS 1 AND 2)

Ecosystem service <i>List ALL ecosystem services here</i>	Development objectives/ measures								Sum of scores
	Promote textile industry (cotton production)		Promote textile industry (processing plant)		Improve food security by supporting small-scale farms (rice production, southern Egana)		Improve the quality and quantity of water flows through purification plant for the Siul River		
	D	I	D	I	D	I	D	I	
Outdoor recreation	0	2	0	2	0	1	0	1	6
Aesthetic appreciation and inspiration for culture	0	2	0	2	0	1	0	1	6
Spiritual experience and sense of place	0	2	0	2	2	1	0	0	7
Sum of scores	16	32	8	31	19	20	6	4	136

Consultancy B

Ecosystem service <i>List ALL ecosystem services here</i>	Development objectives/ measures						Sum of scores
	Increase investments in livestock and dairy industry		Improve food security by supporting small-scale farms (fruits production, northern Egana)		Promote fishery support services for increased productivity and income		
	D	I	D	I	D	I	
Food	2	2	2	2	2	1	11
Raw materials	2	2	1	1	0	0	6
Fresh water	2	2	2	1	2	1	10
Medicinal resources	0	1	0	1	0	0	2
Local climate and air quality	0	2	2	1	2	0	7
Carbon sequestration and storage	0	2	2	1	0	0	5

Ecosystem service <i>List ALL ecosystem services here</i>	Development objectives/ measures						Sum of scores
	Increase investments in livestock and dairy industry		Improve food security by supporting small-scale farms (fruits production, northern Egana)		Promote fishery support services for increased productivity and income		
	D	I	D	I	D	I	
Moderation of extreme events	1	2	2	1	2	0	8
Waste-water treatment	2	2	2	1	2	0	9
Erosion prevention and maintenance of soil fertility	2	2	2	1	0	0	7
Pollination	1	1	2	1	0	0	5
Biological control	1	1	2	1	0	0	5
Habitat for species	1	1	1	1	2	1	7
Maintenance of genetic diversity	1	1	2	1	2	1	8
Mental and physical health	0	1	0	1	2	1	5
Outdoor recreation	1	1	1	1	0	1	5
Aesthetic appreciation and inspiration for culture	2	1	1	1	1	1	7
Spiritual experience and sense of place	2	1	2	0	2	0	7
Sum of scores	20	25	26	17	19	7	114

Consultancy C

INTEGRATING ECOSYSTEM SERVICES INTO DEVELOPMENT PLANNING – AGRARIAN LANDSCAPES

MODULE 2: DEFINING THE SCOPE, SCREENING AND PRIORITIZING ECOSYSTEM SERVICES (STEPS 1 AND 2)

Ecosystem service <i>List ALL ecosystem services here</i>	Development objectives/ measures								Sum of scores
	Promote textile industry (cotton production)		Promote textile industry (processing plant)		Enhance conditions for non-timber products production and develop supply chain for exports		Increase investments in livestock and dairy industry		
	D	I	D	D	D	I	D	I	
Food	0	2	0	2	2	0	2	1	9
Raw materials	2	2	2	2	2	0	2	1	13
Fresh water	2	2	2	2	2	0	2	1	13
Medicinal resources	0	1	0	0	0	0	0	1	2
Local climate and air quality	1	2	1	0	0	0	2	1	7
Carbon sequestration and storage	1	2	0	0	0	0	1	1	5
Moderation of extreme events	2	1	2	1	1	0	2	1	10
Waste-water treatment	2	2	1	2	2	0	2	1	12
Erosion prevention and maintenance of soil fertility	2	2	0	2	2	0	1	1	10
Pollination	1	2	0	1	1	0	0	0	5
Biological control	2	2	0	1	1	0	0	0	6
Habitat for species	0	2	0	1	1	0	2	1	7
Maintenance of genetic diversity	1	2	0	1	1	0	0	0	5
Mental and physical health	0	2	0	0	0	0	2	1	5
Outdoor recreation	0	2	0	1	1	0	2	1	7
Aesthetic appreciation and inspiration for culture	0	2	0	2	2	0	2	1	9

INTEGRATING ECOSYSTEM SERVICES INTO DEVELOPMENT PLANNING – AGRARIAN LANDSCAPES

MODULE 2: DEFINING THE SCOPE, SCREENING AND PRIORITIZING ECOSYSTEM SERVICES (STEPS 1 AND 2)

Ecosystem service <i>List ALL ecosystem services here</i>	Development objectives/ measures								Sum of scores
	Promote textile industry (cotton production)		Promote textile industry (processing plant)		Enhance conditions for non-timber products production and develop supply chain for exports		Increase investments in livestock and dairy industry		
	D	I	D	D	D	I	D	I	
Spiritual experience and sense of place	0	2	0	2	2	0	2	1	9
Sum of scores	16	32	8	20	20	0	24	14	134

Module 3. Ecosystem Services Assessments: Identifying conditions, trends and trade-offs (Step 3)

In this module, participants learn about the Step 3 of the IES approach. Step 3 makes a more detailed analysis and collects information to assess the conditions and trends of an ecosystem and ecosystem services, the drivers of change, underlying causes and the to identify trade-offs. Steps 1 and 2 set the framework of the process, and step 3 involves undertaking an assessment.

This module includes a presentation on the crucial concepts and challenges to consider when undertaking an ecosystem services assessment, specifically when applied in the context of agrarian landscapes. The module reinforces the importance of evidencing negative tradeoffs and distributional issues, and identifying the drivers that cause risks to the supply of ecosystem services.

Objectives

- Assess the conditions and trends in the supply and demand of the prioritized ecosystem services.
- Identify the associated tradeoffs, distributional issues and the drivers of change of ecosystem services' supply and demand.

Key messages

- Step 3 consists in an assessment of the conditions and trends in the supply and demand of the prioritized ecosystem services, as well as the resulting tradeoffs.
- At the end of the application of step 3, it should be clear how stakeholders manage and use ecosystem services and the implications this has in distributional issues. Also, the drivers that may be leading to their degradation and stakeholders behind them, should be identified.
- After the application of step 3 and 4, the information generated will provide a baseline to identify concrete policy options to improve decision making affecting ecosystem services.
- Assessing the conditions and trends in supply and demand, help to identify the risks related to the fulfilment of the demand of ecosystem services, and therefore, the associated risks for the activities and livelihoods of stakeholders.
- Identifying and understanding direct and indirect drivers is crucial when proposing policy measures in the following steps. The recognition of the mechanisms and stakeholders responsible for the changes in ecosystem services, helps to identify where interventions are required to change the trends in ecosystem services and manage trade-offs.
- Since not all data for analysis in ecosystem services assessments is available, it will usually be necessary to make assumptions about attributions, linearity and thresholds. Such assumptions need to be clearly stated and transparent to all stakeholders. Otherwise, credibility and legitimacy of the process can be at risk. In most cases the way of dealing with uncertainty in relation to ecosystem services is to employ the precautionary approach.
- Additional considerations on spatial and temporal dynamics of ecosystem services, their connectivity and trade-offs, are crucial because of the challenges they pose to the design and implementation of policy changes and management.
- The importance of trade-offs relies on the fact that they have impacts on the current and future provision of ecosystem services, and therefore, in the associated stakeholders, which can risk their livelihoods and the distribution of costs and benefits: "Successful strategies will recognize the inherent complexities of ecosystem management and will work to develop policies that minimize the effects of trade-offs" (Rodríguez et al. 2006).

Overview	Presentation 2: Ecosystem services assessments Exercise 3: Carrying on with the assessment (Step 3) Presentation 3: Methods Navigator.
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Presentation 2. Ecosystem services assessments

Before starting with the presentation, make a recap of the key messages of the steps 1 and 2. Encourage participants to remember what they did in the previous exercises and how does that build on the application of the IES approach. Also, give a quick introduction on step 3 and its main outputs.

It might be the case that many participants have already experience with ecosystem services assessments and agriculture. In such cases, remind the group that it is still necessary to level the knowledge. If you think it is required, adapt the presentation to the level of experience of participants.

Content covered in presentation 2

- Ecosystem services assessments and main components.
 - Conditions of supply
 - Trends of supply and demand
 - Direct and indirect drivers
- Examples for the agricultural sector.
- Important considerations when conducting an ecosystem services assessment.
 - Spatial and time dynamics of ES
 - Connectivity of ES
 - Synergies and trade-offs of ES

Remember to try to make the presentation as interactive as possible, encouraging the group to participate and provide inputs from their own experiences.

Main presentation points and notes for the presenter

- ✓ Start the presentation by pointing out that step 3 consists in an assessment of the conditions and trends in the supply and demand of the prioritized ecosystem services, as well as the resulting trade-offs. Explain that this presentation will go through all the relevant elements to consider when undertaking an ecosystem services assessment.
- ✓ Clarify that at the end of the application of step 3, it should be clear how stakeholders manage and use ecosystem services, and the implications this has in distributional issues. Also, the drivers that may be leading to their degradation and stakeholders behind them, should be identified. Together with the results of the application of step 4, the information generated will allow to identify concrete policy options to improve decision making affecting ecosystem services.
- ✓ Ask participants: what do they think an ecosystem services assessment is? Indicate that ecosystem services assessments are a social process that connects ecosystem services issues and decision making. They analyze the causes and consequences of ecosystem services changes in order to identify the negative trade-offs that need to be minimized and the drivers that require to be intervened.
- ✓ Explain that ecosystem services assessments can range from purely descriptive and qualitative to those which incorporate quantified data, maps, figures and statistics. The type of assessment to undertake in the IES process depends on the availability of data, resources and expertise. At the end, the point is to count with credible, realistic and useful information for planning.

- ✓ After clarifying the concept of ecosystem services assessment, explain its main components. For more information into each one of them, revise MEA (2005b); Kosmus et al. (2017a) and Kosmus et al. (2017b)
 - Assessing the conditions and trends in supply and demand, help to identify the risks related to the fulfilment of the demand of ecosystem services, and therefore, the associated risks for the activities and livelihoods of stakeholders. An ecosystem services assessment clarifies whether there is a lack of provision in quantity and quality of ecosystem services and accentuates who are the stakeholders affected.
 - Condition of ecosystem services refer to the ability of the ecosystem service to provide (supply) benefits, in a certain moment in time (“snapshot”). Determining the condition of ecosystem services provide a baseline for comparison with other scenarios in the future. The question to answer when determining the condition of ecosystem services is: what quality and quantity of benefits are being generated?
 - Trends refer to how ecosystem services supply and demand change through time. Trends can be assessed under different scenarios, by formulating specific assumptions. For example, the baseline scenario, “business as usual”, shows the trends in demand and supply if the current patterns are maintained. Other scenarios can reflect the changes in ecosystem services demand and supply under the implementation of certain policies or programs.
 - Trends on the supply of ecosystem services refers to the changes in quality and quantity of the benefits generated by ecosystem services, through time.
 - Trends on the demand of ecosystem services refers to the changes in quality and quantity of the required benefits from ecosystem services, through time.
 - Provide some examples on conditions and trends of ecosystem services that are relevant for agriculture. The presentation already includes some examples, but we suggest you to change them according to you participants’ experience and interests. In case you use the examples provided, we recommend you to carefully revise their references. You can also ask participants for further relevant examples.
 - Drivers of change are defined by the MEA (2005b) as “any natural or human induced factor that directly causes a change in an ecosystem”, and therefore, in the ecosystem services it provides. Identifying and understanding direct and indirect drivers is crucial when proposing policy measures in the following steps. The recognition of the mechanisms and stakeholders responsible for the changes in ecosystem services, helps to identify where interventions are required to change the trends in ecosystem services and manage trade-offs. The design and implementation of policies address indirect drivers to change their impact on conditions and trends of ecosystems. There are two types of drivers:
 - Direct drivers: Are those which have a direct impact on ecosystem services. There are a consequence of management decisions and cause physical changes in the landscape and in ecosystem services. Some examples are: land conversion, energy use, biological diseases, emissions of air pollutants, external inputs such as pesticides and fertilizers, agricultural practices (such as tilling and crop rotation), and air, water and soil pollution.
 - Indirect drivers (also known as “underlying causes”): Are those which influence other drivers that affect ecosystems and their services. Some examples are: demographic changes, economic growth, technology changes, etc. Indirect drivers normally shape the

development of direct drivers and are closely related to incentives that encourage stakeholder decisions that affect ecosystems and ecosystem services.

- Remind participants that each driver is related to different stakeholders, and their incentives and motivations can be different. For example, a farmer can decide how much pesticides and fertilizers to use (direct driver), but the Ministry of Agriculture can influence prices of commodities or subsidies programmes (indirect drivers). This is crucial, since in the following steps, the drivers reveal which mechanisms influence ecosystem change and therefore, require an intervention in order to encourage a better decision making.
- In the presentation, an example of direct and indirect drivers is given for the case of cultivated systems (MEA, 2005c). Ask participants how some of the direct and indirect drivers can impact the supply and demand of ecosystem services. How does that change for different scales of agriculture, crops and socio-cultural contexts?
- Point out that one of the most common and important challenges when undertaking an ecosystem services assessment, relates to the collection and analysis of data. Information for determining the current condition on ecosystem services can be collected through literature research, surveys, interviews, etc. Collection and analysis of information for assessing the trends on ecosystem services supply and demand is more challenging. It is helpful to look at past and present data and is always desirable to develop different possible scenarios. When it comes to the information on drivers, what is most important is to understand how direct and indirect drivers are related, and how each one of them affect ecosystem services.
- Since not all data for analysis is available, it will usually be necessary to make assumptions about attributions, linearity and thresholds. Such assumptions need to be clearly stated and transparent to all stakeholders. Otherwise, credibility and legitimacy of the process can be at risk.
 - Causality: The belief that one thing causes another. For example, the water pollution is caused by water discharges that contain pesticides.
 - (Non-)Linearity: The rate in which ecosystem services change. For example, a change in land use generates a proportional change in soil fertility? Or is this change disproportional and in which rate?
 - Threshold: At which point the supply in ecosystem services have a turning point? Which are the critical “tipping points” at which ecosystem services cannot be restored?
 - Indicate participants that some level of uncertainty is unavoidable, and it is inevitable to make assumptions. In most cases the way of dealing with uncertainty in relation to ecosystem services is to employ the precautionary approach: “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation” (Rio Declaration on Environment & Development).
 - Expert opinion and stakeholder consultation are particularly important source of information (especially where studies and data are scarce)
 - Point out that there are several methods that can be applied in an ecosystem services assessment. There is no such thing as “the one and only method”: a mix of methods is always desirable, as this gives a “range” of possible results, which contributes to the accuracy of the assessment. Also, biophysical, economic and social assessments might also

be required, as they provide relevant inputs. Participants will be able to have a closer look to a variety of methods after the reflection of exercise 3, when the “Methods Navigator” is presented.

- ✓ Other important considerations to have in mind when undertaking ecosystem services assessments, consist in understanding the characteristics of ES and the challenges they represent. Ask participants about each one of them: spatial and temporal dynamics, connectivity of ecosystem services and synergies and trade-offs. These considerations are relevant because of the challenges they pose to the design and implementation of policy changes and management. Try to exemplify each one of them with the case of agrarian landscapes. In the notes of the slides you will find more information on the applied examples.
 - Spatial dynamics. Refer to the difference between where a service is provided and where the benefit is received. This differentiation is crucial for the identification of trade-offs and drivers, and therefore for the design of interventions in policies and mechanisms. Also, biophysical processes, benefits and beneficiaries, and costs of provision of ecosystem services, change across a landscape (Fisher et al., 2011). Ecosystem services’ values depends on where the service is delivered and to whom.
 - Temporal dynamics. Refer to the changes of ecosystem services over time: ecological conditions, processes and societal preferences change over time. Also, individuals prefer to receive benefits sooner than later (Fisher et al., 2011).
 - Connectivity of ecosystem services. The supply of ecosystem services can be related to interactions with other ecosystem services, and/or to responses to the same driver of change (Bennet et al., 2013).
 - Synergies and trade-offs. Since you have already widely discussed trade-offs in previous exercises, just reinforce the concept and go through the types of trade-offs. Spend more time in discussing the examples referred to the types of trade-offs, especially for the case of ecosystem services relevant to agriculture. Also, point out that the importance of trade-offs relies on the fact that they have impacts on the current and future provision of ecosystem services, and therefore, in the associated stakeholders, which can risk their livelihoods and the distribution of costs and benefits. Focusing in trade-offs is a critical element for informing better decision making: “Successful strategies will recognize the inherent complexities of ecosystem management and will work to develop policies that minimize the effects of trade-offs” (Rodríguez et al. 2006). Another key message regarding trade-offs consist in the fact that “the groups that are affected by changes in the supply of ecosystem services are often not the same as those who benefit from the changes to ecosystems” (Rodríguez et al., 2006). Therefore, analysing trade-offs also allows to consider such distributional issues in the interventions to decision making. By applying the IES, trade-offs and the impacted groups are made explicit and factored into the decision making. Give examples related to trade-offs in agrarian landscapes and ask participants if they have any other examples from their own experience.
- ✓ Right after the presentation on ecosystem services assessments, give the instructions and apply exercise 3. Below, find the exercise 3, a step by step guide for the application and discussion of the exercise and some example answers. After the reflection of exercise 3, we recommend you to give a presentation on the Methods Navigator, which can be useful for participants to identify methods, tips and examples for undertaking ecosystem services assessments.

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Application of Exercise 3: Carrying on with the assessment (Step 3)

<i>Exercise 3 – Carrying on with the assessment (Step 3)</i>	
Preparation	<ul style="list-style-type: none"> • Write the exercise objectives and questions on a flip chart. • Distribute flipcharts, a pinboard, cards and markers for groups to take notes and visually represent their group work. • Place the pinboards and the results of exercise 2 (Where the story begins) in each one of the working groups, correspondingly, since they might need to revise their previous analysis in order to answer exercise 3. • It is important for you to know very well the information on Zentralistan and the case studies, so you can clarify all the questions. It is recommended for you to solve the exercise before giving the training.

Objectives	Participants explore the conditions and trends in the supply and demand for the ecosystem services. They identify the direct and indirect drivers of change, as well as the stakeholders behind such drivers.
Instructions and recommendations	<p>After the presentation on ecosystem services assessments, explain the objectives of exercise 3, give the contextual information of the case study and clarify the instructions. Ask participants to gather in their working groups and allow them to go through the exercise information and instructions in their workbooks. Give them some time and dedicate some moments to answer their questions about the instructions and the exercise.</p> <p>Once they are gathered in teams, clarify the ecosystem services that each team will work with:</p> <ul style="list-style-type: none"> • Consultancy A <ul style="list-style-type: none"> - Raw materials (cotton production, western Egana) - Fresh water quality and quantity (Siul river) - Erosion prevention and maintenance of soil fertility (cotton production, western Egana) - Inspiration for culture (rice production, southern Egana) • Consultancy B <ul style="list-style-type: none"> - Food (fruit production, northern Egana) - Fresh water quality and quantity (Siul river) - Local climate and air quality regulation (Egana province) - Habitat (Siul Reserve, northern Egana) • Consultancy C <ul style="list-style-type: none"> - Raw materials (cotton production, western Egana) - Food (nuts, northern Egana) - Fresh water quality and quantity (Siul river) - Recreation (Siul Reserve, forests of northern Egana) <p>Remind participants that to answer this exercise, they need to take into account the information on the study case of Egana, and that they might also need to revise the results of exercise 2.</p> <p>Ask participants to choose a person of their team, who will have 5 minutes to present their results to the “development committee”.</p>
Hints on carrying out the exercise	<p>Commonly, participants express confusion regarding the definition of the conditions and trends. Explain that the condition refers to the present state of the ecosystem services. The trends refer to the change in the condition in the supply and demand of ecosystem services through time, given the fulfilment of the development goals as they are formulated until now. The idea is to establish a “business as usual scenario” with the unmodified development plan: what would happen with the ecosystem services, the development goals and the stakeholders, if the development plan is not modified?</p> <p>Make sure to clarify the questions regarding how to assess the supply and demand of ecosystem services. In some cases, participants would like to have all</p>

	<p>the information available as possible to construct very detailed assessments. Remind them that the objective of this exercise is not to be as accurate as possible, but to know the relevant trends of ecosystem services in order to identify the drivers, and stakeholders associated. Indicate them to make assumptions regarding the behaviour of variables, and to mention them when presenting their results.</p> <p>Participants should be accurate regarding the spatial dimension of the ecosystem services: identify where each ecosystem service is provided and where the benefits received, and more importantly, recognize the drivers that affect such provision or reception of benefits. The idea is that such drivers, in following steps, will give hints on where to intervene to change the trends in ecosystem services supply and demand. They should also differentiate between the direct and indirect drivers.</p> <p>Encourage participants to reflect on the resulting trade-offs of the analysis, and what does this mean for the development goals and the stakeholders associated.</p> <p>Recommend participants to keep in mind that they need to adjust the language and the messages when they present their findings to the “development committee members”. They should not forget that they are trying to convince them on integrating the value of ecosystem services in the development plan, and that depending on their knowledge, views and interests, this may be understood (or not) and well received (or not) by the committee members.</p> <p>If there is not enough time to run the exercise, request participants to choose 2 ecosystem services for the analysis.</p> <p>Try to go around the groups and listen to the discussions of each of them. In case there is the need of guidance and correction, intervene, but never suggest an answer. If teams do not need guidance, let them work and discuss among themselves.</p>
Presentation of results	<p>Each group will present their findings in a meeting organized by the development committee. You and your co-trainer can play the role of members of the committee. Give no more than 5 minutes to each group for their presentation.</p> <p>After the presentation, other groups can ask questions and provide feedback.</p>
Reflection	<ul style="list-style-type: none"> • Open discussion in plenary. • Encourage participants to contribute with their knowledge to the discussion. • Write important points, ideas, and questions on flip charts or on cards. • Use the exemplary answers of the exercise to encourage discussion on different results and to ask questions that have not been raised during the reflection. • Try to place the pinboards with the results of each team next to one another, so you can make comparisons and point out the differences between their work. <p>Possible guiding questions for reflection:</p>

	<ul style="list-style-type: none"> • Why do you think it is important to assess the conditions and trends on supply and demand of ES? • Why do you think it is important to identify the direct drivers of change and differentiate them from the indirect drivers (underlying causes)? • Which main trade-offs (in terms of ecosystem services) could you find in your cases? How are trade-offs related to the drivers of change? • How do the stakeholders link to the drivers of change? • What do you think are the main challenges of undertaking an ecosystem services assessment? • What were the main highlights of the discussions in your groups? • Do you have any real-life examples, focused in agriculture cases, that contribute to the discussion? • Looking at your findings, what might be the implications for the next step in the IES process?
Key messages	<ul style="list-style-type: none"> • Step 3 consists in an assessment of the conditions and trends in the supply and demand of the prioritized ecosystem services, as well as the resulting trade-offs. • At the end of the application of step 3, it should be clear how stakeholders manage and use ecosystem services and the implications this has in distributional issues. Also, the drivers that may be leading to their degradation and stakeholders behind them, should be identified. • After the application of step 3 and 4, the information generated will provide a baseline to identify concrete policy options to improve decision making affecting ecosystem services. • Assessing the conditions and trends in supply and demand, help to identify the risks related to the fulfilment of the demand of ecosystem services, and therefore, the associated risks for the activities and livelihoods of stakeholders. • Identifying and understanding direct and indirect drivers is crucial when proposing policy measures in the following steps. The recognition of the mechanisms and stakeholders responsible for the changes in ecosystem services, helps to identify where interventions are required to change the trends in ecosystem services and manage trade-offs. • This analysis also reflects the contradictions among the development goals. For example, one of the objectives is to improve food security, but on the other hand, incentives are given to the production of cotton and wheat for exports, which decreases the quality and quantity of ecosystem services for their use for food production (among other activities). Moreover, this have direct impacts on the stakeholders related and on the distributions of costs and benefits. • The stakeholder groups can often be linked to one of more drivers, and they can develop potential alliances or conflicts. In the following steps, a more detailed analysis is made on the incentives, interests and perspectives that guide their decision making. • Since not all data for analysis in ecosystem services assessments is available, it will usually be necessary to make assumptions about attributions, linearity and thresholds. Such assumptions need to be clearly stated and transparent to all stakeholders. Otherwise, credibility and legitimacy of the process can

	<p>be at risk. In most cases the way of dealing with uncertainty in relation to ecosystem services is to employ the precautionary approach.</p> <ul style="list-style-type: none"> • Additional considerations on spatial and temporal dynamics of ecosystem services, their connectivity and trade-offs, are crucial because of the challenges they pose to the design and implementation of policy changes and management. • The importance of trade-offs relies on the fact that they have impacts on the current and future provision of ecosystem services, and therefore, in the associated stakeholders, which can risk their livelihoods and the distribution of costs and benefits: “Successful strategies will recognize the inherent complexities of ecosystem management and will work to develop policies that minimize the effects of trade-offs” (Rodríguez et al. 2006). • Main messages that groups should include in their presentations can be: <ul style="list-style-type: none"> ✓ The conditions and trends of ecosystem services indicate that the achievement of all development goals might be at risk. ✓ In some of the cases, the lack of provision of ecosystem services can accentuate the environmental and distributive problems, causing conflicts between sectors and stakeholders. ✓ Extreme events will become more frequent and more intense because of climate change. This adds up to the current risks. ✓ Identifying the drivers of change brings an opportunity to manage such conflicts and encourage a “greener” and more “equitable” development plan. • As an introduction to the next module, ask participants which the next step in the IES approach would be. Go back to the diagram and synthesize the key messages of step 1, 2 and 3.
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Exercise 3: Carrying on with the assessment

Congratulations! Your presentation was successful, and the Development Committee awarded you a contract for a more detailed assessment.

The results of the first assessment showed that a detailed analysis of the conditions and trends of ecosystem services is required in order to review the development plan and possibly identify alternative policies and measures. The Governor of Egana is especially keen on getting more information about ecosystems in his province, since investors are constantly pressing him to allow more cotton plantations and to release permits for building the processing plants. However, in spite of all the money in play, the governor is surprisingly cautious, as he is still dealing with consequences of the recent drought.

Your team already conducted a literature review and identified several studies and legal documents (primarily environmental impact assessments) on the relationships between different sectors’ activities and the environment. Literature included information on cotton and wheat plantations, textile industry plants, rice crops, livestock breeding, water purification, etc. National and municipal databases and satellite images provided data on land use changes, food production, soil quality and other important socio-economic factors, such as income trends and demographic changes. A report of the Economiska municipality showed the risks posed to water purification facilities from increases in sedimentation and river pollution. Semi-structured interviews provided information on stakeholder groups that were set to lose or win from the current development plans, either because some

ecosystem services they depend on would be affected by other activities or because they were part of favoured sectors. Examples of such relations included the effects of cotton plantations on soil quality and micro-climatic regulation and how this may affect small-scale subsistence farmers in the long-term while providing important financial rewards for textile industry entrepreneurs in the short-run. How the recreational value of mountain forests declines if deforestation increases was another example. This situation would affect both tourists and operators and would contradict efforts to promote sustainable tourism in the country.

A more complete picture of the current environmental state of the province is finally taking shape. Essentially, you have found that the current situation is neither great nor terrible. The most pressing worry however, comes from the trends in the drivers that are causing the degradation. The pressure of almost all of these drivers is increasing. The conversion of forests and grasslands to agriculture, the use of pesticides and fertilizers, overgrazing, global climate change and population growth are all becoming more intense. If these trends continue unchanged it will not be long before the provision of ecosystem services starts to decline, with foreseeable negative consequences on the quality of life in Egana province.

Based on various internal discussions and consultations, including your initial findings, and reflecting on the level of dependence and impacts of economic activities on ecosystem services, the Development Committee agreed on the following list of priority ecosystem services to be looked at in more detail:

1. Food
2. Fresh water
3. Raw materials
4. Erosion prevention and maintenance of soil fertility
5. Inspiration for culture
6. Habitat
7. Local climate and air quality regulation
8. Recreation

Your task:

Trainers will assign three to four priority ecosystem services to each group for further analysis.

1. What are the conditions and main trends in the supply and demand for the selected ecosystem services?

Think about the current state of each ecosystem service and what would happen if current trends continue in the future. Be aware that many of the conditions and trends are going to be site specific and highly dependent on local conditions. Consider upstream-downstream relationships in watersheds.

2. What are the direct drivers of change of ecosystem services and underlying causes (indirect drivers)?

Remember that drivers can cause both degradation and maintenance or conservation of ecosystems; and certain drivers may be affecting some and benefitting others.

3. Which stakeholders⁴ are related with which drivers?

⁴ Stakeholders can be groups or individuals that either affect or are affected by certain decisions or situations, and can be classified socioeconomically by, say, occupational group/sector, income level, and employment status.

You can use the following table to organize the results. Remember: as in real life situations, you probably will not find the all the information you need on the case. Look at the key trends and changes in the province of Egana and Zentralistan that are described in this course material and, if necessary, make assumptions.

Matrix for recording ecosystem service conditions and trends, drivers and stakeholders

Ecosystem service (ES)	Ecosystem that generates the service	Current condition of the ES (++/+/--)	Trends in the provision of the ES (→ ↗ ↘)		Drivers of change and underlying causes	Stakeholders (related to the drivers of change) and/or other motivations
			Supply	Demand		

Example of answers to exercise 3. Carrying on with the assessment (Step 3)

Ecosystem service (ES)	Ecosystem that generates the service	Current condition of the ES (++/+/--)	Trends in the provision of the ES (→ ↗ ↘)		Drivers of change and underlying causes	Stakeholders (related to the drivers of change) and/or other motivations
			Supply	Demand		
Raw materials	Agroecosystem (cotton production, western Egana)	+	↘	↗	<ul style="list-style-type: none"> Land use change: decrease of land where to produce cotton because of land degradation and use of land for other crops. Decrease of productivity of crops because of the reduction of soil fertility. Decrease of productivity of crops because of low water quality, caused by misuse of pesticides and fertilizers, as well as overgrazing. Decrease of productivity because of decrease in water provision, caused by overexploitation and deficient irrigation systems. 	<ul style="list-style-type: none"> Cotton producers and investors. Communities living along the Siul river. Textile companies. Livestock breeders in northern Egana. Municipal authorities in agriculture and environment (lack of agreement on law enforcement on water discharges and water uses, as well as financial incentives for unsustainable practices, like subsidies). Development Committee, who lack sustainable criteria for land planning. Provincial Water Resources and Meteorological Unit. Small-scale farmers downstream and in northern Egana, who are pressured to change their crops to cotton plantations, and/or lease their lands.
Fresh water (quality and quantity)	Siul River	-	↘	↗	<ul style="list-style-type: none"> Decrease in water quality, caused by water discharges with pesticides and fertilizers (by monocultures like cotton 	<ul style="list-style-type: none"> Cotton producers and investors.

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(STEP 3)

Ecosystem service (ES)	Ecosystem that generates the service	Current condition of the ES (++/+/--)	Trends in the provision of the ES (→ ↗ ↘)		Drivers of change and underlying causes	Stakeholders (related to the drivers of change) and/or other motivations
			Supply	Demand		
					<p>and wheat), water discharges from textile industry and overgrazing in the upper Siul river.</p> <ul style="list-style-type: none"> • Decrease in water quantity, overexploitation and deficient irrigation systems (not only in Egana, but also in Warif province). 	<ul style="list-style-type: none"> • Communities living along the Siul river, and small-scale farmers downstream. • Textile companies. • Population of Economiska. • Livestock breeders in the northern region of Egana. • Municipal authorities in agriculture and environment (lack of agreement on law enforcement on water discharges and water uses, as well as financial incentives for unsustainable practices, like subsidies). • Development Committee, who lack sustainable criteria for land planning. • Water company of Egana. • Provincial Water Resources and Meteorological Unit. • Water company of Egana. • Provincial Health Unit. • Provincial authorities of Warif province.
Erosion prevention and maintenance	Agroecosystems (cotton production, western Egana)	-	↘	↗	<ul style="list-style-type: none"> • Land conversion from forests and grasslands to agriculture. The decrease in soil fertility is accentuated due to the change to monoculture (cotton). 	<ul style="list-style-type: none"> • Cotton producers and investors. • Textile companies. • Livestock breeders (northern Egana).

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(STEP 3)

Ecosystem service (ES)	Ecosystem that generates the service	Current condition of the ES (++/+/--)	Trends in the provision of the ES (→ ↗ ↘)		Drivers of change and underlying causes	Stakeholders (related to the drivers of change) and/or other motivations
			Supply	Demand		
of soil fertility					<ul style="list-style-type: none"> Decrease of soil fertility due to overuse of agrochemicals. Decrease of soil productivity due to water pollution (caused by misuse of pesticides and fertilizers, overgrazing and deficient irrigation system). 	<ul style="list-style-type: none"> Provincial Water Resources and Meteorological Unit. Municipal authorities in agriculture and environment (lack of agreement on law enforcement on water discharges and water uses, as well as financial incentives for unsustainable practices, like subsidies). Development Committee, who lack sustainable criteria for land planning.
Inspiration for culture	Agroecosystems (rice production, southern Egana)	+	↘	⇒	<ul style="list-style-type: none"> Decrease of productivity because of the reduction of soil fertility, water quality and quantity. Decrease of productivity of crops because of low water quality, caused by misuse of pesticides and fertilizers, as well as overgrazing. Decrease of productivity because of decrease in water provision, caused by overexploitation and deficient irrigation systems. Decrease of food production due to pests and diseases. Financial incentives (subsidies and higher income) and extension services for changing to high value-added crops, like 	<ul style="list-style-type: none"> Small-scale farmers (rice producers). Cotton producers and investors. Textile companies. Livestock breeders. Population of Economiska. Municipal authorities in agriculture and environment (lack of agreement on law enforcement on water discharges and water uses, as well as financial incentives for unsustainable practices, like subsidies).

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(STEP 3)

Ecosystem service (ES)	Ecosystem that generates the service	Current condition of the ES (++/+/--)	Trends in the provision of the ES (→ ↗ ↘)		Drivers of change and underlying causes	Stakeholders (related to the drivers of change) and/or other motivations
			Supply	Demand		
					<p>cotton or wheat, are higher than income generated by rice production.</p> <ul style="list-style-type: none"> Financial incentives (higher income) lead them to land use change: lease their land to cotton investors or change production from rice to cotton with their capital. 	<ul style="list-style-type: none"> Development Committee, who lack sustainable criteria for land planning. Provincial Water Resources and Meteorological Unit.
Food	Agroecosystem (fruit production, northern Egana)	+	↘	→	<ul style="list-style-type: none"> Land use change pressure from livestock breeders. Financial incentives (subsidies and higher income) and extension services for changing to high value-added crops, like cotton or wheat, are higher than income generated by fruit production. Financial incentives (higher income) lead them to land use change: lease their land to cotton investors or change production from fruits to cotton with their capital. 	<ul style="list-style-type: none"> Small-scale farmers (fruit producers). Cotton producers and investors. Textile companies. Livestock breeders. Municipal authorities in agriculture and environment (financial incentives for unsustainable practices, like subsidies). Development Committee, who lack sustainable criteria for land planning.
Local climate and air quality regulation	Egana province	+	↘	↗	<ul style="list-style-type: none"> Land use change from forests, grasslands or small-scale agroecosystems to large-scale monoculture or grazing areas. Increase of livestock for the dairy industry in the upper stream causes increase in methane emissions. 	<ul style="list-style-type: none"> Cotton producers and investors. Textile companies. Livestock breeders. Municipal authorities in agriculture and environment (lack of agreement on law enforcement on sustainable

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(STEP 3)

Ecosystem service (ES)	Ecosystem that generates the service	Current condition of the ES (++/+/--)	Trends in the provision of the ES (→ ↗ ↘)		Drivers of change and underlying causes	Stakeholders (related to the drivers of change) and/or other motivations
			Supply	Demand		
					<ul style="list-style-type: none"> • Increase of textile industry causes increase of greenhouse gases. 	<ul style="list-style-type: none"> • agriculture and livestock management, as well as financial incentives for unsustainable practices, like subsidies). • Development Committee, who lack sustainable criteria for land planning.
Habitat	Siul Reserve (Northern Egana)	+	↘	⇒	<ul style="list-style-type: none"> • Land use change from forests, grasslands or small-scale agroecosystems to large-scale monoculture or grazing areas. • Habitat loss in agroecosystems due to soil degradation, caused by misuse of agrochemicals and water pollution and salinization. • Habitat loss in grasslands due to overgrazing. 	<ul style="list-style-type: none"> • Cotton producers and investors. • Textile companies. • Livestock breeders (northern Egana). • Municipal authorities in agriculture and environment (financial incentives for unsustainable practices, like subsidies). • Development Committee, who lack sustainable criteria for land planning. • Siul Reserve Management.
Food	Forests (nuts, northern Egana)	+	↘	⇒	<ul style="list-style-type: none"> • Land use change from forests, grasslands or small-scale agroecosystems to large-scale monoculture or grazing areas. • Financial incentives (subsidies and higher income) and extension services for changing to high value-added crops, like cotton or wheat, are higher than income generated by harvest of nuts. 	<ul style="list-style-type: none"> • Small-scale farmers (nut harvesters). • Cotton producers and investors. • Livestock breeders. • Municipal authorities in agriculture and environment (financial incentives for unsustainable practices, like subsidies).

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(STEP 3)

Ecosystem service (ES)	Ecosystem that generates the service	Current condition of the ES (++/+/--)	Trends in the provision of the ES (→ ↗ ↘)		Drivers of change and underlying causes	Stakeholders (related to the drivers of change) and/or other motivations
			Supply	Demand		
						<ul style="list-style-type: none"> Development Committee, who lack sustainable criteria for land planning.
Recreation	Forests (northern Egana, Siul Reserve)	+	↘	↗	<ul style="list-style-type: none"> Land use change from forests, grasslands or small-scale agroecosystems to large-scale monoculture or grazing areas. Livestock breeders can change land use and deforest to increase grazing areas and generate higher income. On the other hand, they can also increase their income by conserving the forests and become guides for tourists. Fruit producers and nut harvesters can conserve the forests to keep with their current activities. Nevertheless, they also have financial incentives to deforest and/or change their land use to monocultures. 	<ul style="list-style-type: none"> Small-scale farmers (nut harvesters and fruit producers). Cotton producers and investors. Livestock breeders. Municipal authorities in agriculture and environment (financial incentives for unsustainable practices, like subsidies). Development Committee, who lack sustainable criteria for land planning. Tourism investors (Ski Resort). Provincial Tourism Unit. Siul Reserve Management.

Presentation 3. Methods Navigator

After discussing the results of exercise 3, make a presentation of the Methods Navigator (www.aboutvalues.net). You can connect your computer to the beamer and show the Navigator and its content to all the participants in plenary. In case it is possible, you can give extra time to participants for exploring the Methods Navigator by themselves. They can even look for the necessary methods that could be useful for undertaking the ecosystem services assessments of their own case study.

When making the presentation on the Methods Navigator, make sure to accentuate the following points (taken from Kosmus, 2017b):

- ✓ Ecosystem service assessments should be ‘issue driven’. They can serve various purposes, such as gaining new insights on a specific issue or problem, making a strong argument for an issue, starting a discussion, helping settle a negotiation, generating information for a planning process, or comparing between different policy options. For the case of Egana, the purpose is already given by the case study (for example, revising and designing policy instruments and incentives, and resolving environmental conflicts), but in real life cases it is crucial to identify what is the issue that the ecosystem services assessment should address, and the decision making to influence.
- ✓ There are many different methods available for doing an assessment. The ValuES Methods Navigator (http://www.aboutvalues.net/method_navigator) can help identifying the right methods and tools according to different purposes.
- ✓ The database contains profiles of a diverse range of methods, tools and sources. Filters help the user find a suitable selection of methods that could be applied in different scenarios. To do this, there are different themes (policy areas) that users can choose from (e.g. infrastructure planning, management of water resources, nature conservation and protected areas, among others).
- ✓ After having selected the policy area of interest, the purpose of an assessment needs to be specified (for instance, comparing alternative policies, programmes and projects, scoping and situation analysis, sourcing new funds for conservation, among others).
- ✓ Once the user selects a general policy area and a purpose, he/she is directed to a page with more information on the types of questions, tips and case studies with a similar purpose. There is a downloadable ‘Top Tips’ file for each purpose, which provides information on key points to consider when conducting an assessment for each specific purpose. The case studies have a short summary of the process and a more elaborated overview of how it was conducted and why. The database then provides an overview of suitable methods that could be applied for the intended assessment.
- ✓ The methods cover a wide range of approaches, from modelling and mapping biophysical assessments to social and economic valuation. Each method comes with a short description and a document, which contains more details on the method including its rationale, how it is applied, input requirements and outputs, resource requirements, pros and cons, relevant cases, links, among other information.

References and sources

Values Method Navigator. Available at: www.aboutvalues.net.

Module 4. Governance of ecosystem services: Appraising the institutional and cultural framework (Step 4)

In this module, the information gathered in step 3 is complemented: A deeper analysis is made on the drivers and their associated incentive structures. Such incentives influence how stakeholders manage, use and impact ecosystems and their services. These might drive to ecosystem degradation or conservation and their study is key for designing interventions that minimize the negative trade-offs. Moreover, a closer look is taken to the profile of the stakeholders that decide on ecosystem services. By the end of step 4, there should be a clear idea of what underlies stakeholders' behavior, which are the possible areas of conflict and cooperation, and which are possible incentives that might need to be intervened in order to minimize negative trade-offs and ecosystem services degradation.

Objectives

- Identify key institutional, policy, legal and cultural frameworks and the resulting incentive structures that influence how stakeholders manage, use and impact ecosystems and their services.
- Recognize how the positions, interests and needs of stakeholders contribute to their decision making towards the use and impact on ecosystems and their services.
- Analyze whether there are conflicts or inconsistencies between institutions, incentives and stakeholders.
- Identify which incentives should be intervened to secure fair arrangements that conserve ecosystem services, minimize conflict and lead to more equitable access and use.

Key messages

- The objective of appraising the institutional and cultural framework is to identify incentives that should be transformed in order to build consensus, involve stakeholders and improve their social interactions. These should secure fair arrangements that conserve ecosystem services, minimize conflict and lead to more equitable access and use.
- In the governance analysis, institutions and stakeholders that govern ecosystem services are identified, and their interactions analyzed.
- An institutional analysis involves understanding the formal and informal rules structures and procedures, while the stakeholder analysis focuses more on individual motivations and/or collective interests. A range of formal and informal, modern and traditional, private and collective systems may coexist simultaneously.
- The governance structures related to ecosystems and ecosystem services are complex. Ecosystems are rarely subject to one form of management or regulation that is clearly enforced and understood by all.
- Understanding incentives of the institutions and stakeholders, means to clarify the inducements through which these achieve their goals, but also, to recognize how such incentives degrade ecosystem services, cause negative trade-offs and distributional issues.
- To know how decisions from institutions and stakeholders can affect ecosystem services, it is also vital to understand the different ways in which people and stakeholders can access and benefit from them.

Overview	Presentation 4: Stakeholders and governance of ecosystem services
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	Exercise 4: Stakeholder meeting at the Town Hall Continuation presentation 4: Stakeholder analysis and involvement
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Presentation 4. Stakeholders and governance of ecosystem services

Before starting with the presentation make a recap with the key messages of steps 1, 2 and 3. Encourage participants to remember what they did in the previous exercises and how that contributed to the IES process. Also, give a quick introduction on step 4 and its main outputs.

It might be the case that many participants have already experience with governance, ecosystem services and agriculture. In such cases, remind the group that it is still necessary to level the knowledge. If you think it is required, adapt the presentation content according to the experience of participants.

Remember to try to make the presentation as interactive as possible, encouraging the group to participate and provide inputs from their own experiences

Content covered in presentation 4

- Understanding governance
- Analysis of institutions and stakeholders
- Incentives and ecosystem services
- Access and benefits to/from ecosystem services

Main presentation points and notes for the presenter

- ✓ Explain how step 4 builds on step 3: On step 3, the drivers of ecosystem degradation were identified. Such drivers and their associated stakeholders influence the management and use of ecosystem services as a result of market failures or/and governance and institutional failures.
 - Market failures: When markets fail to allocate resources efficiently and effectively, due to incomplete information, existence of a dominant firm or externalities (TEEB 2010). An externality happens when costs are imposed on others, and the imposer is not charged; or when the benefits are received by others, but provider is not compensated. For example, pollution from an industry upstream that affects water use for agriculture downstream, and polluters don't pay. Most of the times, decision makers may not have full awareness of the consequences with regard to environmental degradation and loss of services.
 - Governance and institutional failures related to the decision-making framework that that affects ecosystems and their services.
- ✓ Market failures and externalities can be further analysed with valuation in step 5. In this module, the focus will be in governance.
- ✓ "Governance is about social interactions, about who takes the decisions, but also how these decisions are taken and how they are enforced, thus affecting the way people access and use natural resources. [...] Additionally, beliefs, values and ideals influence people's thinking about nature, society, government and individual responsibilities" (Kosmus et al., 2017)
- ✓ The point of the governance analysis is to improve cooperation among actors, build consensus and transform incentives that have a negative impact on biodiversity. "Based on this analysis, interventions should seek to improve social interaction between people and institutions in order to secure fair arrangements that conserve ecosystem services, minimize conflict and lead to more equitable access and use". (Kosmus et al., 2017).

- ✓ The governance analysis (or appraisal on institutional and cultural framework) requires answering the following questions. Mention that each one of these questions will be further analysed in the following slides:
 - Which are the institutions and stakeholders that govern over ecosystems? How they interact? Who are the decision makers?
 - How and why they make decisions? How those decisions affect ecosystem services? What other elements influence stakeholders in decision making?
- ✓ In the following slides, explain with more detail each one of the questions regarding the governance analysis.
- ✓ **Which are the institutions and stakeholders that govern over ecosystems? How they interact? Who are the decision makers?**
 - Explain that, to answer this question, an institutional and stakeholder analysis is required.
 - Institutions are formal and informal rules and the measures to enforce them (North, 1990). Explain the difference between the formal and informal institutions. Point out that institutions can take various shapes and forms. For example, meeting your colleagues for lunch every day at a particular time, established procedures of conflict resolution in a school class, the right of way in traffic, but also agreements on the use of a particular grazing area (GTZ, 2004). When analysing the institutions related to the drivers, it is important to identify their governance levels. For example, are they national or supranational institutions, or are they local informal institutions? (Primmer et al., 2016). It is also relevant to understand their mandate, reputation, history, capacity, interests, etc.
 - Formal institutions: Include laws and legal principles. Formal rules derive from policy decisions at different levels and influence which services are accessible to whom and who is allowed to use them and how. Examples of formal institutions in agricultural sector are: Ministry of Agriculture, cooperatives, institutions that provide extension services, etc. Ask participants to give you some other examples.
 - Informal institutions: Refers to “norms embedded in interactions between groups and individuals” (Primmer et al., 2016). They shape stakeholders’ behaviour in a certain group or organization and they arise from social interaction, and therefore, are rooted in traditional and/or local values and beliefs. In comparison to formal institutions, their principles of action and behaviour are not explicitly stated or written. Examples of informal institutions in the agricultural sector are: time of fallow cycles in communal land, social events arising from harvesting seasons, etc. Ask the participants to give you some other examples.
 - A stakeholder analysis is necessary to identify the actors’ goals, motivations and links to ecosystem management and use. In comparison to an institutional analysis, a stakeholder analysis focuses more on individual motivation and/or collective interest, than on structures and procedures (GESAMP, 2001). Applied in earlier stages (step 1 and 2), the stakeholder analysis is also be relevant to identify how different stakeholders can be involved in the IES process and how. A stakeholder map can be useful to recognize the relationships between the institutions and the stakeholders, which is the nature of their relationships and how relevant it is in terms of ecosystem services management and use. Examples of stakeholders

in the agricultural sector are: minister of agriculture, consumers of corn, distributors of corn, small-scale farmers, etc.

- Ask participants about possible elements to consider when categorizing the stakeholders relevant in the agrarian sector. For example, whether the Ministry of Agriculture and its local representations also manage livestock, fisheries, forestry and aquaculture; whether farmers cooperatives own land collectively or are they private owners; who are the regulatory institutions for pesticide uses, etc. An example of institutional-stakeholder map for the agriculture sector is given in the presentation. In case you consider it necessary, change the example to another one more useful for the interests and experiences of the participants.
- Tools for undertaking the institutional and stakeholder analysis are varied. There are many software and methods to undertake the stakeholder analysis. Some examples include: NetMap Tool (included in the Methods Navigator), UCINET, NetBrain, etc.
- Remind participants that the governance structures related to ecosystems and ecosystem services are complex. Ecosystems are rarely subject to one form of management or regulation that is clearly enforced and understood by all. Also, a range of formal and informal, "modern" and traditional, private and collective systems may coexist simultaneously.

✓ **How and why stakeholders make decisions? How these decisions affect ecosystem services? What are other factors that influence decision making of stakeholders?**

- The analysis of this question involves the following aspects:
 - Understanding the stakeholders' and institutions' incentives. For this, remind participants of the concept of incentives: inducements that motivates an individual to perform an action, or factors that motivate human behaviour. They can be positive and foster certain behaviour, but they can also act as disincentives and deter people from doing something (GTZ, 2004). Therefore, understanding incentives means to clarify the inducements through which stakeholders achieve their goals, but also, to recognize how such incentives degrade ecosystem services, cause negative trade-offs and distributional issues. It is relevant to mention that many incentives that encourage production, act as disincentives for ecosystem conservation. When analysing the incentives of decision making, a differentiation should be made between those at an institutional level, and those at the stakeholder level. Mention some of the incentives that tend to influence ecosystem management and use (adapted from Emerton, 2000 and GTZ, 2004) and ask participants for specific examples in the agricultural sector. The presentation already includes some examples, but feel free to change them for others that are more relevant to participants' knowledge and experience.
 - Market oriented. Measures usually transferred by way of prices and markets. For example, subsidies to pesticides and fertilizers, etc.
 - Regulatory (formal or informal). Measures that regulate and stipulate legal conditions and codes for social interaction. For example, clarification of property rights, concessions of water.
 - Cooperation. Measures that involve interest groups in the decision-making and governance process. For example, income distribution in cooperatives.
 - Information. Measures that make external effects visible and provide information about the actual benefits and costs. For example, information channels between agrarian policy implementors and farmers.

- To know how decisions from institutions and stakeholders can affect ecosystem services, it is also vital to understand the different ways in which people and stakeholders can access and benefit from them. Depending on their characteristics, ecosystem services can be managed and intervened differently. For example, timber grown in a patch of land usually belongs to the landowner, yet many countries require permits for cutting trees, even on private land. The typology of goods/services is a tool that helps undertaking these characteristics. The following is an explanation on the typology of goods/service graph included in the slides of presentation 4 and is taken from Kosmus et al. (2017b).
- If a good/service is considered a rival good, it means that the use of it reduces its availability for others. The term excludability refers to the fact that others can be prevented from using the good/service (by restricting their access).
- Goods/services that are rival and excludable (i.e. goods that are limited and to which the access of others can be restricted) are called private goods/services. An example of an ecosystem service that can be classified as a private good could be the amount of corn produced and that is sold in a market place.
- If access to a good/service cannot be restricted (non-excludable), but is rival, they are called common goods/services. This is the case of timber in an open access forest. Similarly, services can be non-rival goods/services at low usage but can move towards being rival goods at high usage. An example here would again be the timber in forests. If only a few trees were logged, then it would be considered non-rival as there are more than enough trees available. However, if harvest levels rise, then this service could shift towards being a rival good, as different loggers would compete for the same tree and tree populations might not be large enough to cover demand.
- Club goods/services are those services that are non-rival (at least to some extent) but excludable. An example would be the aesthetics in a national park: the use of it is (generally speaking) non-rival (I can look and enjoy the scenery just as well as the people before or after me), but the access to it can be restricted (through an entrance fee, for example).
- Public goods are those services that are non-rival and non-excludable, and an example can be clean air. Many ecosystem services have characteristics of public goods, meaning that people cannot necessarily assert unambiguous ownership rights over them, or be excluded from using or benefiting from them. For example, the use of the good/service (breathing of air) does not deplete the resource and others cannot be excluded from it. The management of public goods poses many challenges, as the identification of the providers, beneficiaries and scope, is not always clear. Moreover, the costs for maintenance and provision cannot be fairly distributed. According to ENRD (NA), the main public goods from which agriculture benefits are: farmland biodiversity, water quality and availability, soil functionality, climate stability, resilience to flooding and fire, agricultural landscapes, rural vitality and food security.
- This classification gives some orientation on the level of difficulty in regulating ecosystem services use and access. Public goods or services, for example, are much more difficult and costlier to regulate — if sometimes not close to impossible — than common goods/services.

- Ecosystem services often cannot simply be placed into one of the four categories. It is important to understand this concept as it directly relates to management decisions. It is therefore not only the inherent biophysical characteristics of an ecosystem service that define it, but also the governance and management that can have an influence on it.
 - Once the ecosystem services are understood in terms of how they can be accessed and managed, it is clearer how decision making of institutions and stakeholders can affect their provision and use under specific contexts. For example, in the case of agriculture, if there are just some few small-scale crops, water can be managed as a public good/service. Nevertheless, as the amount and scale of crops increases, an intervention could be required, making water to be managed as a club good, through concessions.
 - An example on the ability to manage and to impair ecosystem services is given in the slides. In it, Felipe-Lucía et al. (2015) evidences how different stakeholders have different levels of ability to manage and impair ecosystem services, depending on their power. For example, there are two groups of farmers who use diverse ecosystem services in different magnitudes (food provision and raw materials; and nutrient regulation, soil condition and freshwater supply), but they have almost the same ability to manage them. On the other hand, their ability to impair the services of soil condition and nutrient regulation is quite high. You can change or adapt the example in order to address participants' knowledge and experience.
 - To understand other elements that influence stakeholders in their decision making, it is also crucial to analyze their positions, interest and needs. Nevertheless, this topic will be further discussed during the reflection on exercise 4.
- ✓ Once it is clear how institutions and stakeholders make decisions and how their associated incentives structures work, it is important to identify current and potential conflicts and synergies. Moreover, a revision of the costs and/or benefits that different stakeholders bear and/or receive should be undertaken. In case it is required, a more detailed cost benefit analysis could be carried in the next step.
 - ✓ The institutional and cultural framework appraisal provides a first overview of the incentives that cause ecosystem degradation and that might need to be modified. But, moreover, the analysis provides a wider view of how those incentives relate to the stakeholders, to ecosystem degradation and the resulting distributional issues. This allows to have a better perspective on how the incentives could be modified (or new ones could be designed): encouraging consensus, looking for improvement in social interactions and minimization of conflicts, and securing a more equitable distribution of costs and benefits.
 - ✓ A way of undertaking Step 4 in real life can include a literature review, including laws, regulations, policies, strategies, etc, as well as technical documentation. Moreover, it is crucial to understand the perceptions and insights of ecosystem managers and users, including traditional knowledge and oral history. This information can be collected through interviews, discussions and participatory workshops. Applying participatory methods is critical to understand the informal factors that encourage stakeholder's decisions and their importance. Most of the valuable information to collect in this step is based on qualitative aspects. Some relevant participatory methods can be found in www.aboutvalues.net
 - ✓ Right after the presentation 4 on stakeholders and governance of ecosystem services, give the instructions and apply exercise 4. Below, find exercise 4, and a step by step guide for the

application and discussion of the exercise. In this case, presentation 4 will continue. This presentation is divided in order to enhance the learning process of participants on stakeholder analysis and involvement: in this case, concepts are clearer when exemplified with the exercises' answers.

Application of Exercise 4: Stakeholder meeting at the Town Hall (Step 4)

Exercise 4 – Stakeholder meeting at the Town Hall (Step 4)	
Preparation	<ul style="list-style-type: none"> • Write the exercise objectives and questions on a flip chart. • Distribute flipcharts, a pinboard, cards and markers for groups to take notes and visually represent their group work. • Place the pinboards with the results of previous exercises (of all groups) in the training room. This will allow participants to revise the results of previous exercises. • Beforehand (day before the application of the exercise), revise the stakeholders that you will assign for the exercise 4. There are 11 roles and you might want to assign them all to the trainees or just to pick those that are most relevant for the participants' interests. • Beforehand (day before the application of this exercise), revise the participant's profiles in order to form working groups and assign them the stakeholder roles. Do not forget to choose only one participant for playing the governor role. • Print out (in one side), the description of the roles included in this manual and cut apart each one of them. Workgroups will only receive information on ONE stakeholder, according to their assigned roles. • The print outs with the full description of all the roles can be distributed to each participant ONLY after the exercise is over. Make sure not to distribute the description of all the roles before the exercise. • It is important for you to know very well the information on Zentralistan and the roles, so you can clarify all the questions.
Objectives	Participants review stakeholder's positions, interests, values and needs. They analyze possible conflicts and alliances between them.
Instructions and recommendations	<p>After the presentation on governance of ecosystem services, explain the objectives of exercise 4, give the contextual information and clarify the instructions. Remind participants that during this exercise, they will no longer be playing the role of members of a consultancy, but stakeholders of Egana. Also, they will not work in their previous working groups, but new groups will be formed.</p> <p>Once you explained the objective, background information and instructions, name each one of the members of each team and assign them a stakeholder role. Be careful not mention to the plenary the role you assigned to each group.</p> <p>Then, ask participants to gather in their teams and read the exercise, the instructions, the additional information and their role description. Give them some time and dedicate some moments to answer their questions about the instructions and the exercise.</p>

	<p>Remind participants that to answer this exercise, they need to take into account the information on the study case of Egana, and they might also need to revise the results of previous exercises.</p> <p>Motivate participants to slip into their role as good as possible and to be very creative when formulating the messages. They need to use ecosystem services arguments, as well consider what they have learned so far. Also, they need to adapt their messages to their target audience.</p> <p>Point out that each team must choose a representative who will have no more than 3 minutes to present his/her statement in the meeting.</p> <p>While participants are formulating their statements, prepare the room for the role play meeting. Arrange some chairs in the front of the training room in a panel format. Write down the name of each stakeholder in tags and organize them, so that you leave a chair in the middle for the governor, and on the sides to the other stakeholders. Prepare a flipchart for welcoming the participants to the meeting. You can also use some more visual and sound aids.</p> <p>During the meeting, you or your co-trainer will play the role of the moderator of the meeting (Director of Municipal Rural Development Unit). Read the description of your role and be creative in acting accordingly. For example, give less time to those stakeholders whose views are conflicting with the promotion of cotton. Or, when organizing the name tags for the stakeholders in the chairs of the panel, seat the cotton investors and textile industry representatives, next to the governor.</p> <p>Once participants finished writing their statements, start the meeting by asking the representatives of each stakeholder group to go seat to the front (don't forget to call the governor at last). Then, request them to present their statement one by one. Like in real life, there are often stakeholder groups that are more favoured by the decision-makers than others, or there are unofficial alliances between the political and economic sectors due to similar interests. You can exemplify this by letting the governor to give his/her statement first, or by giving the representative of the cotton investors more weight than other stakeholders. After everybody have presented their statements and discussions are over, ask the governor to give the closing remarks.</p>
Hints on carrying out the exercise	<p>Beforehand (day before the application of this exercise), revise the participants profile in order to choose the roles to assign them. Try to assign participants to stakeholder groups conflicting or different to their roles in real life. This will help them to understand other positions. You can vary the amount of stakeholder groups that will be present at the stakeholder workshop, depending on the participants of your training, their sectors of interest and the available time.</p> <p>When moderating the meeting, try to discretely encourage participants to use arguments related to ecosystem services, but also try to keep momentum and tension between them. The role play is a good moment for participants to have fun and relax, nevertheless, the learning process should not be jeopardized. Therefore, when moderating, try to keep balance so that participants can learn while still having fun.</p>

	While participants are formulating their statements, try to go around the groups and listen to their discussions. In case there is the need of guidance and clarification regarding their roles, intervene, but never suggest an answer. If teams do not need guidance, let them work and discuss among themselves.
Presentation of results	In this exercise, there is no presentation of results.
Reflection	<ul style="list-style-type: none"> • After the role play, open a discussion in plenary. • Encourage participants to contribute with their knowledge to the discussion. • Write important points, ideas, and questions on flip charts or on cards. <p>Possible guiding questions for reflection:</p> <ul style="list-style-type: none"> • Where could you see possible conflicts between stakeholders regarding the access and use of ecosystem services? You can ask directly to the groups which their positions and interests were. • Which alliances and conflicts could you observe in the meeting? • Do you think the Development Committee represented the interests of all groups? • Which stakeholders were missing in the meeting? • What arguments that were used in the role play have convinced you? What arguments have not persuaded you? Why? • Do you think communication is important to have impact? Why? • What are your experiences in influencing decision-making? What are some of the success factors for achieving this? • Did you think it is a worthwhile experience to put yourself in different roles? • What are the advantages and disadvantages of participatory workshops for decision-making? What does this mean in the IES process? • Do you have any real-life examples, focused in agriculture cases, that contribute to the discussion? • At the end of this discussion, distribute the print outs with the description of all the roles. • Then, continue with the presentation 4. Remember that this presentation builds on the results of the exercise, so we strongly suggest you to give it as an extension of the reflection of exercise 4.
Key messages	<ul style="list-style-type: none"> • The objective of appraising the institutional and cultural framework is to identify incentives that should be transformed in order to build consensus, involve stakeholders and improve their social interactions. These should secure fair arrangements that conserve ecosystem services, minimize conflict and lead to more equitable access and use. • In the governance analysis, institutions and stakeholders that govern ecosystem services are identified, and their interactions analysed. • An institutional analysis involves understanding the formal and informal rules structures and procedures, while the stakeholder analysis focuses more on individual motivations and/or collective interests. A range of formal and informal, modern and traditional, private and collective systems may coexist simultaneously.

	<ul style="list-style-type: none"> • The governance structures related to ecosystems and ecosystem services are complex. Ecosystems are rarely subject to one form of management or regulation that is clearly enforced and understood by all. • Understanding incentives of the institutions and stakeholders, means to clarify the inducements through which these achieve their goals, but also, to recognize how such incentives degrade ecosystem services, cause negative trade-offs and distributional issues. • To know how decisions from institutions and stakeholders can affect ecosystem services, it is also vital to understand the different ways in which people and stakeholders can access and benefit from them.
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Exercise 4: Stakeholder meeting at the Town Hall

The Development Committee decided to organize a stakeholder meeting and to invite representatives from different stakeholder groups in order to express their opinions. The purpose of the meeting is to obtain a better understanding of stakeholder's positions and interests with regard to development planning in Egana province and to explore existing and possible conflicts and alliances.

Your task:

During this exercise, you will not be part of the consultancy team. Instead, you will represent one of the stakeholder groups invited to the workshop. You received the invitation letter to the workshop, but there is neither an agenda nor information on the objectives and participating groups.

Prepare a very short statement (not more than a few lines) where you point out the main interests and needs of your stakeholder group with regard to the development plan in Egana.

Base your statement on the information generated during the previous steps and the additional information (following pages). You can be creative too. Try to put yourself in the position of your stakeholder! Do not forget to choose one person to present the statement in plenary during the stakeholder workshop. Each representative will have no more than 3 minutes to present his/her statement.

Additional information

One of the biggest projects of Zentralistan's government is the ongoing land reform. During the Great-Stan era, almost all the land was owned by the state. Since 1998 land redistribution is going on. Much of the farmland (40 % of the arable lands) has been privatized and transformed into smallholder and peasant-farms. Nevertheless, most of the economically important lands, used for

Invitation

You are cordially invited to a meeting organized by the Development Committee of Egana province. The event will take place at the City Hall this evening.

On behalf of the Development Committee of Egana, I look forward to your attendance.

Sincerely,

Mr. B. Smith
 Director of provincial and
 municipal rural development

Permanent Secretary
 of the Development Committee of Egana

cotton and wheat production, are still state owned and remain big-sized collective farms or farms operated by state enterprises.

Today, the Land Code established in 2003 regulates the land tenure. According to the Land Code, the following types of land always remain in state ownership: Forest reserves, reserves of minerals, protected areas and pasture lands. Foreign entities are becoming more and more interested in the country and are allowed to lease and invest in agriculture lands (term is 5-8 years).

The privatization comes along with different challenges. New land owners often lack knowledge on sustainable, good agriculture practices and extension services are practically non-existent. Additionally, small-scale farmers lack financial resources to invest in improved machinery. Subsequently productivity often remains low.

One structural challenge is that registration of private land titles is a lengthy, bureaucratic and costly process. Therefore, in many cases property rights remain insecure. The absence of well documented, demarcated and permanent boundaries between land tenants often leads to conflicts. Especially in remote areas, like the Siul Reserve, where law enforcement and presence of government institutions is low, illegal extraction of firewood and grazing livestock is leading to massive forest degradation. Also, in and around the densely populated areas (Capitalska and Economiska) illegal land acquisition by poor internal migrants is a severe problem, resulting in social conflicts between the government and the communities.

Zentralistan is a country rich in biodiversity. It has a high concentration of species of flora and fauna. Zentralistan's government and international donors made first efforts to protect this ecological diversity by creating the National Park System (NPS) in 2002. The NPS includes different protected area categories, such as National Parks and Reserves. The two biggest protected areas are the Katakir Reserve in Nishtak, and the Siul and the Tuklak Reserves in Egana. Representing 5% of the country's area, the NPS comprises only forested and mountainous areas. It does not include semi-desert or steppe ecosystems although a significant portion of the world's natural steppes are found within Zentralistan. Effectiveness of the NPS is still unsatisfactory due to institutional weakness, weak law enforcement, lack of funding and low management capacity in the responsible institutions. Therefore, biodiversity in National Parks and reserves is often threatened by illegal wood extraction, deforestation, hunting and invading cattle farming.

State policies often - accidentally - increase the pressure on Zentralistan's biodiversity and ecosystems, for example, subsidies for cotton production which worsen the land degradation problem; and subsidies for irrigation which promote an excessive use of water, leading to soil salinization and water-logging.

Description of main stakeholder groups

Director of Provincial Rural Development Unit (PRDU) (moderation of the meeting): The export-oriented crops initiative will create new jobs and more revenues for farmers. Due to the increasing worldwide demand for cotton and wheat, the Director sees economic gains. He/she also sees the opportunity to attract national and foreign investors and thereby boost the economy. For promoting this economy-booster initiative, the Director is encouraging the creation of a financial support program to all of those farmers that decide to change their crops. This includes subsidies for extension services, fertilizers, pesticides and capacity development. Moreover, he/she is already discussing with the Land Territory Division on how to solve the administrative issues in order to change the land use of some parcels near Economiska to start the construction of new textile plants which will employ 500 people. With this, not only the agribusiness but also the small-scale farmers can create value supply chains of

their products and generate higher income. As a main lobbyist of this initiative, the Director seeks to not only increase the income for small-scale farmers and agribusiness, but also to generate a stable and convincing political career. If these initiatives work, he/she could gain credibility. Given the case, he/she would like to support the Governor in his/her candidacy for reelection, and maybe one day, even become Governor himself/herself.

Governor of Egana: The governor is worried about the public's harsh reaction to the problem of water and soil quality and quantity caused by water extraction for agriculture and industries, the use of fertilizers and the missing enforcement for industries' wastewater regulations. There have been recent public outcries against the policies to encourage cotton and wheat for export. He/she suspects that the largest NGO in Egana is behind this position, but he doesn't understand. He/she was assured that all these investments are actually considering environmental criteria. He/she is also very worried about the rumors on the low water quality, causing health problems in the population. Communities along the Siul river, inhabitants of Economiska and farmers in the south of Egana had organized major protests against the cotton investors. They assure that they have been using high pollutant pesticides, which have damaged the vegetation coverage, their drinking water and productivity of their crops. He/she needs to pressure the water company to start the construction of the water purification plant right away. With all of the social interest in these current events the governor ponders whether or not the "environmental issues" are a good subject for running as a presidential candidate next year.

Zentralistan Nature Conservation (ZNC): Like other environmental NGOs, ZNC is up in arms against expansion of cotton production and textile industry. ZNC argues that the cotton processing plants will employ no more than 100 people, as most of the process is automated. In addition, senior staff will come from overseas. The development goals on cotton promotion and textile industries enhancement are seen as a disgrace as they will only foster more monoculture; further displace small-scale farmers and lead to land degradation. Food prices will go up as land is used to produce cotton for export instead of food for ensuring domestic consumption. Moreover, if cotton producers and textile industries do not attain to a strict code of conduct regarding waste water management, the Siul River and the lake will be further degraded. The forests and grasslands will also be degraded having a disastrous impact on its biodiversity, and the losses in production will be impossible to compensate. As the Siul river, they are afraid that the Erosh River might also be in danger of being exploited and polluted by pesticides and fertilizers. In their opinion the new water purification plant would not be necessary if deforestation upstream would halt, and the Provincial Agriculture and Environment Units would agree on regulations on water discharges from agriculture, livestock and industries; and who is to enforce them. They also think that the Provincial Agriculture Unit should stop the subsidies programs for cotton and wheat production and refocus them to help small-scale farmers to produce more sustainably and develop value supply chains. ZNC is also concerned about the misuse and overuse of pastures' soils as they are important carbon sinks. ZNC together with other NGOs is threatening to bring these cases before the international community.

Cotton investors: Cotton production has a long tradition in Zentralistan. The cultivation of cotton has always been a priority of the government and has always been subsidized. However, production measures are inefficient and international prices for cotton have decreased during the last years. The processing industry (spinning mills) is outdated, it is gradually being renovated and modernized, mostly with foreign investment. Assessments of international experts show that foreign consumers are interested in Zentani cotton not only because of the volumes of its exports, but also because of the improvement of the cotton's quality characteristics which meets cotton market demand. Zentralistan's high quality cotton fiber has an excellent niche. Nevertheless, there is still a need for additional knowhow and the production volume has to be expanded. The cotton industry has convincingly argued

in favor of the expansion of cotton fields and production, in order to satisfy the demand of the textile industry. Considering that much of the land is not productive anymore due to soil degradation, investors need the support of the Development Committee to ease the land use change of forested areas, and/or the financial incentives to be able to lease small-scale farmers land. They assure that the prices paid to small-scale farmers for leasing their lands, will be beyond the market prices. They also want the government to invest more in innovation and new technologies.

Textile industries: The textile companies are satisfied with the 5-Year-Development Plan since it prioritizes the expansion of the textile industry. They are financially backed by a big foreign investor interested in financing new industrial locations. In exchange they promise to create new income opportunities for the local population. In the beginning, 2000 new jobs would be created, and after the first 2 years this number would continue to increase. The companies assure to apply the highest environmental standards; certified by ISO 14001. The support of social community projects is part of their company's social responsibility strategy. They insist that their presence will have a significant impact on Zentralistan's economy. The companies have already partially financed the construction of a new industrial location after the Province Agricultural Development Unit (PADU) assured them that the final approval of the operation permit is already on its way and a mere formality. State and people would benefit in multiple ways from this development

Director of the Provincial Agriculture, Livestock, Forestry and Fishery Unit (PADU) is the representation of the Ministry of Agriculture (MoA) at provincial level. Its main objectives are the improvement of agricultural and livestock productivity, as well as the creation of income and employment opportunities. Since the agricultural sector is the backbone of the country, it is of crucial importance for the economy of Egana. The director welcomes the development goals on promotion of cotton, and the enhancement of livestock industry. These strengthen the role of PADU and enables the director to agree with major investors for cotton and agrochemicals. The PADU has actively promoted cotton plantations in the province even though in most of these areas the soil is unsuitable for sustainable production. The main incentives for potential cotton farmers are the favorable pricing system and the provision of fertilizer and scholarships for their children from PADU. This has led to a massive change in land cover, pollution of streams, degradation and salinization of soils. PADU is aware of these problems, moreover since in the last meeting several representatives raised their concerns about declining productivity due to progressive land degradation. PADU is also aware about tensions between large-scale cotton producers and small-scale farmers. Also, the Unit has been trying to attract private investors to the dairy industry. It has offered credits and supporting services for all of those who show interest in owning cattle and who are willing to switch or convert their lands to grazing areas. One major goal for the coming years is to diversify the agricultural sector. An increased export of high quality agro and non-timber forest products as nuts and dry fruits is foreseen. Nevertheless, PADU still lacks the knowledge and capacity to develop a sustainable extraction and marketing strategy. PADU is concerned about the lack of knowledge on sustainable production measures and the old agricultural infrastructure and irrigation systems. They hope that through foreign investment these issues can be tackled.

Farmer Association of Egana (FAE): The association was set up to represent the interests of the farmers cultivating rice, potatoes, vegetables in the south of Egana and specially to improve their value chain. The farmers are afraid that if water quantity and quality get worse and soil fertility declines there will be no more land for agricultural purposes. In their last meeting they discussed the existing reports on cotton production addressing the issue of land degradation and salinization in the western region. They fear that similar things could happen to their crops. They are concerned that they might be forced to migrate, maybe even to the city. Also, many members of the cooperative might change

their production to cotton, since it has been impossible to generate sufficient income to support their livelihoods. The same that happened in the neighboring Warif Province. They are also worried that the price of food may increase. The Provincial Rural Development Unit pushed for a development goal which focuses in food security. The director promised the farmers that they will be included in the benefactors of this initiative, but the cooperative does not trust them at all. They hope that the Zentralistan Nature Conservancy (NGO) can help them to secure their production and develop a sustainable value chain for rice.

Livestock Breeders Association of Egana (LBAE): Drylands in Zentralistan are mainly used as rangelands for grazing cattle and goats. The farmers are concerned about the expansion of the cotton fields and the negative consequences coming along with the large-scale agricultural production, which is successively taking away their pasture grounds. They are aware that overgrazing and degradation of pasture grounds will lead to less fodder grounds for their animals. Recently, some smallholders downstream, as well as the Zentralistan Nature Conservancy (NGO) and the directives of the Water Purification Plant, have blamed the livestock industry of the decrease in the water quality of the Siul river, due to overgrazing, presence of manure in the catchment area and what they call “bad practices”. They are really afraid of losing their cattle and their land, in which case, they would probably be forced to move with their families to the cities. In view of these threats, they decided to establish the Livestock Breeders Association in order to give their voice more weight. They are glad that the 5-Year-Development Plan has established the promotion of livestock and dairy supply as a major goal. They hope that the Egana Province Development Committee will really support them, since they also see their traditional heritage as sheep and cattle breeders threatened, a tradition they are very proud of.

Water Company Egana: During the last year, the water quality of the Siul river have dramatically decreased due to the long dry season, pollution, and the increasing water extraction for cotton irrigation and agriculture. A technical assessment from the Provincial Agriculture Unit concluded that a new water purification plant is needed. However, the water company is a semi-public enterprise and there is no funding available. The company is sliding into red numbers as their operation costs are continuously increasing. With the construction of a new plant, water tariffs would need to go up significantly. An enhancement of the water quality beforehand in the upper stream would therefore be the best solution.

Director of the Provincial Environment Unit: The opinion of the Director usually does not seem to count when it comes to investment or development decisions. The Director is well-informed about the relation between deforestation, the land use change, and the last month’s droughts. He/she is worried that if deforestation continues and the remaining forests are replaced with monocultures, things will only get worse. He/she also knows that they need more budget to enforce the water discharges regulations and promote sustainable planning of agriculture in the province. He/she needs to convince the Development Committee that increasing the investment in ecosystem conservation and encouraging sustainable planning in the productive sectors, is the most profitable investment for the economy in Egana. Wondering how to enhance the mainstreaming of ecosystem services into development planning, the director is looking in many directions for solutions into how his/her voice can be heard.

Fishing community: People living on the Ursi Lake side are worried about their income and their cultural heritage. They look back on a long history and tradition. All their myths and legends are about the great Siul River, the Erosh River and Ursi Lake. The fishermen are very concerned about the decreasing water quality and the depletion of fish stocks in Siul River and Ursi Lake. In places where they used to easily catch fish and crabs, fisherman nowadays say there is nothing and even going

further out by boat for their catch does not help. They are losing an important food source and they fear the loss of income and of their cultural identity. In their opinion the increasing utilization of fertilizers and pesticides has led to eutrophication and declined fish stocks. Moreover, since fish stocks are declining some people have thought about getting involved in community tourism to diversify their income. Nevertheless, the contamination of the formerly pristine waters of the lake and the abundant vegetation surrounding it have deteriorated more and more. The water level of the lake has dropped significantly. The community has invited representatives of the Zentralistan Nature Conservation (ZNC) to exchange about a possible cooperation. The community has also had several meetings with community tourism operators to discuss possible cooperation and mutual support. They are also already exchanging their experiences with communities living at Erosh River in order to inform them what can happen if no protection measures for Erosh River flow are been taken.

Continuation of presentation 4. Stakeholder analysis and involvement

Main presentation points and notes for the presenter

- ✓ During the discussion of exercise 4, refer back to the stakeholders' role play and accentuate the importance of taking a closer look at the profile of the stakeholders as a crucial element of the institutional and cultural framework.
- ✓ It is not only the institutional, legal and cultural framework, on an organization level, that shape the incentives that motivate stakeholders. Stakeholders also shape their behaviour according to their positions, interests and needs. "The extent to which institutional, policy, legal and cultural frameworks encourage or discourage ecosystem service dependencies and impacts is of particular concern, as is the way in which people's interests, rights and values may either stimulate conflict or cooperation in their use and management" (Kosmus, et al., 2017)
- ✓ One method to analyze the stakeholders' characteristics is the iceberg model. Through this model, the positions, interests and needs of stakeholders are revised. While explaining each one of the concepts, give an example applied to the role play. Ask participants to give examples applied to their own roles.
 - Positions: What people say they want to protect their interest and needs. Positions are always negotiable. For example, small-scale farmers (rotation) opposing cotton plantations.
 - Interests: Why people want what they say they want. This include things that enhance the quality of life and are desirable. They might be negotiable. For example: small-scale farmers want to have enough income.
 - Needs: What people try to fulfil in order to earn a living and have community survival. Needs are not negotiable, but the way to get them might be. For example: small-scale farmers need to produce in order to ensure their livelihoods and heritage, as well as to avoid changing to a job in the textile industry or migrate to the cities.
- ✓ After analyzing the positions, interests and needs of the stakeholders, ask participants: are stakeholder positions, interests and needs: complementary or competing? For example: under the current patterns, the needs of the fishing communities are competing with those of the livestock breeders. Nevertheless, under different arrangements and practices, they could be complementary. Ask participants on more examples.

- ✓ The point of understanding stakeholders is to come up with new/modified incentives that shape their decisions in order to minimize social conflicts and the impacts on ecosystem services, as well as to look for a fairer distribution of costs and benefits.
- ✓ Once all information on step 4 is collected, and a first overview of incentives to be modified has been revised, it is crucial to plan which stakeholders to involve/engage in the coming process and how.
- ✓ The power/interest grid is a method used to categorize stakeholders according to their level of power and interest in integrating ecosystem services in the development plan (in this case). A different management strategy is suggested for each one of the four proposed categories. For example, the small-scale farmers have high level of interest and low power. They can be kept informed, or, another strategy could be to empower them to have more influence in the process. In the case of the Governor, who has high level of power, but medium interest, the best strategy is to manage closely. Discuss with participants where would they place the rest of the stakeholders.
- ✓ Finally, if we are trying to involve/engage stakeholders, it is vital to prepare communication strategies for each one of them. One of the most relevant factors to consider when doing so, it is to remember that stakeholders also make decisions based in different types of information (not only scientific/validated information). This is, rational and factual arguments do not always drive people's behaviour. There are many other interests, experiences, values that determine the way in which stakeholders make decisions (and value ecosystem services).
- ✓ Communication is not only important for presenting the results of the IES process. A communication strategy should be formulated from the design of the process. In this way, it is more feasible to count on stakeholders' participation, legitimize the process and its results.
- ✓ Good communication skills are required to have impact. Arguments and messages should be short, precise, easy to understand, targeted to a specific audience, and relevant to a given problem situation.
- ✓ Finally, ask participants: looking at the findings so far, what might be the implications for the next step in the IES process?

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Module 5. Preparing a better decision making and valuation of ecosystem services (Step 5)

Steps 1 to 4 provide information about the linkages between development and ecosystem services, and identify in detail the main stakeholder groups who stand to gain or lose out from ecosystem changes. They also describe the main causes of drivers of ecosystem degradation and loss, and the frameworks and incentives that govern how ecosystems are used and managed. With this, we have a foundation to identify which incentives require an intervention to encourage a better management of ecosystems and their services, minimizing negative trade-offs and looking for a more equal distribution of costs and benefits.

Step 5 appraises the policy options and instruments that can be used to improve the way in which ecosystem services are used in support of development goals, and to ensure that development activities in turn provide a solid basis for sustainable and equitable ecosystem management and use. At the end of step 5, entry points for decision making processes should be identified and suitable policy options and instruments would have been selected to avoid risks to development and capture its opportunities.

Before deciding on policy options and entry points, it could be useful to undertake a valuation of ecosystem services. This could provide additional arguments to get stakeholders on board for the policy and instrument changes. It can also provide relevant pieces of information to encourage a better design of such policies and instruments, and a fairer distribution of costs and benefits.

Therefore, this module focuses in a review of the process of the valuation of ecosystem services. In the presentation, a more detailed look will be given to the economic valuation methods, their rationale, principles of application, advantages, disadvantages and examples of its application in the agrarian landscapes. In exercise 5, participants will learn about the selection of economic valuation methods for their own cases. This exercise can also be solved with another study case in a field trip. More on the step by step guide on how to prepare it is described in sections below.

It is important to mention that the module cannot cover all the topics and exercises that participants would need to apply the valuation methods themselves. For this, more content, time and practice would be required.

A relevant amount of the content of this module is taken from the training on Economic Valuation of Ecosystem Services, designed by Lucy Emerton for the ValuES project in 2018. For more about this training, see www.aboutvalues.net.

Objectives

- Understand what a valuation of ecosystem services is, when it could be useful to apply it in the IES process, its advantages, disadvantages, risks and examples of application for the agrarian landscapes.
- Learn how to frame the valuation process so that it is targeted to provide relevant information for better-informed decision-making.
- Learn about the rationale, principles of application, advantages, disadvantages, challenges and examples of the most used valuation methods.
- Understand basic criteria for the selection of methods in a valuation study.
- Acknowledge the distributional analysis as a crucial element of an ecosystem valuation study.
- Learn additional criteria to fulfill for increasing impacts of the ecosystem valuation.

Key messages

- Ecosystem valuation is the process of expressing the value of ecosystem services for one or several stakeholders.
- Ecosystem valuation is embedded in another process (IES approach) and provides important pieces of information for capturing the value of ecosystems in the modified/new incentives. It can also provide arguments for influencing decision making.
- Valuation gives crucial information to design policy interventions that are not only addressing ecosystem services degradation but are also consistent with stakeholders' values and a fair distribution of costs and benefits.
- Valuation is not an end itself, but a means to an end: better informed decision making.
- Stakeholders value ecosystem services differently. Such diversity derives from different world views and/or different knowledge about nature.
- Depending on the purpose, a biophysical, holistic, cultural and social, health or economic valuation might be needed. Economic valuations always require some level of social and biophysical valuations to understand the decision-making context, and most of the times, it requires their inputs.
- Depending on the study's purpose and questions, valuations can be purely descriptive, qualitative, quantitative and/or monetary.
- Price is not the same as value. Prices is an indicator of value, but it is only part of it. Many values are not considered when establishing a market price.
- Not all elements of the TEV should/can be valued, since only some of them will contribute to fulfill the study's purpose. It is crucial to be transparent about the ecosystem services that are being valued and the stakeholder's perspectives considered, and which are being left out.
- There is no such thing as the best method: each valuation should use a range of methods to cross-check the results and present a range of possible values.
- Before choosing a method, it is absolutely crucial to count on the following: purpose of the valuation study (based on the decision-making that will be influenced/changed), target audience to whom the study is addressed to and the type of information they require to know, and the ecosystem services and trade-offs that will be valued, and the stakeholder perspectives to integrate.
- The selection of methods should fulfill technical and practical criteria: a) the outcomes of the application contribute to fulfill the purpose of the study; b) there is information and data availability; and c) there is enough budget, time and experts to apply the method accurately.
- By valuing at the margin, valuation shows the implications of different decisions in terms of changes in ecosystem services and well-being, for different groups and goals.
- Since one of the challenges of valuation consist in uncertainty and risk, it is very important to be transparent about the quality of information and assumptions made in the study.
- Valuation has the most impact when the findings are relevant, credible and legitimate.
- However technically good the valuation study is, if it is to influence decision-making, it needs to be communicated in a clever and strategic manner.

Overview	<p>Presentation 6: Valuation of Ecosystem Services</p> <p>Exercise 5: Applying Economic Valuation in Egana (step 5). This exercise can also be solved with a study case (field trip)</p>
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Presentation 5. Valuation of Ecosystem Services

Before starting with the presentation, make a recap with the key messages of steps 1, 2, 3 and 4. Encourage participants to remember what they did in previous exercises and how that contributed to the IES process. Also give a quick introduction on step 5 and its main outputs.

Remind them that step 5 covers the topic of transforming or creating new incentives that modify management of ecosystems and their services. Nevertheless, first we will focus on the valuation of ecosystem services, which could be required to provide important pieces of information for capturing the value of ecosystems in the modified/new incentives and could be used as arguments for influencing decision making.

This presentation can be very overwhelming for some participants, as it might contain many new concepts. Therefore, try to give it in the most interactive way possible. Try to keep track on the groups' spirits and try to recognize when it might be necessary to have a quick break.

It might be the case that participants have already experience with valuation of ecosystem services. In this case, ask them if they would like to give a presentation on their experiences, as it could be valuable for the learning process of the group. If they decide to share their work with the participants, guide them on some relevant points to include in the presentation. If this is not the case, you can also talk to the organizers and try to identify some experts in the region that could give this presentation with examples on case studies that could be relevant for the participants' experience and knowledge.

Content covered in presentation 5

- Valuation of ecosystem services concept
- Multiple values perspective
- Why to undertake an ecosystem valuation?
- How to design an ecosystem valuation?
- Valuation methods (rationale, advantages, disadvantages and examples for agrarian landscapes)
 - Biophysical
 - Cultural and social
 - Health
 - Holistic
 - Economic
- Selection of ecosystem valuation methods
- Hints for using ecosystem valuation
- Increasing impacts of ecosystem valuation

Main presentation points and notes for the presenter

- ✓ Start the presentation by discussing with participants the concept of valuation of ecosystem services. Important elements to accentuate during the discussion are the fact that valuation is a process (not just a study), and that it expresses the value that stakeholders perceive of ecosystem services (sometimes in monetary terms, but sometimes in other units of value).
- ✓ Emphasize the fact that stakeholders value ecosystem services differently. Such diversity derives from different world views and/or different knowledge about nature. An example of this is the different value that corn has for farmers (cultural value), for consumers (provision of food), for companies that process it (generation of income), for artists (source of inspiration), etc. Ask participants to provide more examples of their own experience.
- ✓ The "Total Economic Value" framework categorizes ecosystem services according to different types of value. Explain the diagram and clarify that very few (if any) valuation studies value all elements of TEV in a single study. They pick out the most important ecosystem services based on the study purpose and questions. In fact, it's not possible to value all elements of TEV.
- ✓ Before showing the slide on possible uses of valuation, discuss with the group, why do they think a valuation of ecosystem services would be needed? And why would it be useful in the IES process?

Participants should be aware that valuation makes explicit the values that stakeholders attribute to ecosystem services, which also helps clarifying whether they are or not undervalued in current policies and decision-making. In these terms, valuation provides crucial information to design policy interventions that are not only addressing ecosystem services degradation, but also consistent with stakeholders' values and a fair distribution of costs and benefits.

- ✓ In the step 5 of the IES process, new policy interventions are designed to minimize the negative trade-offs related to ecosystem services. Considering that an ecosystem valuation might be resources-intensive (time, financial resources, experts, etc.), a valuation should be carried only if it is necessary. To know if a valuation is really required, practitioners should ask themselves if a valuation will help them to better capture the value of ecosystem services in the new policy interventions, if it will contribute to promote a better-informed and more equitable decision making, if it will help addressing other stakeholders to get them on board with the process of designing the new policies, and/or if it will reveal trade-offs, impacts or contributions that were not explicit and were necessary for the process.
- ✓ If valuation results are considered as a necessary contribution for the IES process, it is very important to frame and design it in the most accurate way. To do so, it is crucial to:
 - Determine the purpose of the valuation study (based on the decision-making that will be influenced/changed);
 - Establish the target audience to whom the study will be addressed to, and the type of information they require to know; and
 - Know the ecosystem services and trade-offs that will be valued, and the stakeholder perspectives to integrate.
- ✓ In this sense, remind participants that valuation is just a tool, a means to an end: it can contribute with a piece of information to improve the IES process. The results of an isolated valuation study are not be enough to influence and/or change current policies.
- ✓ Present the other types of valuations: biophysical, cultural and social, health and holistic. In these, ecosystem services can be valued in terms of their biophysical effects, economic costs and benefits, livelihood and wellbeing impacts and social/institutional outcomes. The presentation slides already include some examples applied to the agrarian landscapes, but you can change them to others that are more relevant for participants' knowledge and experience. When you present this group of methods don't forget to explain the following points. Due to the nature of this manual, we will not provide a detailed clarification of each one of them. You can find all the relevant information in www.aboutvalues.net and in the references recommended at the end of this section.
 - Their rationale in easy and understandable language
 - For which types of purposes, ecosystem services values and contexts can they be applied
 - The information and data needs for their application
 - Expected outcomes of their application
 - The advantages and disadvantages of their application
 - Main challenges

- Example of a case study where it is possible to identify the practical purpose and how the method contributed to fulfil the study's objective.
- ✓ Once you finish, and before presenting the economic valuation methods, emphasize that an economic valuation study always requires some level of social and biophysical valuations to understand the decision-making context, and most of the times, it requires their inputs. In reality, economic valuation is rarely carried out in isolation.
- ✓ Also, before you start the presentation on economic valuation methods, quickly go through the “economic valuation toolbox”. Do not take time to explain each one of the economic valuation methods at this moment: only explain how they are categorized and their rationale, for example: “revealed preference methods”, imply to observe people’s behaviour to understand how they value something, instead of asking directly, like it is the case for the “stated preference methods”).
- ✓ Indicate that many of the economic valuation methods express their results in monetary values, but this is not necessarily the case for all of them. Also, explain that prices and values are not the same: the market price is only an indicator for the value, but it is only a part of the total value. Many values are not considered in a price (for example, intrinsic values or existence values).
- ✓ The presentation of the economic valuation methods starts with the market prices. Ask participants to clarify the limitations of this method to value ecosystem services. In case participants do not underlay it, the key message relies in that many ecosystem services do not have market prices (and if they do, they are distorted), which would suggest they do not have a value. That is the reason why economists have tried to develop methods that do capture the ecosystem services values.
- ✓ Once you start presenting each one of the methods, make sure that you explain its rationale with the less complicated language as possible. Remember that participants should not be experts in the application on each one of the methods, but they should understand what the logic of each one of them is and the type of results and outcomes of their application. The explanation on the methods should allow them to identify which methods could be potentially useful for the specific purposes and ecosystem services of their case studies (exercise 5).
- ✓ As in the case of the other group of methods, make sure to clarify all the points mentioned above for the economic valuation methods. You can find all the relevant information on each one of them in www.aboutvalues.net and in the references recommended at the end of this section. Also, examples of the application of each method for agriculture are included in the presentation. Feel free to modify or adapt them according to the participants’ experience and knowledge.
- ✓ Many participants might be interested in learning how to apply each one of the methods “step-by-step”. Mention that there is a lot of free guidance online besides the ValuES Navigator (documents, tools, publications, case studies, etc.) and that there should not be a problem to find it. You can also share the resources provided in this manual, or some other sources you find relevant.
- ✓ Once you finish presenting each one of the methods, give participants some practical tips on how to select the most adequate method for their purpose. It is crucial to communicate that there is no such thing as the best method, and it is always the method that must adapt to the context and the purpose of the study, not the other way around. Explain that each valuation can (and desirably should) use a range of methods to cross-check the results and present a range of possible values. The most appropriate method should fulfil both technical and practical criteria. Some of the criteria that should be considered when selecting the method are: a) the outcomes of the

application contribute to fulfil the purpose of the study; b) there is information and data availability; and c) there is enough budget, time and experts to apply the method accurately.

- ✓ As final remarks, discuss with participants the following:
 - The whole point of the valuation is to change the decision-making that involves mechanisms and incentives that do not capture the value of ecosystem services, which also leads to an unequal distribution of costs and benefits between stakeholder groups. Therefore, when designing the valuation study and making use of the results, it is important to consider the distribution of costs and benefits between stakeholders.
 - Having the results of a valuation is not enough to generate changes in decision making. Knowing the value of ecosystem services will not do much if it remains more profitable to degrade ecosystems than to conserve them. Accentuate that it is necessary to change the mechanisms and incentives that drive economic behaviour and lead to the degradation of ecosystem services, generating negative impacts in stakeholders' life quality.
 - Point out that, a valuation which shows total aggregated values or shows a “snapshot” of a single scenario, do not help to accomplish such desired changes. A “snapshot” valuation does not help to convince/influence the target audience, since it is not clear what the difference is between their “business as usual decision” and a decision that integrates the value of ecosystem services. A single figure also doesn't point out the shifts in social, economic, environmental and institutional contexts. To illustrate this, you can also refer to the Costanza et. al. (1997) study, in which the single figure of US\$33 trillion per year, undoubtedly reflected the importance of the value of ecosystem services but did not indicated how this figure relates to different policies and/or decision-making scenarios.
 - Clarify that, valuing “at the margin” and showing incremental changes in values, allows the target audience of the economic valuation to differentiate the consequences of taking particular courses of action. By recognizing the changes that a decision generates in ecosystem services values, environmental, social and economic indicators, as well as in the costs and benefits for the associated stakeholders; it can become clearer which scenario allows a better combination of efficiency, equity and sustainability. Only in this way can economic valuation generate the desired impact.
 - Transparency and replicability of the valuation increases its credibility, and therefore, its potential impact.
 - Finally, explain participants that to increase the influence of the valuation process, they should balance its credibility, legitimacy and relevance. The explanation of these principles can be found in the publication on “Increasing the Policy Impact of Ecosystem Service Assessments and Valuations” (Berghöfer, et al., 2016). Encourage participants to discuss about the challenge of fulfilling them in practice and to give examples of how they have achieved (or failed to achieve) them in their everyday work.
- ✓ Right after the presentation on economic valuation of ecosystem services, give the instructions and apply exercise 5. Below, find the exercise 5, a step by step guide for the application and discussion of the exercise and some example answers.

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Application of Exercise 5: Applying Economic Valuation in Egana (Step 5)

Exercise 5 – Applying Economic Valuation in Egana (Step 5)	
Preparation	<ul style="list-style-type: none"> • Write the exercise objectives and questions on a flip chart. • Distribute flipcharts, a pinboard, cards and markers for groups to take notes and visually represent their group work. • Place the pinboards with the results of previous exercises in each one of the working groups, correspondingly, since they might need to revise their previous analysis in order to answer this exercise. • It is important for you to know very well the information on Zentralistan and the case studies, so you can clarify all the questions. It is recommended for you to solve the exercise before giving the training.
Objectives	Participants explore the risks and opportunities of economic valuation of ecosystem services as a tool for influencing decision making. They analyze the viability of economic valuation for their specific cases, determine the purpose and target audience of an economic valuation study and select methods.
Instructions and recommendations	After the presentation on ecosystem services valuation, explain the objectives of exercise 5, give the contextual information of the case study and clarify the instructions. Ask participants to gather in their working groups and allow them to go through the exercise information and instructions in their workbooks. Give

	<p>them some time and dedicate some moments to answer their questions about the instructions and the exercise.</p> <p>Once they are gathered in teams, clarify the economic valuation that each team will work with:</p> <ul style="list-style-type: none"> • Consultancy A: Economic valuation to raise awareness on the contribution of remaining forests and grasslands to agriculture productivity (ZNC) • Consultancy B: Economic valuation to show how the purification costs can offset if better agricultural and livestock management practices are implemented upstream (Provincial Environment Unit and Water Company) • Consultancy C: Economic valuation to evidence the contribution of sustainable rice production to ecosystem services provision (Farmers Association of Egana) <p>Remind participants that they can find complementary guidance on each one of the valuation methods in the Annex of their workbooks (Annex III of this handbook).</p> <p>Ask participants to choose a person of their team, who will have 5 minutes to present their results to the “development committee”.</p>
Hints on carrying out the exercise	<p>Encourage participants to dedicate enough time to determine the decision to influence and the target audience. These constitute the purpose of the valuation and they help to frame the whole process. Also, they help to think about the type of data/information required as an outcome in order to impact the decision making. To understand better the information necessary to influence their selected target audience, they might also want to revise step 4 and analyze its positions, interests and needs.</p> <p>Make sure that participants think through the inputs they require for applying each of the valuation methods. This not only means the type of quantitative data, but also the biophysical, social, political and cultural information that could be useful as an input for the valuation, or that could complement it in the search of influencing decision making.</p> <p>When selecting the valuation methods and the ecosystem services to value, participants should also be aware of whose perspective on value they are reflecting. Valuation makes explicit the values that stakeholders attribute to ecosystem services, but hardly, all those perspectives can be captured in a single study.</p> <p>Recommend participants to keep in mind that they need to adjust the language and the messages when they present their findings to their target audience. They should not forget that they are trying to convince them on integrating the value of ecosystem services in the development plan, and that depending on their knowledge, views and interests, this may be understood (or not) and well received (or not) by the committee members.</p> <p>Try to go around the groups and listen to the discussions of each of them. In case there is the need of guidance and correction, intervene, but never suggest an</p>

	answer. If teams do not need guidance, let them work and discuss among themselves.
Presentation of results	<p>Each group will present their findings in plenary. You and your co-trainer can play the role of the target audience of each one of the economic valuation studies. Give no more than 5 minutes to each group for their presentation.</p> <p>After the presentation, other groups can ask questions and provide feedback.</p>
Reflection	<ul style="list-style-type: none"> • Open discussion in plenary. • Encourage participants to contribute with their knowledge to the discussion. • Write important points, ideas, and questions on flip charts or on cards. • Use the exemplary answers of the exercise to encourage discussion on different results and to ask questions that have not been raised during the reflection. • Try to place the pinboards with the results of each team next to one another, so you can make comparisons and point out the differences between their work. <p>Possible guiding questions for reflection:</p> <ul style="list-style-type: none"> • Which criteria did you use to select the methods for valuing the ecosystem services? Which were the main points of discussion when selecting the methods? • Did the purpose of the study and the target audience was important for selecting the method? Why? • Would the results of the application of the methods you chose give relevant information to the target audience (to change/influence their decision making)? • What are some advantages and disadvantages of the methods you selected? • Do participants have any real-life examples, focused on agriculture cases, that contribute to the discussion? What were the main highlights of the discussions in your groups?
Key messages	<ul style="list-style-type: none"> • Ecosystem valuation is the process of expressing the value of ecosystem services for one or several stakeholders. • Ecosystem valuation is embedded in another process (IES approach) and provides important pieces of information for capturing the value of ecosystems in the modified/new incentives. It can also provide arguments for influencing decision making. • Valuation gives crucial information to design policy interventions that are not only addressing ecosystem services degradation but are also consistent with stakeholders' values and a fair distribution of costs and benefits. • Valuation is not an end itself, but a means to an end: better informed decision making. • Stakeholders value ecosystem services differently. Such diversity derives from different world views and/or different knowledge about nature. • Depending on the purpose, a biophysical, holistic, cultural and social, health or economic valuation might be needed. Economic valuations always require some level of social and biophysical valuations to understand the decision-making context, and most of the times, it requires their inputs.

	<ul style="list-style-type: none"> • Depending on the study's purpose and questions, valuations can be purely descriptive, qualitative, quantitative and/or monetary. • Price is not the same as value. Prices is an indicator of value, but it is only part of it. Many values are not considered when establishing a market price. • Not all elements of the TEV should/can be valued, since only some of them will contribute to fulfill the study's purpose. It is crucial to be transparent about the ecosystem services that are being valued and the stakeholder's perspectives considered, and which are being left out. • There is no such thing as the best method: each valuation should use a range of methods to cross-check the results and present a range of possible values. • Before choosing a method, it is absolutely crucial to count on the following: purpose of the valuation study (based on the decision-making that will be influenced/changed), target audience to whom the study is addressed to and the type of information they require to know, and the ecosystem services and trade-offs that will be valued, and the stakeholder perspectives to integrate. • The selection of methods should fulfill technical and practical criteria: a) the outcomes of the application contribute to fulfill the purpose of the study; b) there is information and data availability; and c) there is enough budget, time and experts to apply the method accurately. • By valuing at the margin, valuation shows the implications of different decisions in terms of changes in ecosystem services and well-being, for different groups and goals. • Since one of the challenges of valuation consist in uncertainty and risk, it is very important to be transparent about the quality of information and assumptions made in the study. • Valuation has the most impact when the findings are relevant, credible and legitimate. • However technically good the valuation study is, if it is to influence decision-making, it needs to be communicated in a clever and strategic manner.
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Applying Economic Valuation in a field trip

Before the training (when planning the agenda of the course) talk to the organizers and ask them if the option of applying exercise 5 (economic valuation) in a field trip would be something they find useful for the participants. Many times, the organizers or project partners, are working in case studies in which an economic valuation exercise could be undertaken.

Before deciding whether the economic valuation exercise can be applied in a case study with a field trip, make sure that:

- ✓ The case proposed by the organizers would need an economic valuation: there is a decision to be influenced/changed.
- ✓ There is enough time in the agenda to do the field trip, without sacrificing learning objectives.
- ✓ The area where the field trip would take place does not require more than one to two hours for transfer from the training venue. We strongly suggest not to take longer than a day for the field trip.
- ✓ There are enough financial resources to cover for participants transportation, lunch and entrance fees.

- ✓ There are two-three experts available to provide the necessary information and data for participants to undertake the valuation exercise.
 - ✓ There are no risks of raising political and social conflicts by visiting the area where the field trip will take place.
 - ✓ Participant's safety is not at stake.

If the organizers decide the field trip is a good idea, there are certain technical and logistical considerations to take into account for the planning. Below, find some recommendations on how to plan the field trip.

Technical aspects of the field trip

If the field trip will take place in a protected area or a project's area, ask the organizers to introduce you with the coordinators or managers of the place, and have a meeting to explain them about the course and about the exercise on economic valuation. Ask about the cases/examples that could be used for the economic valuation exercise and that fulfil the requirements (there is a decision to be influenced/change, there is available information). Explain that the exercise requires two to three experts on such cases/examples to talk to each one of the working groups. In case there are experts available, ask for their contacts so you can introduce yourself and clarify the exercise and what you need from them.

Before going further, make sure that the organizers and coordinators agree on the cases and the experts. Then, work on an agenda for the day of the field trip. Do not forget to include enough time for:

- ✓ presentation on valuation of ecosystem services (presentation 5),
- ✓ introduction of the general background of the field trip (by experts),
- ✓ assignation of the cases/examples to each one of the working groups (by the trainers),
- ✓ clarification of questions on instructions to participants,
- ✓ participants to formulate the questions they will ask to the experts,
- ✓ experts to provide necessary information to participants while giving a visit to the area,
- ✓ participants to answer the exercise,
- ✓ transfer (round trip),
- ✓ lunch, and
- ✓ presentation of results

Consider talking to the organizers to ask them if they would like to invite the coordinators/managers of the area and the experts to the training. If this is not the case, make sure that at least they are invited to join you from the presentation on valuation of ecosystem services until participants present the results of the exercise.

Also, work on a concept note where you introduce the case/example of the field trip, and a brief introduction and background information on each one of the cases for the participants. Include the questions of exercise 5 (Applying economic valuation in Egana), and in case it is necessary, adapt them to the case/example (might be the case that participants can also apply some arithmetic to have some approximated results). Do not forget to indicate how the weather will be like and if participants need to bring special clothes, equipment, etc. (for example, hiking shoes, thick jacket, a bottle of water, sunblock, etc.). Share the agenda and concept note with the organizers and experts with a week in advance (in case they have further comments or recommendations) and one day before the field trip with the participants.

It is crucial for you to talk to the experts before the day of the field trip, to be clear on the objectives of the training and the exercises, and specially, for them to prepare the data and information that participants might require. It would also be ideal for them to prepare an introduction of the field trip. It is very important to remind them that they also need to provide the environmental, political, social and cultural background of the case, since it will be relevant for participants to take into account in the exercise.

Keep a very transparent communication with the organizers of the training, the managers/coordinators of the area to visit and the experts. Everybody should be aware of the agenda, the concept note, the information and logistical requirements.

Logistical aspects of the field trip

Make sure to take into account the following:

- ✓ hire transportation for the transfer of participants
- ✓ hire lunch-boxes or catering
- ✓ make sure to pay entrance fees and/or get the necessary permits

Exercise 5: Applying economic valuation in Egana

The initiatives of the development committee exploring the linkages between the development plan and ecosystem services have prompted interest by several groups.

The National University of Zentralistan invited an expert in economic valuation to give a conference. As a result, several organizations have started to promote economic valuation as an important tool for decision-making. These include:

- The Zentralistan Nature Conservancy (ZNC) wants to undertake an economic valuation to raise awareness on the contribution of remaining forests and grasslands to agriculture productivity and security. They want the Development Committee of Egana to reevaluate their policy for granting permits of land use change to promote cotton plantations.
- The Provincial Environment Unit and the Water Company plan to make an economic valuation to show how the purification costs associated with removing sediments and pollution in the Siul river can offset if better agricultural and livestock management practices are implemented upstream, and water discharges regulations are enforced.
- The Farmers Association of Egana wants to apply economic valuation in order to prove that, in comparison to cotton, sustainable rice production can actually contribute to improve the provision of ecosystem services and provide additional benefits to the stakeholders in Egana. They have asked the Province Agricultural Development Unit for support, but still have not gotten an answer.

Your task:

Please discuss the following questions:

1. Which decision do you intend to influence with the results? Which types of results would you need?
2. Which decision-maker are you trying to reach? What type of information do you need to approach or influence the decision-maker (biophysical information, monetary figures, etc.)?
3. Which ecosystem services would you value?

4. Which economic valuation methods would you suggest using and what information/inputs would you need? Why did you choose those methods? Describe their advantages and disadvantages.
5. Can you identify possible risks associated with conducting an economic valuation?
6. Which other methods do you think could provide inputs to complement the economic valuation?
7. Can you think of other ways to highlight the value of ecosystems and ecosystem services?

Refer to the table in the Annex II to identify suitable methods. You can also access the ValuES methods navigator on-line (www.aboutvalues.net/method_navigator) to find information on methods, as well as the advantages and disadvantages of their application.

Example of answers to exercise 5. Applying Economic Valuation in Egana (Step 5)

Economic valuation to raise awareness on the contribution of remaining forests and grasslands to agriculture productivity (ZNC)

1. Decision to influence: Granting of permits for land use change in the remaining forests (to promote cotton) will jeopardize the development of all the economic activities in the province and will increase environmental and social conflicts.
2. Target audience: Development Committee of Egana.
3. Ecosystem services to value (in table below)
4. Valuation methods (in table below)
5. Possible risks related to economic valuation: Undervaluation, since not all ecosystem services provided to other stakeholders are taken into consideration (not all of them can be monetized). Only the contributions of forests to agriculture are taken into account, leaving aside other relevant values from other stakeholders, such as recreation, inspiration for culture, water provision for other activities, etc. Maybe the valuation result is lower than the income generated by the agriculture expansion, nevertheless, this also implies distribution issues among stakeholders: monetary benefits will be received by the agribusiness, but the costs will have to be assumed by the small-scale farmers and other stakeholders like fishers, tourists, inhabitants of Economiska and other communities. etc.

Ecosystem service	Valuation approaches that can be used	Methods	Some aspects to be considered
Erosion prevention and soil fertility	Contribution of erosion prevention and soil fertility for productivity	Damage costs Production function	Costs to agriculture sector due to an increase of erosion and decrease in soil fertility. Loss of productivity in different crops when loss of vegetation coverage is transformed to agricultural fields.
Moderation of extreme events	Costs and losses avoided to agriculture sector	Damage costs	Potential losses (income) in production volumes, if the forests would not provide moderation of extreme events.
Water regulation	Loss of water regulation services (quantity and quality of water for agriculture)	Replacement costs Damage costs Health costs	Costs of replacing the water (e.g. bringing the water from somewhere else, treating the distributing it), avoided costs of damage to the downstream population (such as lost in production or health problems), costs of health problems.

Economic valuation to show how the purification costs can offset if better agricultural and livestock management practices are implemented upstream (Provincial Environment Unit and Water Company)

1. Decision to influence: Whether building a new water purification plant is the most suitable decision for increasing water quality in the Siul river. Maybe resources can increase for the Provincial Environment Unit to increase their enforcement capacities on water discharges regulations, as well as to generate compensatory systems for agriculture and livestock upstream.
2. Target audience: Development Committee of Egana

3. Ecosystem services (in table below)
4. Valuation methods (in table below)
5. Possible risks related to economic valuation: Undervaluation of the Siul river, since not all ecosystem services are related to water quality for consumption and economic activities. There are other non-monetizable benefits, like inspiration for culture, etc.

Ecosystem service	Valuation approaches that can be used	Methods	Some aspects to be considered
Water regulation	Compare the costs of improving practices of farmers (agriculture and livestock) upstream, against the construction and operation of the water treatment plant	Replacement costs	Costs of investment and operation resulting of implementing better practices upstream. Costs of investment and operation resulting from enforcing regulations regarding discharges. Costs of investment and operation of a water purification plant.
Soil fertility	Compare the level of soil fertility with and without the improvement in practices	Replacement costs Production function	Costs of fertilizers, changes in yields, operation and transaction costs, etc.
To complement the study, the contribution of water regulation to different stakeholders can be made.			
	Water for Irrigation	Market prices Production function Benefits transfers Replacement costs	Prices, changes in yield, people or household dependent on such products, prices of alternatives and substitutes, transaction costs, changes in income generation.
	Drinking water	Replacement costs Market prices Market prices (treatment of illnesses)	Costs of replacement buying the water from somewhere else, avoided costs of health problems, and transaction costs)
	Recreation	Stated preferences WTP Market prices Travel costs Hedonic prices	Number of visitors the area, fees, income generate by activities that depend on tourisms, household that depend on such activities, differences in prices of the houses and land in the area, distance travelled by people to visit the place, number of jobs depending on such activities

Economic valuation to evidence the contribution of sustainable rice production to ecosystem services provision (Farmers Association of Egana)

1. Decision to influence: Assign more resources and support to the promotion of rice production, since it helps to maintain the provision of ecosystem services and is a more equitable option.

2. Target audience: Development Committee of Egana
3. Ecosystem services to value (in table below)
4. Valuation methods (in table below)
5. Possible risks related to economic valuation: Undervaluation, since not all ecosystem services are being taken into account (not all of them can be monetized, such as inspiration for culture). The economic valuation only shows two scenarios, corresponding to agricultural strategies, but other options -that could pose a better scenario for all the stakeholders- are not be taken into account.

The Economic valuation could comprise a cost benefit analysis for diverse stakeholders (inhabitants, agriculture, tourism, fisheries, etc) of implementing the two types of agriculture in the same areas. The comparison would evidence the option with more benefits than costs, and also, the alternative with more equitable distribution of costs and benefits. As noted below, the valuation considers costs and benefits on the same ecosystem services for different types of crop: for example, both crops generate a loss in water regulation services, but the sustainable scheme generates less losses (which can be accounted as a “benefit” for the sustainable scheme).

Ecosystem services benefits related to cotton Promotion	Ecosystem services costs related to the cotton Promotion	Valuation approaches that can be used	Some aspects to be considered
Raw materials (cotton)		Market prices	Total value of cotton production.
	Loss of water regulation services (quantity and quality of water for other activities: tourism, domestic use, fisheries and agriculture)	1. Replacement costs Avoided costs Health costs 2. Production function	1. Costs of replacing the water (e.g. bringing the water from somewhere else, treating the distributing it), avoided costs of damage to the downstream population (such as lost in production or health problems), costs of health problems. 2. Change in productivity according to different water quality levels in agriculture (for different crops) and fisheries.
	Loss of carbon storage and sequestration	Market prices Production function Damage cost	CO2 price (for ton CO2) depending on type of carbon markets or regulated markets such as CDM. Biomass (related to CO2)
	Loss of moderation of extreme events	Damage costs	Potential losses (income) in production volumes and in infrastructure value.

Ecosystem service benefits related to the sustainable production of rice	Ecosystem services costs related to the sustainable production of rice	Valuation approaches that can be used	Some aspects to be considered
Food provision (rice)		Market prices	Total value of rice production, prices of rice, changes in production, etc.
Recreation in rice plantations		Stated preferences WTP Market prices Travel costs Hedonic prices	Number of visitors the area, fees, income generate by activities that depend on tourism, households that depend on such activities, distance travelled by people to visit the place, number of jobs depending on such activities
	Loss of water regulation services (quantity and quality of water for other activities: tourism, domestic use, fisheries and agriculture)	1. Replacement costs Avoided costs Health costs 2. Production function	1. Costs of replacing the water (e.g. bringing the water from somewhere else, treating the distributing it), avoided costs of damage to the downstream population (such as lost in production or health problems), costs of health problems. 2. Change in productivity according to different water quality levels in agriculture (for different crops) and fisheries.
	Loss of carbon storage and sequestration	Market prices Production function Damage cost	CO2 price (for ton CO2) depending on type of carbon markets or regulated markets such as CDM. Biomass (related to CO2)
	Loss of moderation of extreme events	Damage costs	Potential losses (income) in production volumes and in infrastructure value.

Module 6: Capturing the value of ecosystem services in policy tools (Step 5)

With the results from previous steps and the inputs from the valuation of ecosystem services, the necessary information is available to continue the application of Step 5. This consists in an appraisal of policy options and instruments that can be used to improve the way in which ecosystem services are used in support of development goals, and to ensure that development activities in turn provide a solid basis for sustainable and equitable ecosystem management and use. In this sense, this also includes applying criteria to assess whether the suggested policy options are adequate and fulfill the requirements of ecosystem services provision and equitable distribution of costs and benefits, among others.

In this module, participants will learn about possible policy options to capture the value of ecosystem services in agrarian landscapes, criteria for selecting them and entry points to increase their impact. This module also contains the last exercise of the training. Therefore, it is particularly crucial for participants to be clear about all the outputs of previous steps and how they link together in this last exercise.

Explain participants that, due to its nature, this training cannot provide a more detailed guidance and exercises on each one of the policy tools. Nevertheless, in case they want to know more, they can revise the list of recommended resources included in the corresponding section.

Objectives

- Identify suitable policy options that will sustain the capacity of ecosystem services to meet the needs included in the development plan.
- Identify entry points to key decision-making processes.

Key messages

- Just assessing and valuing ecosystems isn't enough: capturing the value of ecosystems in policy tools is crucial to generate changes.
- It is crucial to assess the distributional outcomes of the policy tools selected, and if it is the case, set mechanisms to redistribute, capture, charge and reward ecosystem values.
- Bottom line is to ensure that conservation and sustainable use is economically and financially viable, effective & sustainable.

Overview	Presentation 7: Policy tools to capture the value of ecosystem services Exercise 6: Putting the pieces together (Step 5)
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Presentation 6. Policy tools to capture the value of ecosystem services

This is the last presentation of the training. Before starting, make a recap of the key messages of the from 1 to 5, and encourage participants to clarify the most important outputs in each one of them. Also, give a quick introduction on the continuation of step 5 and its expected outputs. Remind participants that the valuation of ecosystem services and the selection/design of policy tools are included in the step 5 (Preparing better decision making).

Content covered in presentation 6

- Overview of policy options
- Criteria for selecting policy options
- Entry points into decision making

It might be the case that many participants have already experience with policy tools for agrarian landscapes and ecosystem services. In such case, remind the group that it is still necessary to level the knowledge. If you think it is required, adapt the presentation according to the experience of participants.

Remember to try to make the presentation as interactive as possible, encouraging the group to participate and provide inputs from their own experiences.

Main presentation points and notes for the presenter

- ✓ Start the presentation by quickly reviewing the pieces of information that participants already have as a result of the application of the previous steps. Discuss with the group how these results can be “put together” to help selecting new policy tools (or adapting the existing ones).
- ✓ Emphasize some important steps to be considered in the selection/design of new policy tools (or adaptation of the existing ones) (based on Kosmus et al. (2017):
 - Bring together all the information that has been collected in the previous steps: impacts and dependencies of the development plan on ecosystem services, trade-offs (especially the negative ones), drivers, stakeholders, the review of the institutional and cultural framework, the first overview on development goals, incentives and policies that might needed to be changed and inputs of the ecosystem valuation.
 - Make sure you have a clear “logic chain” which links together information on these topics into a coherent “story line” about the development plan and the most relevant ecosystem services to fulfil it.
 - Identify if, at this point, there is some data gaps that might be needed to complete. For example, if some stakeholders have not been able to contribute with their inputs in the process. Or maybe, if the valuation also needs to address other relevant stakeholders to get them on board for the changes to come.
 - Decide if the development goals, the policies and incentives associated, need to be modified and how, or new ones need to be created. Sometimes, improving already-existing policy instruments might be more effective than introduce new policy options (this includes law enforcement). Also, depending on the ecosystem services to be addressed, a mix of policy instruments can be required. Remember that the objective is to minimize the negative trade-offs and the impacts on ecosystem services relevant for the stakeholders, their activities and wellbeing.
 - Revise again the stakeholders, drivers and causes of degradation of the ecosystem services. Make sure that the new policies and instruments (or adapted ones) change the stakeholders’ behaviour to maintain the flow of ecosystem services, or better capture the opportunities associated.
- ✓ Go through some of the policy tools and incentives, and emphasize those relevant for agrarian landscapes (Garret et al. 2016). These incentives can also be categorized according to their level of enforcement (between enforced regulation and voluntary agreements) (FAO, 2018). Give some examples of their application: the presentation already includes some, but feel free to change them for those you consider relevant for the participants’ experience and knowledge. Remind participants that, when looking at these policies and instruments, they should think of which ones will sustain the capacity of ecosystem services to meet the stakeholders’ needs. The following description is taken from FAO (2018).

- Mandatory regulations, which include command and control measures (for example: prohibition of agriculture in the buffer zone of a protected area), taxes/charges (for example, taxes of pesticides and fertilizers), property use rights (control and regulation of different ownerships and management), mandatory farm set-asides (for example, legislation that requires land owners to give up part of their land for restoration, reforestation, etc.)
 - Flexible regulations, which include subsidies (under the implementation of sustainable land management practices), offsets (to ensure that unavoidable adverse environmental impacts of development are compensated for), marketing labels (for example, certifications and standards), permits and quotas (for example, permits to emit a certain volume of pollutants or to extract a specific amount of a natural resource), corporate social responsibility measures (for example, integrating responsible accounting).
 - Voluntary investments - linked to input, which include green public procurement (commitment of authorities and entities to reduce the environmental impact of production throughout its life-cycle), voluntary farm set asides (landowners voluntarily give up to part of their land for conservation in exchange of payments), conservation concessions (management contracts between authorities, landowners and a private stakeholder interested in conservation, to use the land for conservation processes in exchange of a compensation), and direct payments for ecosystem services (beneficiaries of ecosystem services compensate to those who manage it)
 - Voluntary investments – delinked to input, which include rewards for ecosystem services (rewards for the protection, restoration or enhancement of ecosystem services), marketing labels (without certificates or standards, for example, eco-labelling), and cultural and social norms.
- ✓ Some additional criteria that can help to appraise the feasibility of implementation of the policy options are political viability, public acceptability, legal authority, economic viability, equity, financial viability, effectiveness, urgency, institutional capacity and sustainability and ease of implementation. Discuss these criteria with the participants and ask them if they would suggest additional ones.
 - ✓ Finally, explain that entry points are windows of opportunity that allow us to place an issue on the political agenda. Their primary purpose is to be able to get a certain issue on the negotiating table or into the political arena. Entry points can be processes (for example, a window of opportunity to integrate ecosystem services when a development plan is being revised) and situations (for example, the mitigation of an extreme event evidences the importance of a protected area for avoiding damages). Mention some of the examples in the slides and ask participants to come up with real life examples.
 - ✓ Right after the presentation on policy tools to capture the value of ecosystem services, give the instructions and apply exercise 6. Below, find the exercise 6, a step by step guide for the application and discussion of the exercise and some example answers.

References and sources

The following references and sources are recommended for reviewing the details and examples of the concepts included in this presentation:

FAO. 2018. Incentives for ecosystem services. Available at: <http://www.fao.org/in-action/incentives-for-ecosystem-services/toolkit/en/>. Consulted on Octo

Garrett, L. and Neves, B. 2016. Incentives for Ecosystem Services: Spectrum. Food and Agriculture Organization of the United Nations, Rome, Italy.

Kosmus, Marina; Renner, Isabel and Ullrich, Sivia. 2017a. Integrating Ecosystem Services (IES) into Development Planning Training material. Deutsche Gesellschaft für International Zusammenarbeit.

UNDP. 2012. International Guidebook of Environmental Finance Tools: A Sectoral Approach. Protected Areas, Sustainable Forests, Sustainable Agriculture and Pro-poor Energy. Chapter 5: Sustainable Agriculture. Available at: <http://www.undp.org/>

Application of Exercise 6: Putting the pieces together (Step 6)

Exercise 6 – Putting the pieces together (Step 6)	
Preparation	<ul style="list-style-type: none"> • Write the exercise objectives and questions on a flip chart. • Distribute flipcharts, a pinboard, cards and markers for groups to take notes and visually represent their group work. • Place the pinboards with the results of previous exercises in each one of the working groups, correspondingly, since they might need to revise their previous analysis in order to answer this exercise. • It is important for you to know very well the information on Zentralistan and the case studies, so you can clarify all the questions. It is recommended for you to solve the exercise before giving the training.
Objectives	Participants identify suitable policy options that sustain the capacity of ecosystem services to meet the needs of the province most effectively. Also, they identify key entry-points for influencing.
Instructions and recommendations	<p>After the presentation on ecosystem services valuation, explain the objectives of exercise 6, give the contextual information of the case study and clarify the instructions. Ask participants to gather in their working groups and allow them to go through the exercise information and instructions in their workbooks. Give them some time and dedicate some moments to answer their questions about the instructions and the exercise.</p> <p>Once they are gathered in teams, clarify that each one of the teams will work with the development goals they worked with in exercise 2, that is:</p> <ul style="list-style-type: none"> - Consultancy A: <ol style="list-style-type: none"> a) Promote textile industry by encouraging private sector participation (cotton production and construction of more processing plants). b) Improve food security by supporting small-scale farms (rice production, southern Egana). c) Improve the quality and quantity of water flows through the construction of a water purification plant for the Siul River. - Consultancy B: <ol style="list-style-type: none"> a) Increase investments in livestock and dairy industry. b) Improve food security by supporting small-scale farms (fruit production, northern Egana). c) Promote fishery support services for increased productivity and income.

	<ul style="list-style-type: none"> - Consultancy C: <ul style="list-style-type: none"> a) Promote textile industry by encouraging private sector participation (cotton production and construction of more processing plants). b) Enhance conditions for non-timber products production and develop the supply chain for increasing exports c) Increase investments in livestock and dairy industry. <p>Ask participants to choose a person of their team, who will have 5 minutes to present their results to the “development committee”. Explain that they should avoid present their final results in the matrix but try to formulate key concrete messages addressed to their target groups (with other visual aids, if required).</p>
Hints on carrying out the exercise	<p>It is common that, during this step, participants might only suggest the policy options without considering several relevant criteria like political viability, legal viability, effectiveness, institutional capacity, availability of financial resources, etc. Suggest them to analyze the implications of the suggested policy changes, and the distributional changes associated. Also, in this last exercise, participants need to think about the resulting benefit receivers and cost bearers of the change in the policies, and which additional measures need to be implemented to address the resulting financial and economic inequities. It might be useful for them to go through the different suggested measures during the presentation, but also encourage them to rely on their own real-life experiences.</p> <p>It is usual for participants to focus in one single group of stakeholders or one single additional measure. Try to encourage the working groups to think in the appropriate scale of impact of the influence of the decision making and in all the stakeholders that could be affected by this, so that the suggested measures are the most adequate.</p> <p>Also, encourage the working groups to revise the results of previous exercises</p> <p>Recommend participants to keep in mind that they need to adjust the language and the messages when they present their findings to their target audience. They should not forget that they are trying to convince them on integrating the value of ecosystem services in the development plan, and that depending on their knowledge, views and interests, this may be understood (or not) and well received (or not) by the committee members.</p> <p>Try to go around the groups and listen to the discussions of each of them. In case there is the need of guidance and correction, intervene, but never suggest an answer. If teams do not need guidance, let them work and discuss among themselves.</p>
Presentation of results	<p>Each group will present their findings in plenary. You and your co-trainer can play the role of the “development committee”. Give no more than 5 minutes to each group for their presentation.</p> <p>After the presentation, other groups can ask questions and provide feedback.</p>

<p>Reflection</p>	<ul style="list-style-type: none"> • Open discussion in plenary. • Encourage participants to contribute with their knowledge to the discussion. • Write important points, ideas, and questions on flip charts or on cards. • Use the exemplary answers of the exercise to encourage discussion on different results and to ask questions that have not been raised during the reflection. • Try to place the pinboards with the results of each team next to one another, so you can make comparisons and point out the differences between their work. <p>Possible guiding questions for reflection:</p> <ul style="list-style-type: none"> • Were the results of the previous exercises helpful to decide on the new policy options? Why? • What additional elements do you think are required to propose changes in instruments, mechanisms and policies in order for them to integrate (capture) the value of ecosystem services? • Do you think there are additional changes to be done for assuring a more equal distribution of costs and benefits? In case there are, which changes should be required? • What were the main challenges that your team faced in this exercise? Which do you think are the challenges when trying to capture the value of ecosystem services in measures or instruments in real life? • Would you like to share any real-life experiences or examples? Do participants have any real-life examples, focused on agriculture cases, that contribute to the discussion? What were the main highlights of the discussions in your groups?
<p>Key messages</p>	<ul style="list-style-type: none"> • Just assessing and valuing ecosystems isn't enough: capturing the value of ecosystems in policy tools is crucial to generate changes. • Step 5 is about selecting/ designing concrete instruments or mechanisms that capture the value of ecosystem services, change the trends to a more sustainable supply and demand, and help redistribute the costs and benefits associated in a more equitable way. • It is crucial to assess the distributional outcomes of the policy tools selected, and if it is the case, set mechanisms to redistribute, capture, charge and reward ecosystem values. • Bottom line is to ensure that conservation and sustainable use is economically and financially viable, effective & sustainable. • After the discussion of exercise 5, quickly explain the final step of the IES approach, which consists in setting up an implementation strategy and work plan, as well as the indicators for monitoring the outcomes of the new policies' application. This work plan should determine the tasks, stakeholder involvement, responsibilities and actions, as well as financial resources required. The training does not contemplate a presentation and exercise for step 6, but further guidance can be found in the IES Manual (Kosmus et al. 2017a).

Exercise 6: Putting the pieces together (Step 5)

Based on the information generated during the assessment process, the consulting teams start preparing their final reports with recommendations on how to revise the content of Egana's 5-Year Development Plan. The assessment process brought to light risks and opportunities related to ecosystem services that were not previously considered.

Your task:

Your consulting team should now develop a proposal on how to revise the development objectives and take into account risks and opportunities related with ecosystem services. Use the findings from the previous steps to select policy options, instruments and concrete measures that will most effectively sustain the provision of ecosystem services to meet the socioeconomic needs of the province.

Look at the different risks and opportunities related with the provision and use of ecosystem services associated with the development objectives you worked on during exercise 2.

1. What needs to change? What are the related drivers (and underlying causes) that should be tackled?
2. Describe different policy options that you would implement. How easy or difficult it would be to implement them? You can discuss this by looking at the following criteria: relative ease of implementation, costs of implementation, stakeholders' acceptance, political context, risk of losing an opportunity, available resources, etc. Keep in mind that a mix of complementary policy options might be required.
3. Identify entry points to key decision-making processes.
4. Identify key stakeholders to be involved in the activities and those with whom you would need to communicate to make change effective.
5. Prepare your key messages and present your recommendations to the development committee.

You can recreate the matrix below to do your analysis. Try not to present everything on the matrix when you are in front of the development committee. Tease out the most important findings and prepare compelling messages. Remember, the members of the development committee usually have very little time.

Matrix for identifying policy options and entry points into decision-making processes

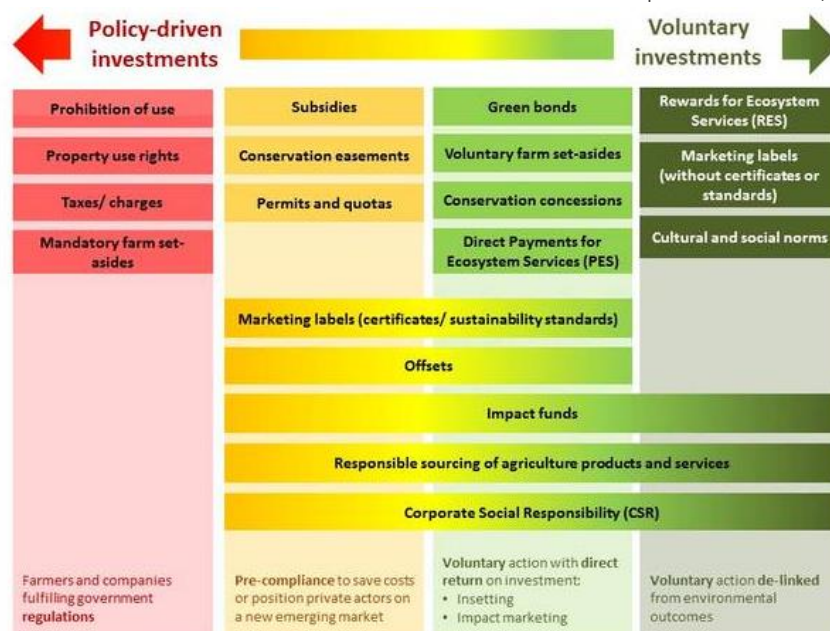
Development objective	Related risks and opportunities	What do we want to change? Drivers to tackle	New/different policy option(s)	Entry points into decision-making	Key stakeholders and stakeholder groups

Examples of policy tools that can support the integration of ecosystem services

TYPE OF INSTRUMENT	EXAMPLES
Command and control instruments	Laws, regulations, restrictions, sanctions, prohibitions, permissions, standard-setting and enforcement, non-market-mechanisms

Planning instruments	Development plans, sector programs, spatial planning, national budgets, integrated ecosystem management plans, protected area planning, Strategic Environmental Assessments (SEA)
Economic and fiscal instruments	Introduction or exemption of fees, taxes and charges, permits, market-based incentives, subsidies, compensations, payments for ES, access and benefit-sharing, biodiversity offsets, performance bonds, revenue sharing
Informative measures	Environmental education, extension programs, green accounting, reports on the state of the environment
Cooperative / Voluntary measures	Voluntary environmental agreements, international standards and protocols developed by NGOs and supranational government

Source: Adapted from GTZ 2010; Pavan Sukhdev 2010



Source: taken from Garret et al. 2016

Optional section for exercise 6: Effective communication

Now your task is to think about an appropriate communication strategy.

1. Identify the key results of the assessment. What are the key messages you want to communicate? What do you want to achieve with communicating the results? Think about the implications the results might have for the development plan.
2. Discuss about appropriate means of communication: How are you going to communicate the main findings – to the development committee and to other key stakeholder groups? What communication products and channels will be most effective to reach your target audience(s)? You also may consult the text box below.

NON-TECHNICAL COMMUNICATION PRODUCTS AND COMMUNICATION CHANNELS

Possible communication products include:

- Policy briefs
- Brochures
- Posters
- Presentations or slideshows
- Videos
- Newsletters
- Press releases for the media
- Sample interview responses for media coverage
- Maps, charts and info graphics
- Website material
- Visuals that display trade-offs (e.g., spider diagrams, bar charts, summary tables)

Avenues for communicating and disseminating results and recommendations include:

- Traditional media
- Social media (e.g., Facebook, Twitter)
- Launch events
- Stakeholder workshops or other public meetings

GLOSSARY OF TERMS

Access and Benefit Sharing (ABS): The ABS principle of the Convention on Biological Diversity (CBD) aims at ensuring a fair and equitable sharing of the benefits arising from the use of genetic resources. This means that, where genetic resources are used for scientific or commercial purposes, the country of origin is to be compensated (GIZ 2012).

Adaptive management: A process of iterative planning, implementing, and modifying strategies for managing resources in the face of uncertainty and change. Adaptive management involves adjusting approaches in response to observations of their effect and changes in the system brought on by resulting feedback effects and other variables.

Agrobiodiversity: The diversity of plants, insects, and soil biota found in cultivated systems. Alien species: Species introduced outside its normal distribution (UK National Ecosystem Assessment 2011).

Biodiversity: Means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (CBD, Article 2).

Certification: Certification of ecological and socially responsible management places businesses apart from their competitors and can allow them to realise added value. A well-known example is the certification of forest enterprises based on the standards of the Forest Stewardship Council (FSC). Certified wood products enter higher-grade markets.

Command and control policy: Refers to environmental policy that relies on regulation (permission, prohibition, standard setting and enforcement) as opposed to financial incentives, that is, economic instruments of cost internalisation (OECD 2008).

Development refers to actions that aim to improve human well-being. It encompasses social, economic, and environmental issues, such as economic growth, poverty reduction, infrastructure expansion, energy independence, and adaptation to climate change (WRI 2008). Development planning is seen here as the process of preparing and carrying out a project that seeks to improve the living conditions in a community, region or nation. Development planning comprises strategic and measurable goals that have to be met within a certain time period. The planning process always requires the involvement of stakeholders. The development plan makes reference to all actions that are part of the planning process (projects, policy instruments, activities).

Direct-use value (of ecosystems): The benefits derived from the services provided by one or several ecosystems that are used directly by an economic agent. These include consumptive uses (e.g. harvesting goods) and non-consumptive uses (e.g. enjoyment of scenic beauty). (TEEB 2010).

Discount rate: A rate used to determine the present value of future benefits, for instance a foreseen cash flow or the flow of benefits to society from a standing forest throughout time (TEEB 2010). The basic underlying idea is that we value something that we may have in the future less than something that we can have right now. The practice of discounting applies

first and foremost to an individual deciding how to allocate scarce resources at a particular point in time. In general, an individual would prefer to have something now, rather than in the future, though with some exceptions (the value of anticipation, for example). Discount rates are expressed as percentages and represent the proportion of the value that each individual is prepared to forego every year until the benefit is received. For example, a 5% discount rate implies that the present value of something that you expect to receive in 10 years' time is only about one tenth as valuable in present terms. The discount rate reflects not only our preference of having something today but also the risk involved of not receiving the foreseen benefit in the future.

Driver: Any natural or human-induced factor that directly or indirectly causes a change in an ecosystem (UK Ecosystem Assessment 2011).

Driver, direct: A driver that unequivocally influences ecosystem processes and can therefore be identified and measured to differing degrees of accuracy (UK Ecosystem Assessment 2011). Land clearing, fishing and urban growth are examples of direct drivers.

Driver, indirect: Also known as causes of change, an indirect driver is a factor, which causes something else to change and therefore has influence on direct drivers. Market prices, consumer preferences, taxes are examples of indirect drivers, since they generate incentives to act in a certain way. For instance, higher fish prices may be an incentive to fish more, while fuel subsidies may also be an incentive to overfish since the cost of fishing remains depressed

Ecological infrastructure: A concept referring to both services by natural ecosystems (e.g. storm protection by mangroves and coral reefs or water purification by forests and wetlands) and to nature within man-made ecosystems (e.g. microclimate regulation by urban parks) (TEEB 2010).

Ecosystem approach: A strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use of nature's benefits to society. An ecosystem approach is based on the application of appropriate scientific methods focused on levels of biological organization, which encompass the essential structure, processes, functions, and interactions among organisms and their environment. It recognises that humans, with their cultural diversity, are an integral component of many ecosystems (UK Ecosystem Assessment 2011).

Ecosystem assessment: A social process through which the findings of science concerning the causes of ecosystem change, their consequences for human well-being, and management and policy options are brought to bear on the needs of decision-makers (UK Ecosystem Assessment 2011).

Ecosystem based adaptation (EbA): The use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change. As one of the possible elements of an overall adaptation strategy, ecosystem-based adaptation uses the sustainable management, conservation, and restoration of ecosystems to provide services that enable people to adapt to the impacts of climate change (CBD, IUCN 2010).

Ecosystem: A community of plants, animals and smaller organisms that live, feed, reproduce and interact in the same area or environment (IUCN 2010). It is a dynamic complex of

animals, plants and microorganisms and their non-living environment interacting as a functional unit, and depending on one another. If one part is damaged it can have an impact on the whole system. Humans are an integral part of ecosystems. Ecosystems can be terrestrial or marine, inland or coastal, rural or urban. They can also vary in scale from global to local. Examples of ecosystems include forests, the open oceans, coasts, inland water bodies, wetlands, drylands, desert, cultivated lands (also known as agroecosystems). Ecosystems interact among each other. Ecosystem conditions are very dynamic and in flux.

Ecosystem degradation: An ecosystem's persistent reduction in the capacity to provide ecosystem services (MA, 2005).

Ecosystem restoration: The process of assisting the recovery of an ecosystem that has been degraded damaged or destroyed (SER Primer 2004).

Ecosystem services: The benefits people obtain from nature. These services come from natural (e.g. tropical forests) and modified ecosystems (e.g. agriculture). While there is no single agreed method of categorising all ecosystem services, the Millennium Ecosystem Assessment (MEA) framework of provisioning, regulating, supporting and cultural services is widely accepted and seen as a useful starting point.

Emissions certificates: An example for trade with emissions certificates with regard to emergent and developing countries is the Clean Development Mechanism (CDM). CDM enables private or government investors to implement projects for emissions reductions in developing countries and get credit for the reductions for their obligations laid down in the Kyoto Protocol of the UN Framework Convention on Climate Change in industrialised countries. Units consist of certified emissions reductions (CERS) in metric tonnes of CO₂ equivalents (tCO₂e).

Endemic: Restricted to a particular area. Used to describe a species or organism that is confined to a particular geographical region, such as a lake, an island or a mountain (IUCN 2010). When referring to a species as endemic, it is important to state the area. For instance, the axolotl salamander (*Ambystoma mexicanum*) is endemic to the lake of Xochimilco in Mexico City.

Environmental and conservation funds: Financing mechanisms that foster sustainable and effective management as well as the protection of ecosystems and our environment. There are at least two main areas of application for environmental and conservation funds: i) Financing environmental protection measures and environment-related projects. This includes environmentally-sound investments in urban-industrial areas in an effort to improve companies' or the state's business activities (e.g. energy, water and wastewater services) and to improve the quality of life in cities and industrial centres. ii) Financing conservation measures, especially the long-term financing of operating costs for protected areas within the context of conservation area management, but also financing other measures such as efforts to combat desertification (GTZ 2004).

Existence value: The value that individuals place on knowing that a resource exists, even if they never use that resource (also sometimes known as conservation value or passive use value) (TEEB 2010).

Externalities: A consequence of an action that affects someone other than the agent undertaking that action and for which the agent is neither compensated nor penalized through the markets. Externalities can be positive or negative (TEEB 2010).

External benefits or positive externalities: Are side effects from production and consumption activities that benefit other people. An example of a positive externality would be when somebody takes care of his or her garden and his or her neighbour can benefit from the nice view or the song of birds, without having to pay or work for receiving that benefit.

External costs or negative externalities: Are external or side effects that damage other people from production and consumption activities. An example of negative externalities would be the side effects of production processes such as pollution (noise, fumes and vibration) endured by people living next to a quarry.

Global change: A generic term to describe global scale changes in systems, including the climate system, ecosystems, and social-ecological systems.

Governance. Governance is the body of rules, enforcement mechanisms and corresponding interactive processes that coordinate people's behaviour (Huppert, Svendsen and Vermillion 2003). Governance is not only what a central government or a dictator would do; it happens in large and small groups and at different scales, from local to global. Consequently, governance is formed whenever people need to interact with others to establish, say, standards and rules for using a natural resource (GTZ 2004).

Governance of ecosystems: The process of regulating human behaviour according to shared ecosystem objectives (TEEB 2010).

Habitat change: Change in the local environmental conditions in which a particular organism lives (IUCN 2010). Habitat change may be gradual or sudden. Gradual change can occur due to, for instance, slight modifications in average seasonal temperatures or precipitation. More sudden habitat changes may be driven by humans, such as land clearings or pollution, or due to extreme events, such as droughts, fires, hurricanes, mudslides and volcanic eruptions.

Habitat: The place or type of site where an organism or population naturally occurs (IUCN 2010).

Human well-being: A context and situation dependent state of being, comprising, among other things, access to basic material for a good life, freedom of choice, health, good social relations, security, peace of mind, a clean and healthy environment and spiritual experience (TEEB 2010).

Incentives: Factors that motivate human behaviour. They can be positive and foster certain behaviour, but they can also act as disincentives and deter people from doing something they would otherwise do. Incentives can be material or monetary, but also non-material or non-monetary. Reputation and appreciation are examples of non-material incentives. We assume that people act under bounded rationality, which means that they always try to increase their individual utility, restricted by their actual opportunities and capabilities. In

many cases, people cannot maximise their utility since they have access to a limited amount of information, or because their willingness to make an effort and spend time on a particular decision is low. But at large, people strive for an increased overall individual utility (GTZ 2004).

Indirect-use value (of ecosystems): The benefits derived from the goods and services provided by an ecosystem that are used indirectly by an economic agent. For example, the purification of water by soil filtration (TEEB 2010).

Institutions: Formal and informal rules (North 1990) including the corresponding measures of enforcing them. Institutions can guide human behaviour and reduce uncertainty (Furubotn and Richter 1998). They can take various shapes and forms -meeting your colleagues for lunch every day at a particular time, established procedures of conflict resolution in a school class, the right of way in traffic, agreements on the use of a particular grazing area- all these guidelines of human behaviour can be considered institutions (GTZ 2004).

Landscape: An area of land that contains a mosaic of ecosystems, including human-dominated ecosystems. The term cultural landscape is often used when referring to landscapes containing significant human populations or in which there has been significant human influence on the land (UK Ecosystem Assessment 2011).

Land use: The human use of a piece of land for a certain purpose (such as irrigated agriculture, recreation and housing) (UK Ecosystem Assessment 2011). Note that the term is not synonymous with land cover. The latter refers to the physical material at the earth's surface (grass, asphalt, trees, water, etc.).

Market-based instruments: Mechanisms that create a market for ecosystem services in order to improve the efficiency in the way the service is used. The term is used for mechanisms that create new markets, but also for responses such as taxes, subsidies or regulations that affect existing markets (UK Ecosystem Assessment 2011).

Market failure: A situation in which the allocation of goods and services is inefficient and there are other outcomes that make at least one person better-off. In the realm of ecosystem services, a market failure could be the inability of a market to capture the correct values associated with a specific ecosystem service (UK Ecosystem Assessment 2011).

Natural capital is the extension of the economic notion of capital (physical and human means of production) to environmental goods and services. Capital is a stock of resources that yields a flow of goods or services into the future. Natural capital is thus the stock of natural ecosystems that yields a flow of valuable ecosystem services into the future. For example, stocks of trees or fisheries provide a flow of new trees or fish. Natural capital may also provide services such as waste recycling, water catchment and erosion control. Since the flow ecosystem services improves if the ecosystem is functional, the structure and diversity of the system are important components of natural capital.

Natural resources: Those parts of nature that have an economic or cultural value to people. In an economic sense, man-made capital and labour are also resources. However, they are not of a 'natural' origin. Some natural resources require the use of man-made capital

and/or labour in order to transform them and make them accessible and useful (GTZ 2004). In this manual, however, we focus on the flows of benefits and costs from using those resources, rather than on the stocks of resources themselves.

Non-use value: Benefits which do not arise from direct or indirect use but rather from not using the resource (TEEB 2010). For instance, knowing that a rare species of monkey is in the wild, even though you might never see them.

Opportunity cost: Refers to the value of the next-best alternative. It is the cost incurred by not enjoying the next-best alternative to the alternative chosen. Foregone benefits of not using forested land in a different way, say, as farm land, is the opportunity cost of having a standing forest. It is a central element when analysing management decisions that result in trade-offs between different qualities and quantities of ecosystem services.

Payments for ecosystem services (PES): Payments for ecosystem services are policy instruments that aim to bring about sustainable land use through direct incentives. The core concept of PES is that those who provide ecosystem services should be compensated for doing so and that those who benefit from the services should pay for their provision. One of the most common examples in this regard is in the realm of water provision. Upstream caretakers of forested areas should be compensated by downstream communities that benefit from the high-quality water flowing from the conserved forest. The amount of compensation should be an approximation of the opportunity cost of forest caretakers for leaving the forest intact rather than using it in some other way, such as clearing it to free up the land for farming.

Policy-maker: A person with power to influence or determine policies and practices at an international, national, regional or local level (UK Ecosystem Assessment 2011).

Policy/policies: A policy is a statement of intent by a group of people. It encompasses the ideas, principles and plans of what to do in a particular situation to reach a certain outcome. Different development sectors, such as industry, agriculture, the environment, energy, education and health, might have their own policies at any scale (national, regional or local). In such cases we speak of sector policies. Sector policies usually look into the current situation and prescribe necessary steps and tasks to achieve goals to improve or change the current state of affairs. The classical policy cycle begins by defining a problem or issue, setting an agenda to solve it, designing and implementing the policy, raising awareness about the policy and evaluating outcomes to, in-turn improve policies. In reality, however, the policy cycle is not necessarily linear and policy unfolding can be a highly complex endeavour.

Politics: Refers to the procedures and processes that unfold as a result of and during exchanges - usually debate or dialogue- between people or groups of people with the aim of negotiating outcomes, resolving differences or trying to reach any kind of agreement. This exchange eventually results in making decisions to implement actions. The notion of power is central to politics, as it is also about gaining influence to turn a given situation to a party's own favour or improving someone's status. Negotiations hardly ever occur in a level playing field; power asymmetries among different actors are the norm. Politics occurs at all levels, from the local household level to the global arena.

Precautionary principle: The management concept stating that in cases "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for

postponing cost-effective measures to prevent environmental degradation,” as defined in the Rio Declaration (UK Ecosystem Assessment 2011).

Private goods: Goods that yield benefits to people and are characterised by high levels of rivalry and excludability. Rivalry means that one person's consumption of the good reduces the quantity available to others. Excludability means that the producer can restrict use of the product and only make it available to those he/she chooses or are willing to pay for it and excluding those outside of the set criteria.

Property rights: Refers to how a given resource or good is used and owned. Property rights confer the right to use the good, to earn income from it, to transfer it to others and to claim your rights over the good. Many argue that establishing clear property rights might be a way of reducing degradation by internalizing externalities (see a description of the term above) and relying on the incentives that owning a resource conveys, such as land, to protect and nurture it.

Public goods: A good or service in which the benefit received by any one party does not diminish the availability of the benefits to others, and where access to the good cannot be restricted (TEEB 2010).

Resilience (of ecosystems): The level of disturbance that an ecosystem can undergo without crossing a threshold to a situation with different structure or functions. Resilience depends on ecological dynamics as well as the organizational and institutional capacity to understand, manage, and respond to these processes (UK Ecosystem Assessment 2011).

Species: An interbreeding group of organisms that is reproductively isolated from all other organisms, although there are many partial exceptions to this rule in particular taxa. Operationally, the term species is a generally agreed fundamental taxonomic unit, based on morphological or genetic similarity. Once a new species has been described and accepted it receives a unique scientific name (UK Ecosystem Assessment 2011).

Species diversity: Biodiversity at the species level, often combining aspects of species richness, their relative abundance and their dissimilarity (UK Ecosystem Assessment 2011).

Species richness: The number of species within a given sample, community or area (UK Ecosystem Assessment 2011).

Sustainability: A system's ability to remain diverse and productive through time. The term originated in the field of ecology but has spread worldwide as the guiding principle of **sustainable development**. In this context, sustainability refers to the endurance of biological, political, cultural and economic systems and their interactions through time. The concept of sustainable development was popularized by the World Commission on Environment and Development (also known as the Brundtland Commission) with the publication of the Commission's report titled *Our Common Future* in 1987. Sustainable development has not lost its usefulness as a guiding principle for development and the concept is now enshrined in the UN's Sustainable Development Goals (SDGs) as part of its Agenda 2030 for Sustainable Development published in 2015. The SDG cover a broad range of development issues, including poverty, hunger, health, gender equality, economic growth, education, climate change, environment, water, sanitation, energy and social justice.

Threshold/tipping point: A point or level at which ecosystems change, sometimes irreversibly, to a significantly different state, seriously affecting their capacity to deliver certain ecosystem services (TEEB 2010).

Total economic value (TEV): A framework for estimating the value of a good or service, or a bundle of goods and services, considering various constituents of value, including direct use value, indirect use value, non-use value, option value and bequest value.

Trade-off: A choice that involves losing a given quantity of a certain quality of an ecosystem service in return for gaining another service. In other words, it describes an exchange where you give up one thing in order to get something else that you also desire.

Traditional knowledge: The knowledge, innovations and practices of indigenous and local communities around the world that are deeply grounded in history and experience. Traditional knowledge is dynamic and adapts to cultural and environmental change. It incorporates other forms of knowledge and viewpoints. Traditional knowledge is often used as a synonym for indigenous knowledge, local knowledge or traditional ecological knowledge.

Transaction costs: Refers to a cost incurred in making any economic trade. The resources spent for the creation, maintenance and functioning of institutions can be understood as transaction costs (Furubotn and Richter 1998).

Use value: The value that is derived from using or having the potential to use a resource. This is the net sum of direct use values, indirect use values and option values (TEEB 2010).

Valuation, economic: The process of estimating a value and expressing it in monetary terms for a particular good or service in a certain context (TEEB 2010).

Willingness-to-pay (WTP): An estimate of people's preparedness to pay in exchange for a certain service for which there is normally no market price, for example, the WTP for the protection of an endangered species (TEEB 2010).

ANNEX I: PEER REVIEW

Peer review is a method used for providing feedback and recommendation between colleagues.

As proposed by the GIZ, it comprehends a series of steps with defined timing.

The process helps to give answer to a very specific question/problem from the “client” (participant who requires the feedback and recommendation).

The “advisors” (participants who provide the feedback and recommendations) provide different ideas on how to solve the question/problem, but the final decision is responsibility of the “client”.

The process takes place in the following format:

1. Ask participants who would like to present a case that poses a question/problem related to ecosystem valuation and would like to receive feedback/recommendations from the group.
2. Plan the time slots in which participants will present their cases in plenary and indicate to the rest of the group that they have to choose one case in which they would like to participate and give their feedback/recommendations.
3. Once the participants presented their cases, ask participants to gather in groups according to the cases they are interested in. Make sure each one of the groups has a moderator.
4. Once the participants are gathered in groups, the process

Time	Activity	Objective	Roles		
			Client	Advisors	Moderator
5'	The client gives a synthesis of the case from his/her perspective. Must not be interrupted by the advisors	Understand the case	Talks	Listen	Facilitates
15'	Advisors make clarifying questions on the case, but should not give comments, interpretations or judgements.	Deeply comprehend the case	Answers	Ask	Facilitates
5'	The client and the advisor discuss the main question to answer of the case (main problem)	Stablish the scope for recommendations	Discusses	Discuss	Writes down the question
20'	Advisors give many ideas to answer the question (solve the problem)	Provide the client with different perspectives and ideas	Listen (JUST LISTEN)	Formulate hypothesis and give ideas	Writes down the ideas
5'	The client gives feedback on the ideas, focusing only in mentioning which ones were the most useful ones. Should not go into why some ideas worked and some others don't.	Review the ideas and emphasize the most useful ones	Emphasises most relevant ideas.	Listen (JUST LISTEN)	Facilitates

ANNEX II: OVERVIEW OF VALUATION METHODS

Overview common economic valuation methods

CATEGORY	METHOD	ELEMENTS OF TEV	APPLICATION	STRENGTHS	LIMITATIONS
Market prices	Market prices	Direct & indirect use	Money paid for ecosystem goods and services that are traded in commercial markets (e.g. timber, fish)	Market data readily available and robust	Limited to those ecosystem services for which a market exists
	Substitute prices		The market price of a close substitute for a naturally-occurring product (e.g. kerosene for fuelwood, roof tiles for thatching grass, purchased feed for pasture)	Market data readily available and robust	Limited to those ecosystem services for which a market substitute exists
Production function approach	Effect on Production	Indirect use	Value is inferred by considering the changes in quality and/or quantity of a marketed good that results from an ecosystem change (e.g. fisheries income resulting from improvements in water quality)	Market data readily available and robust	Data-intensive and data on changes in services and the impact on production often missing
Surrogate market approaches	Travel cost	Direct & indirect use	It assumes that the value of a site is reflected in how much people are willing to pay to travel to the site. Costs considered are travel expenditures, entrance fees and the value of time.	Based on observed behaviour	Generally limited to recreational benefits. Difficulties arise when trips are made to multiple destinations or for multiple motivations.
	Hedonic price		Value of environmental amenities (air quality, scenic beauty, cultural benefits, etc.) that affect prices of marketed goods (e.g. the higher market value of waterfront property, or houses next to green spaces)	Based on market data, so relatively robust figures	Very data-intensive and limited mainly to services related to property
Cost-based approaches	Replacement costs	Direct & indirect use	Value is based on the cost of replacing the ecosystem service (function) or providing substitutes (e.g. previously clean water that now has to be purified in a plant)		
	Damage costs avoided		Value is based on the costs of actions taken to avoid damages if a specific ecosystem service did not exist (e.g. the costs to protect a property from flooding)		
	Mitigative & avertive expenditures		The costs of dealing with the effects of the loss of an ecosystem service, in terms of what has to be spent to remediate any negative impacts (e.g. costs of buying bottled water because of pollution, costs of food relief and resettlement of affected populations, costs of desilting a reservoir)	Market data readily available and robust	Can potentially overestimate actual value
Stated preference methods	Contingent valuation	Use & non-use	Involves directly asking people how much they would be willing to pay to prevent loss of, or enhance an	Able to capture use and non-use values	Bias in responses, resource-intensive

CATEGORY	METHOD	ELEMENTS OF TEV	APPLICATION	STRENGTHS	LIMITATIONS
			ecosystem service (e.g. willingness to pay to keep a local forest intact)		method, hypothetical nature of the market
	Choice experiments		People chose from a 'menu' of options with differing levels of ecosystem services and differing costs, e.g. policy decisions where a set of possible actions might result in different impacts on ecosystems.		
	Participatory economic valuation	All	Based on stakeholders' own participation, perceptions, preferences and categories of value. There is no fixed approach or method for participatory economic valuation, but PRA techniques often used.	Able to capture use and non-use values, not based on externally-imposed categories	May not be comparable between sites or contexts. Often cannot be monetised.
Benefit transfer methods	Benefits transfer	All	Transferring a value from studies already completed in another location and/or context (e.g. estimating the value of a forest using the calculated economic value of a different forest of a similar size and type)	Can reduce the need for primary valuation studies	Degree of accuracy of the valuation might not be sufficient for making a decision

Overview cultural and social ecosystem services assessment methods

APPROACH	METHOD	APPLICATION	ADVANTAGES	DISADVANTAGES
Ethnographical Methods (Process of observing and working towards understanding the world from the perspective of the people under consideration.) and Ethnoecological Methods (Process of understanding how people conceptualize, value, and use their local environments.)	Action Research	Based on a learning-by-doing approach. A researcher is actively participating in community processes over a given period of time in order to gain insights into community practices and beliefs.	Implementable in almost any setting at relatively low costs.	May be time consuming and may require involving many people.
	Participant observation	Can be used to derive values by looking at people's behaviors and consumption patterns.		Not representative of 'society' or 'culture' as a whole.
	Daily Note Taking	A researcher delegates the task of keeping daily notes and records of actions to community members over a period of time. Analyzing these data sets will help to better understand the perspectives of community members.	Data collection spread over larger time frames allows for better capturing the entire spectrum of people's values and beliefs.	Possible bias through misinterpretation of actions or missing information.
	Writing of a descriptive monologue	A researcher delegates the task of writing a short monologue about a specific topic or specific cultural interaction to community members.		People may act or express themselves differently when being observed.
	Questionnaires	Asking people directly how important they think ecosystem services are by means of a questionnaire.	Implementable in almost any setting at relatively low costs.	Hypothetical situation, i.e. based on people's stories and perceptions.
	Interviews	A single person or a group of people is interviewed about their values, beliefs and preferences concerning ES through the use of either closed- or open-ended questions.		Several biases possible referring to the design of the questionnaire or
	Key Informant Interviews	A person with in-depth knowledge about a community in question (e.g. a community leader) is interviewed in order to deepen the understanding	Survey results can be compared and be used for	

APPROACH	METHOD	APPLICATION	ADVANTAGES	DISADVANTAGES
		of, how a community consumes resources or deals with governance issues and can give recommendations.	statistical analysis.	interview (e.g. response bias, strategic bias, design bias).
	Cultural Consensus Analysis	Based on the theory that some beliefs and values are cultural. The method is applied by asking different individuals a series of questions to which they have to provide a specific answer. If there is a sufficiently high level of agreement amongst the responses, that can be seen as a common cultural belief or value.	Values and preferences derived directly from (different) societal actors.	May require expert input.
	Cultural Domain Analysis	People indicate how they think different items or products fit together in categories. Through the analysis of matrices, a researcher can then derive how a group of people judge and value different items or products.	Can capture different aspects of values, beliefs and preferences.	Getting a large and representative sample size may be time consuming.
	Social Network Analysis	Social structures are investigated by visualizing 'networks' (i.e. institutions, actors, ES) in a graph and then linked to each other through 'ties' (i.e. relationships, interactions). This can help to visualize how a society or community interacts with these 'networks' and values them.	Includes the perceptions of most relevant stakeholders if done thoroughly and ensuring representation of all involved parties.	Can be "incomplete" or not representative of an entire culture or society.
	Stakeholder Analysis	Stakeholders are all those people affected by a project/policy/study/decision, or who have an important influence on its outcome. Stakeholder provides essential information on the economic, social and political context of a project or study area. Stakeholder analysis is an important first step in many ecosystem service assessments. It helps to identify and understand stakeholders: how they are affected by ecosystem services, how they influence them, and their role in (public) decision making. Stakeholder analysis allows fine-tuning of the assessment design. It also provides vital information for effectively and meaningfully engaging stakeholders in the assessment process itself. Stakeholder involvement in assessments has to be considered according to their rights, their interests, their knowledge, as well as any strategic goals pursued by the assessment.		
Geographic Methods (Identify and map ES relevant information spatially.)	GIS and Remote Sensing	Geo-Information Systems (GIS) analyze and represent spatial and geographical data in an integrated way. Many different data types can be inputted in a GIS, including ecosystem areas, ES flows, boundaries, socio-economic variables, societal preferences in specific areas, among others.	Involvement of relevant stakeholders in the design ensures public acceptance, legitimacy and relevance of the results. Easy to understand due to visual output.	Can be expensive and time consuming.
	Participatory Mapping and Modelling	Involvement of stakeholders in the design and content of analytical models or maps that represent ES, benefit flows, beneficiaries and trade-offs under different spatial and temporal conditions.	Promotes ownership amongst a	Modelling: Essentially depends on the availability of relevant data in the right format, quantity and quality, as well as the quality of the model itself.

APPROACH	METHOD	APPLICATION	ADVANTAGES	DISADVANTAGES
	Protected Area Benefits Assessment Tool – PABAT	The Protected Areas Benefits Assessment Tool (PA-BAT) helps to identify the different types of benefits provided by Protected Areas (PA). The tool identifies who benefits and by how much. It also provides information regarding the degree to which particular benefits are linked to protection strategies. Stakeholder involvement and input helps achieve a high-quality assessment. The PA-BAT aims to assess legal resource use and the benefits that potentially accrue from that use. The assessment may also identify neglected ecosystem services. If the assessment is repeated over time, changes in quality or quantity of either supply or demand of ecosystem services can be monitored. The tool needs to be adapted to site-specific circumstances. It is possible to apply the tool to areas under no form of protection.	community or group of stakeholders. Visual output that can be used to influence decision-making processes. High flexibility, questions can be adapted to specific local conditions or information needs.	Can be “incomplete” or not representative of an entire society or culture. Difference in opinions can be difficult to reflect in a ‘final output’. May not capture complexity of the situation. Can require extensive knowledge and expertise.
	TESSA Toolkit	The TESSA-toolkit focuses on a site-scale-level, such as a wetland, using information gathered locally. The toolkit can help assess climate regulation, flood protection, water provision, water quality improvement, harvested wild and cultivated goods and nature-based recreation. The toolkit is accessible to non-experts and practitioners on the ground, as it provides a ‘user manual’ with a workbook structure. TESSA is relatively low cost to apply compared to many other methods. It delivers scientifically robust results, often based on field measurements, rather than scenarios. Guidance on how to pull together data from individual ecosystem services into an ecosystem service overview is also provided.	Provides insights into the overall value of ecosystem services at a specific site.	Difficult to assess all ecosystem services spatially.
	Participatory Rural Appraisal	Participatory Rural Appraisal (PRA) offers various tools for practitioners, government officials and community members to jointly analyze a local situation and plan projects/programmes/activities that are sensitive to local context. PRA is highly relevant for small-scale ecosystem service appraisals. PRA tools can be applied to examine the locally perceived state, the demand and the use of ecosystem services. PRA is not a fixed combination of methods, rather an evolving set of tools, which are marked by their relative simplicity, adaptability and low-tech/low-cost character. Typically, they comprise qualitative field research methods stemming from social anthropology and sociology, such as ranking exercises, transect walks, participatory mapping, trend analyses and seasonal calendars. In PRA, facilitators seek to support community members to undertake their own analysis and identify their own plans for action. Extensive mentoring, training and practical assistance may be necessary as preparatory work for PRA facilitation team to ensure that the PRA process leads to the desired results.		

APPROACH	METHOD	APPLICATION	ADVANTAGES	DISADVANTAGES
Historical Methods (Reveal how and why values of nature and its benefits have formed and changed over time.)	Archival Work	Reading of original archival records to gain a better understanding of a society or culture. It is generally more difficult than internet research, as the identification of relevant documents and archives can be time consuming.	Large amount of information availability.	Results may not be representative of 'society' or 'culture' as a whole, but rather of individual stakeholder groups or organizations. May be time consuming.
	Document Analysis or Problem-Oriented Discourse Field Analysis	Screening of relevant existing literature to identify values and beliefs of different actor groups on specific topics in regard to ES. Problem-oriented discourse field analysis can further be used to identify actors' knowledge and potential conflicts. Academic literature, grey literature and social media can be examined.	Allows exploring past and present tendencies and preferences.	
	Media Analysis	Media (newspaper, TV channels) and social media outputs are analyzed over a period of time in order to capture the perceived value and beliefs of society on ecosystem services.		
Narrative Methods (Descriptive methods which capture the importance of nature and its benefits to people through stories, verbal or visual summaries.)	Storytelling (Oral History)	Participants are asked to share stories about past experiences. The group then reflects upon the presented information to discuss societal values and beliefs related to these experiences.	Based primarily on opinions of relevant stakeholders and general public.	The way information is presented may cause a bias in responses. Difficult to present all information and capture complexity correctly. Can be time consuming. Results can be highly influenced by individuals with a stronger voice. Due to complexity of ecosystems, it is difficult to create comprehensive and realistic scenarios for the future in terms of ES supply and demand.
	Participatory Scenario Analysis	Two or more different future scenarios are presented to participants. The group then reflects upon the presented information and discusses which scenario would be preferable under which conditions.	Allows for weighing and judging different options.	
	Scenario Development and Scenario Planning	Some scenario development approaches are developed for the assessment and/or management of ecosystem services, while others are easily adapted to reflect ecosystem services issues. Scenario approaches range from highly exploratory to decision-oriented and from intuitive to analytical. They vary in the degree of complexity. Different contexts require different scenario approaches. All approaches involve a common set of steps for scenario development. This process includes: selecting a scenario approach, developing storylines based on available data, identifying uncertainties and drivers of change, and discussing scenario outcomes. Scenario planning is an effective tool to analyse future prospects of changes in ecosystem service provisioning and trade-offs. However, a scenario cannot forecast the future. Rather, it reflects different possibilities of what the future could look like.	Can help in decision-making processes. Ensures public acceptance and local / regional relevancy of results.	
	Focus Groups	Deliberative group setting in which information is exchanged between group members, and the group then discusses in an iterative process until a consensus is reached. Deliberative group sessions help in expressing shared values instead of individual values. Usually done in a small group of people (4-8) and facilitated by an instructor or mediator.	Allows exploring different scenarios and their implications.	
	Citizen's Juries	A number of experts and relevant stakeholders present information to a group of citizens who then respond by giving a recommendation or 'verdict'.	Can help create awareness.	

APPROACH	METHOD	APPLICATION	ADVANTAGES	DISADVANTAGES
	Deliberative Multi-Criteria Analysis	Techniques that involve groups of stakeholders designing formal criteria against which to judge the non-monetary (and sometimes monetary) costs and benefits of different management options as the basis for highlighting the value of ecosystem services.		
Preference Methods (Analyse perceptions, knowledge and values associated with nature's benefits.)	Freelisting	Community members are asked independently to list items that they think belong to a certain category or list which items they prefer most of a given category. Based on the most common answers, a researcher can derive a certain extent of societal preferences and values in regards to the topic in question.	Helps to gauge society's preferences and can be used to develop new products or strategies.	Design may require expert input. Getting a large sample size may be time consuming.
	Paired Comparisons or Triad Tests	In order to gain knowledge about the values of different items or products, a researcher can arrange these items or products into multiple sets of two. A respondent can now indicate his preference out of all possible paired combinations. The item that has been chosen most is the most preferred. In triad tests, respondents choose a "best", "middle" and "worst" item from all possible combinations of three items.	Can capture all aspects of values, beliefs and preferences.	Several biases possible referring to the design of the method (e.g. response bias, strategic bias, design bias).
	Pile Sorting	Participants divide items or products into a number of value-categories based on their perceived value.	Results can be compared and be used for statistical analysis.	Often suffers from a lack of information regarding method adaptation and complexity of results, such as explanations of why a scenario is preferred or why people act the way they do.
	Delphi Survey and Value Compass	Set of techniques that revolve around a group of participants (often experts) that discuss an issue at hand iteratively until a consensus is reached. The group ranks different values and then discusses the degree to which these values are important in a specific community.		
	Rankings	In ranking exercises, two or more products or entities are presented to an individual or a group of people who can then choose which of the options are preferred to others or if some of them have an identical value.		

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