



**Report from Workshop on
“Testing the final methods in policy- & decision-making (II)”**

Held in Eger, Hungary, co-organized by UNITN, REC and MTA ÖK

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Milestone 29

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ESMERALDA Workshop VIII in Eger, Hungary - Participants Group Picture (By Pensoft)

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INTRODUCTION AND AIM OF THE WORKSHOP

ESMERALDA aims at supporting European countries in fulfilling their duties in the frame of the EU Biodiversity Strategy Target 2 Action 5 “Mapping and Assessment of Ecosystems and their Services” (MAES). The project will deliver a “flexible methodology” based on a tiered approach for mapping and assessment of ecosystem services (ES), as well as for the integration of different value dimensions. This methodology integrates various methods for the mapping and assessment of ecosystems and their services (MAES) in EU Member States. Particularly, the methodology will help to select the most appropriate methods (as combination of biophysical, socio-cultural, and economic methods) to perform mapping and assessment of ES under specific conditions (e.g., data and time requirements, expertise and experience, scale of application), and for specific contexts (e.g., geographical area and biome) and purposes (e.g., policy questions, themes and sectors).

The ESMERALDA Workshop VIII (WS8) in Eger aimed at testing the final version of the flexible methodology in policy- and decision-making in real-world case studies. It had the same content as WS7, to ensure a larger variety of policy- and decision-making processes, including businesses and citizens, and geographical contexts. This continued the work of testing the first version of the flexible methodology conducted during the Workshops held in Prague (WS3, September 2016), WS4 Amsterdam (WS4, January 2017), and Madrid (WS5, May 2017), building also on the revisions and feedback from stakeholders collected at the Plovdiv Workshop (WS6, October 2017).

In WS8, the participants had the opportunity to firstly receive an update on the final version of the ESMERALDA flexible methodology, including the structure of the “Final Guidance Documentation” (**Session 1**), followed by a keynote speech on “Perspective on using ES mapping and assessment in the private sector”, based on the experiences of the Land Degradation Neutrality Fund under the UNCCD (**Session 2**). The Workshop then focused on three selected case studies from Hungary, Finland, and Sweden, which served to analyse how mapping and assessment of ES supports different phases of decision-making processes (**Sessions 3-6**). The last session of DAY 1 was panel discussion involving the stakeholders in an overall review of the ESMERALDA methodology and products (**Session 7**). Finally, DAY 3 was dedicated to finalizing the different ESMERALDA products and Deliverables, with the active involvement of all participants, and discussing idea for after the completion of the project (**Sessions 8-10**).

In WS8, with respect to the case studies, the focus was on the application of the methods by business and citizens. Particularly, the case study from Hungary was focused on local business also involving several other sectors through the socio-economic evaluation of ES and development of action plan. The case study from Finland had a strong citizen participation component and links with the business sector. Finally, the one from Sweden involved reindeer husbandry planning as well as natural and cultural values in territorial planning. The case studies were analysed according to the main components of the MAES process (see Figure 1). This served to identify the main challenges and respective solutions that emerged during the case study applications, also based on input from the stakeholders. Ultimately, the case study-based discussions provided useful insights about the

needs and requirements arising from the application of MAES to support decisions by businesses and citizens and about their implications for the ESMERALDA flexible methodology (e.g. structure of the Final Guidance Documentation, IEA framework, and online tool).

WS8 participants included project partners and stakeholders directly involved in the case studies. The former were actively involved in coordinating the activity towards achieving the final ESMERALDA Deliverables. The latter shared their experience with the case study, and provided feedback on the different ESMERALDA products.

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GENERAL STRUCTURE AND CASE STUDIES

The core of DAY 1 was represented by two breakout sessions in which the participants worked in three different groups, each group focusing on one case study. As shown in Figure 1, the case studies were discussed with respect to the main components of the MAES process, following the proposed structure of the “Final Guidance Documentation” developed at the ESMERALDA WS in Plovdiv and further elaborated during, and after WS7 in Trento.

Particularly, for each case study, the breakout sessions addressed: (1) “Identification of relevant stakeholders” and “Network creation/Involvement of stakeholders” (**Session 3**) and (2) “Dissemination & Communication”, and “Implementation” (**Session 4**). This allowed exploring the spectrum of needs and requirements that determine usefulness/effectiveness of ES mapping and assessment in informing/supporting policy/decision-making processes. Ultimately, this gave us the opportunity to “test” different aspects of the final version of the ESMERALDA flexible methodology.

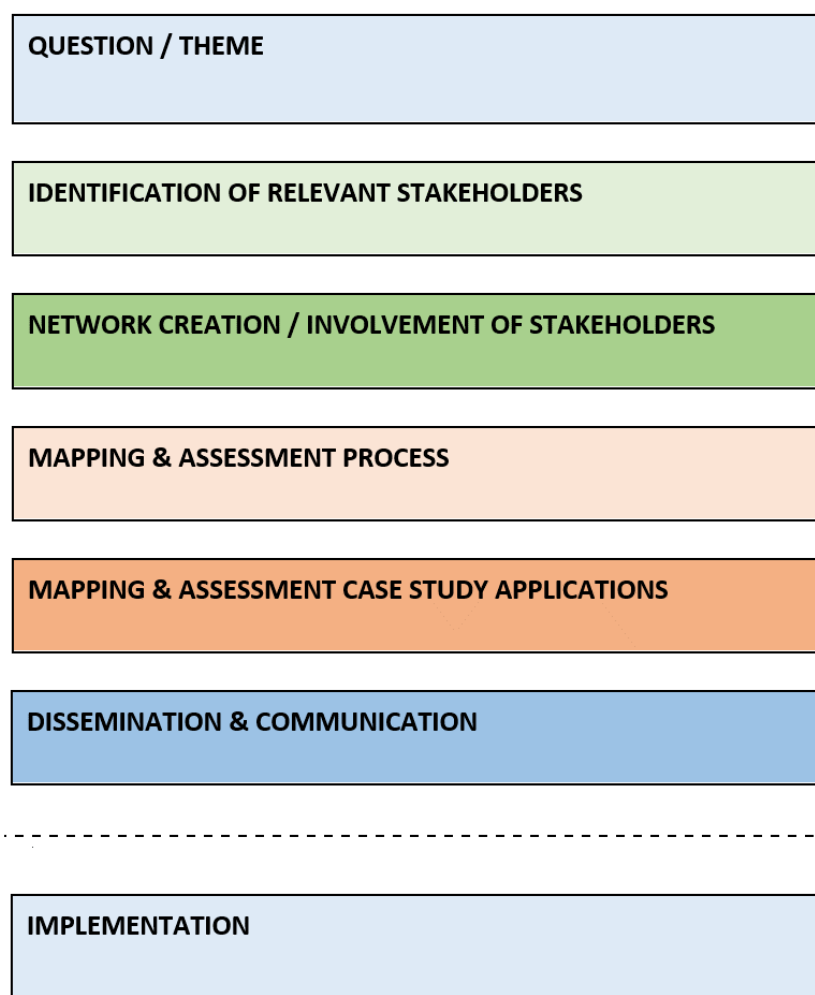


Figure 1. Components of the Mapping and Assessment process according to the proposed structure of the ESMERALDA Final GUIDANCE DOCUMENTATION (Version 17.11.2017).

Operationally, in DAY 1, after an update on the status and progress of the ESMERALDA project (**Session 1**), the topic of the involvement of the private sector was introduced by a keynote speech focusing on the experience of the Land Degradation Neutrality Fund, launched by the UNCCD in September 2017 together with several partners from the public and private sector (**Session 2**). Following, an overview of the three ESMERALDA case studies was provided in plenary, highlighting their specific interest for businesses and citizens (**Session 3**). The case studies were then discussed in two breakouts addressing two key components of the MAES process (**Sessions 4, and 5**). After this, the main findings of the discussion around the three case studies was shared in a plenary session (**Session 6**). The last plenary session of DAY 1 was used for facilitated stakeholder panel discussion. This was particularly useful to hear stakeholders' views and find novel and more effective approaches in engaging citizens and business as well as communicating and implementing ES mapping and assessment results for policy and decision-making. (**Session 7**). The last session was followed by the ESMERALDA General Assembly.

DAY 2 was a field excursion to Bükk National Park, the target area of the Hungarian case study. The excursion provided insight into how the results of ES assessment can support pro-biodiversity business (PBB) opportunities (with a specific focus on grazing and hay provision).

DAY 3 was dedicated to coordinating the activities of the Consortium Partner towards achieving the final ESMERALDA Deliverables and the Final Guidance Documentation. This was achieved through a plenary discussion focusing on the structure and template of the ESMERALDA Final Guidance Documentation, followed by updates and discussion on the ESMERALDA "Online tool" and Glossary (**Session 8**). Hence, two breakout discussions addressed the final ESMERALDA Deliverables (**Session 9**). In conclusion, the group discussed the outline and content of the final conference in Brussels, had updates on the status of the One Ecosystem special issue, and discussed activities and ideas foreseen after the completion of the project (**Session 10**).

RESULTS OF INDIVIDUAL SESSIONS

In the following section, we provide details of the individual sessions listed below. For each session, we report main results and outcomes.

Session No. 1: Update on ESMERALDA status & progress

Session No. 2: Perspective on using MAES in the private sector

Session No. 3: Introducing Hungarian, Finnish, Swedish case studies.

Session No. 4: Discussing “Network creation and Involvement of stakeholders” in the case studies

Session No. 5: Discussing “Dissemination & Communication, and Implementation” in the case studies.

Session No. 6: Reporting key points from sessions 4 and 5 + Q&A.

Session No. 7: Stakeholder panel discussion - Engaging citizens & business

Session No. 8: Final Guidance Documentation and other final ESMERALDA products– Overview, status and implementation

Session No. 9: Discussing final Deliverables

- WP3 & WP4
- WP5

Session No. 10: Discussing the final conference, publications, and life after ESMERALDA



ESMERALDA Workshop VIII in Eger, Hungary – Pictures from sessions (By Pensoft)

Session 1: Update on ESMERALDA status and progress

The main outcome of the Session was that the Workshop participants were updated about the development of the project. In particular, the stakeholders were introduced to the ESMERALDA general approach. The session started with a brief introduction by the host, Tamas Kristof Kallay (REC) who welcomed the participants and introduced the agenda. He highlighted that the main aim of the workshop is to make a final test of the ESMERALDA flexible methodology for in decision-making involving businesses and citizens. Following, the project coordinator Benjamin Burkhard (LUH) gave an update on the project (see presentation). Key points of the presentation include:

- This is the last working meeting, before the final conference in Brussels (12-13 June).
- Previous meetings were held in different regions with different questions, this meeting has the focus on the application of the tools by business and citizens
- EC DG ENV is about to make a Guidance on Ecosystem services implementation, they would build on ESMERALDA experience.
- One open task from Trento workshop: 'How to name the tools?', accordingly, a 'Survey monkey' link was sent to participants but it turned out that several people did not receive that. Those should indicate that to Benjamin who will resend the link.
- An update of the status of each WP was provided (see Figure 2 and the presentation).
- Next steps planned to be discussed in the relevant sessions later.
- Administrative part: for the periodic reporting some things have not arrived yet from partners; this will be followed up on an individual basis.

Finally, the ESMERALDA bottle was handed over.

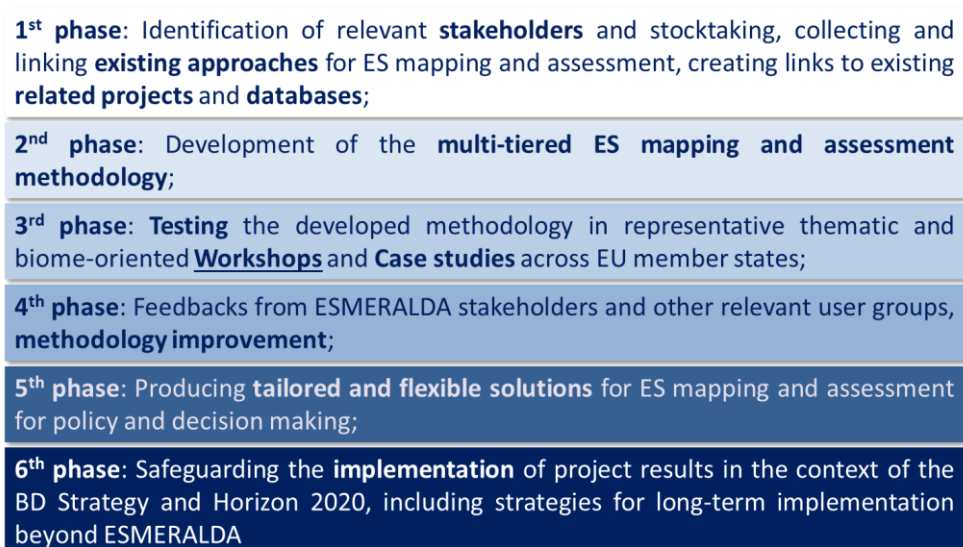


Figure 2: Overview ESMERALDA working phases.

Session 2: Perspective on using MAES in the private sector

The aim of the session was to introduce the potential application of ES mapping and assessment in decision-making involving businesses and citizens. Based on the experience of the “Land Degradation Neutrality Fund” launched by the UNCCD, the keynote speech served to highlight, on the one hand, the decision-making needs of the private sector, and more generally of citizens, and on the other hand, the potential that the MAES process has to address these needs. What follows is the abstract of the keynote speech.

Unlocking finance for sustainable development: the Land Degradation Neutrality Fund

By Simone Quatrini (ETH Zurich)

Over the past two years, the international community adopted a number of important policy frameworks that laid the foundations for an inclusive green economy that acknowledges the value of ecosystem services, protects natural resources and promotes a sustainable future, such as the 2030 Sustainable Development Goals (SDG) Agenda. Without finance, all these objectives and commitments will remain on paper. While the public sector can cover part of the finance gap, the largest investment is expected to come from the private sector. Yet, the global financial system is not effectively channelling private sector investments towards sustainable development. Essentially, this is due to the lack of instruments to mitigate risks and uncertainty, and lack of appropriate investment vehicles. One particularly underexploited instrument is a form of public-private partnerships called blended finance. The recently launched Land Degradation Neutrality Fund (LDN Fund) is a rare example of blended finance vehicles specifically anchored to a SDG target.

The talk provided an overview of the key characteristics of this innovative financial instrument, including the role of ES in the fund’s environmental and social standards. It will illustrate the underlying theory of change and challenges ahead.

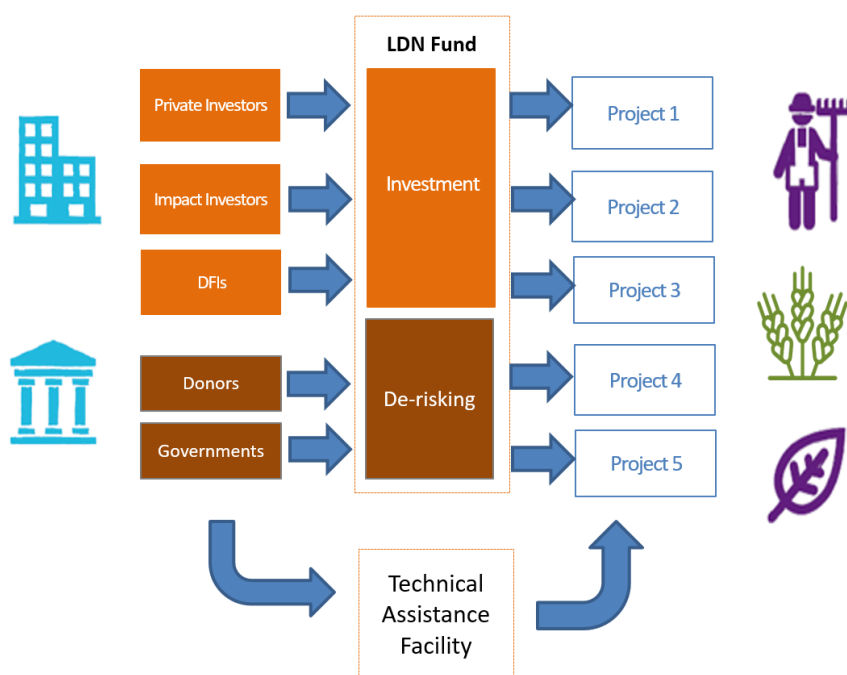


Figure 3: Architecture of the Land Degradation Neutrality Fund (Source: Morova, 2018)

Session 3: Introducing Hungarian, Finnish, Swedish case studies

The main outcome of the session was that the participants were exposed to the process of ES mapping and assessment in the selected case studies (see description below), and were thus prepared to discuss the need and requirements emerging from these three applications. Specifically, participants were prepared to discuss how MAES could support decision-making involving citizens and businesses. The session served to clarify the rationale, and to pave the way to the breakout discussion on “Identification of relevant stakeholders” and “Network creation/Involvement of stakeholders” and on “Dissemination & Communication”, and “Implementation”.

Fostering pro-biodiversity business in the Bükk National Park (Hungary)

The Bükk National Park - a part of the Northern Mountain Range of Hungary – was established in 1977 and covers 43 thousand ha. It is mainly managed and utilized as forest (94%) and to a smaller extent, grassland, meadow and pasture (3.4%). Almost 98% of the national park is state owned, with two forestry companies as managing organizations, and the remaining area is managed by the Bükk National Park Directorate. The subject of the case study, however, is the wider local socio-ecological system containing low-intensity areas of settlements, arable lands, grasslands, vineyards and orchards adjacent to the National Park territory, reflecting the significance of these land uses and the opportunities they offered to involve business and citizens. The case study is part of the project ‘Ecosystem services of karst protected areas – driving force of local sustainable development (Eco Karst), funded by the EU Territorial Cooperation Programme to promote the opportunity to use the natural heritage of protected areas as an economic development factor. The project aims to support local development based on the raised awareness and sustainable management of karst ecosystems across the Danube region, including the Bükk National Park in Hungary. Accordingly, ecosystem types are mapped, ES identified, assessed and, where applicable, economically valued and spatially visualized. The results of ES assessment will be a basic resource for the discussion on increasing pro-biodiversity business opportunities.



Green infrastructure and urban planning in the City of Järvenpää (Finland)

The City of Järvenpää is a compact city with tight boundaries and population around 42,000 inhabitants that makes it fourth densely populated city in Finland. The city has an expected population growth of over 10 % by the year 2030, leading to an exceptionally strong need for infill development to provide housing for new inhabitants. The city's interest was to find the tools and criteria for valuing the sites excluded from construction (i.e. green infrastructure) so that future urban planning could compress up and intensify the urban structure without losing the most valuable features of the GI. The objective of this study was to evaluate the green infrastructure in the city by mapping and assessing the supply and demand of the most important ES and assess the connectivity on green infrastructure. In the case study, mapping and assessment was done in three phases concentrating to the questions of: 1) *how the provision of ES related benefits provided by the green infrastructure were distributed in the area*; 2) *how and where the citizens use these benefits* and; 3) *how the ecological processes providing these services were connected*. The citizen role was considered by arranging workshop, via online questionnaire and sending survey to schools and kindergartens to map their perceptions related to cultural ecosystem services.



ES mapping and assessment in the Vindelälven-Juhtatdahka river valley (Sweden)

The Vindelälven-Juhtatdahka river valley stretches about 450 km from the Scandinavian mountain range watershed divide to the Gulf of Bothnia marine coast. The river is the southernmost one out of four national rivers in Sweden. Before railways and roads were developed starting in the late 1800s, the river was the main historical southeast to northwest infrastructure for humans and as the natural ecological spread and migration route for species and habitat types. In particular, the annual migration of reindeers from the mountains to the coast and back – the backbone of the traditional Sami reindeer husbandry – marks the significant value of the river. The river valley includes territories used by seven Sami communities and is within the land of Sápmi, which encompasses indigenous peoples in northern Sweden, Norway, Finland and Northwest Russia. The area is rich in forest, minerals and other natural resources and rich in nature conservation values. Cultural influence dates 8,000 years back. The Vindelälven-Juhtatdahka river valley area is, formally, in the candidacy process for becoming a member reserve in the UNESCO Man and Biosphere Program. The mapping and assessment of ES has been put in the context of planning and implementing sustainable development across a large-scale biotic transition that display a magnitude of economic, ecological and socio-cultural gradients and that it representative for northern Sweden. Here, the foci are on ES associated with forest habitats, forest management and forests in a landscape context, and with the indigenous Sami culture reindeer husbandry.



A short clip from the film on reindeer breeding in Swedish Lapland is available on YouTube at the following link: <https://youtu.be/1IYB3FD7eFM>

* The Case Study Booklets are being finalized, and will be included in the final Deliverable 5.3

Session 4: Discussing “Network creation & Involvement of stakeholders”

The session aimed at shedding light on the needs and requirements that emerged during the early stage of the MAES process by exploring the involvement of different stakeholders. To this end, the Workshop participants discussed how the identification of stakeholders, network creation and stakeholders’ involvement was carried out, and documented the lessons learned in the case study applications. Particularly, stakeholders had the opportunity to share their experience on networking and involvement also beyond the case study. Following are the main results from the case studies.

Hungarian case study

The breakout started with a presentation of the *stakeholder network analysis in the Bükk case study* by Béla Kuslits (MTA ÖK). Within the project ‘Eco Karst’, assessment of ES, development of local action plans and the facilitation of pro-biodiversity businesses are directly related to stakeholder involvement. To involve a big enough group of local people with diverse backgrounds, economic status, expertise and experience, an initial systematic network analysis was carried out. Method of the analysis and interpretation of the resulting network included the following steps:

- create preliminary stakeholder list based on existing database
- identify the 6 most relevant groups of stakeholders based on two dimensions of their relation to ES (dependence and influence)
- Carry out online and personal survey of local stakeholders asking: “*Who do you talk to regularly about issues related to Bükk NP from the XY sector? Please list up to 5 names or organizations.*”
- apply the graphic network-layout designer software Gephi on the survey answers
- Analyse the results and interpret patterns, e.g. Bridge people (betweenness centrality), Authorities / Trusted people (in-degree), Hubs (out-degree), see Figure 4.

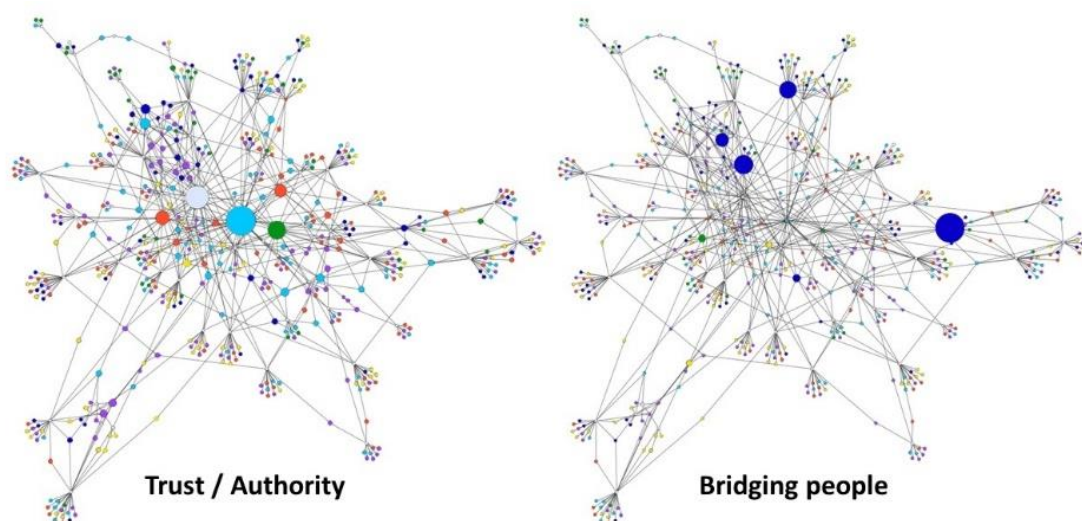


Figure 4. Graphic layout of the social network in Bükk based on online survey of stakeholders. Nodes represent people or organizations, edges represent communication.

Main points of discussion and conclusions

From the main challenges emerging and lessons learned during stakeholders' identification and network analysis, some practical ideas for social network analysis are:

- You can mix people with institutions both in survey and analysis.
- In the graphic network it is advisable to use specific colour nodes to show activity-groups.
- When processing data, it is suggested to filter results to see group-relations or highlight the more influential people.

Potential pitfalls mentioned during the discussion:

- Willingness (trust) to respond may be low, but it can be overcome with communication and personal trust – in such case personal recording (e.g. by rangers) is more efficient.
- This method does not tolerate typos, spell checking is necessary before data processing.
- People representing institutions are often restricted in what they can answer.
- It is hard to estimate the right sample size.
- Some expertise is needed for the network analysis (but other social science methods such as focus groups also need experience).

Some conclusions that can be drawn are:

- Social network analysis might add significant new knowledge to the current group of people usually contacted by the nature conservation authority of a protected area. Therefore such analysis is a preliminary task before the real involvement of stakeholders.
- There might be mismatch between the most dominant land use in terms of area and the most significant stakeholder groups in terms of social network: in Bükki, forests have the biggest area coverage with no settlements and only two big companies in charge, while grassland are relatively small in area, however due to their complex land management and marketing activities animal keepers turned out to be the bridging people between sectors.
- Results of social network analysis can already indicate further opportunities targeted by the project, e.g. in the Bükki case animal keepers are likely interested in pro-biodiversity business opportunities and national park products certification.
- During the survey it is advisable to ask whether the respondent is willing to participate in later phases of the project, e.g. in workshops.
- Personal data needs to be protected, names never shown in public presentations.
- There are sometimes similar project activities in the same area, which do not cooperate or use the results of each other: e.g. recently there had been a similar social network analysis carried out by Bucharest University colleagues in another Eco Karst pilot area in Romania (Apuseni NP). Better synergy between projects could bring more efficient results.

Finnish case study

The breakout started with a description of the case study given by Arto Viinikka and Leena Kopperoinen (SYKE), with focus on “Network creation and involvement of stakeholders and citizens”. Specifically, the needs and requirements for ES mapping and assessment in the city were the topic of this session, with strong methodological focus on experiences and challenges related to the identification and involvement of relevant stakeholders during the process.

In the city of Jarvenpää, a population growth of up to 2,5% per year creates a strong need for housing development, growing upwards instead of extending outside (see Case Study booklet). Hence, tools and criteria are needed for valuing ES in the city planning. Therefore, the Järvenpää project aimed to map and assess supply of ES and the spatial distribution of ES demand. In addition, a spatial SMCDA was tested for engagement of practitioners aiming to find the most potential infill development sites and enhance the integration of urban greenspaces and residential infill development. Therefore, 12 ES have been assessed, with strong focus on cultural ES (5/12). First, green and blue infrastructure was spatially extracted using multiple GIS-data layers together with aerial images and knowledge of the local planners. The GreenFrame method was applied (semi quantitative, matrix based method) to map the potential provision of ES in the area. At this stage, the stakeholders were the local planners. The co-operation between researchers and planners started at the very beginning of the process by identifying relevant ES to be mapped and reviewing and compiling the relevant background information and spatial data from the national and city archives.

Main points of discussion and conclusions

Stakeholder and citizen involvement required in planning.

According to the Finnish Land use and building act plans urban planning must be prepared in interaction with such persons and bodies on whose circumstances or benefits the plan may have substantial impact. The authority preparing plans must publicize planning information so that those concerned are able to follow and influence the planning process (see: Finnish Land use and building act 132/1999, amendment 222/2003 included). This in fact is a consolidated approach throughout the EU, although there are some variations. In Norway, for example, such a procedure mainly refers to buildings, but at city level such involvement is rare. Some processes might require consultation in case of technical and political disagreements, but nature of the process is different. Similarly, in Latvia, public hearings are compulsory, but mainly refer to the first draft, where stakeholder’s comments can be left in written form. Thereafter, public meetings are held, good practice means to allow for participation in early stages, including citizens and stakeholders, especially for big planning projects. Participation becomes most active phase in the final public hearing though.

However, questions that arise are for example:

- *How is substantial impact in the planning defined?* Means that it is included in all zoning/planning processes. In zoning especially it is required.

- *What is the main reason for population growth in the city?* Are expectations of people who move outside of Helsinki, but commute, included? Traditionally there is lot of detached houses, but there is a change happening, building high up to meet the housing demand. This does not match all citizens' ideas, as small scale used to be traditional.
- *Who is a stakeholder?* Commuter's opinions are limited in this stakeholder analysis. Rather, citizens have been included as they experience the city differently. Virtual surveys have been included in the research too.

How has citizen participation been established in the planning process?

Several sources of input were gathered to establish citizen participation in the planning process. Especially, PGIS tools were used to evaluate spatial distribution of cultural ES via workshop, surveys and online questionnaires. PGIS helped to identify ES hotspots on a map. The **Workshop** consisted out of two sessions, held in congress hall. Open invitation advertised by city webpages, big marketing. Collecting all the data on perceptions and placing the values for the individual services. How important are the different areas? Where do citizens get the benefits, by pointing these out on a map? **Schools and kindergartens** received maps via mail to point out areas used for educational purposes, including a few questions. Goal was to differentiate between actual and desired use of city areas. **Online survey** was used to map cultural ES. Online mapping tool gave 377 responses e.g. on areas with high recreational values, beautiful scenery, green areas to be preserved. However, people find it difficult to draw polygon shape areas – here sometimes point size pins are easier.

In the citizen workshop the attendance rate was low – only 8 participants attended. Survey to schools and kindergartens had 36 % answer rate which is actually quite good. According to Survey Monkey statistics 20-30 % answer rate is generally quite good. Also Geographical coverage was good and survey was easy and quick to carry-out. Nowadays, electric tools such as mobile apps and online questionnaires are preferred and Järvenpää has good experiences related to these. After data collection, a hot spot maps of cultural ES was conducted by integrating all the PGIS results together.

Stakeholder involvement during the integration of the ES mapping and assessment results

Following, the spatial mapping & assessment (supply & demand) results were integrated applying a Spatial Multi-criteria Decision Analysis (SMCDA) method to test the engagement of practitioners aiming to enhance the integration of urban greenspaces and residential infill development (see presentation & case Study Booklet for more information on methodology). This was mostly scientific driven exercise. The practitioners saw the method & results as logical and a good representation of their city's values from the perspective of green infrastructure. The decision tree was seen useful tool to structure the factors having impact to the infill development. The practitioners saw much potential in the method to improve infill development planning. The resulting maps were considered to be a useful way to communicate with the decision-makers.

But how to minimize the risk of polarizing green and built up areas? Therefore, triangulation of methods (mapping the provision of ES, surveys, SMCDA) were conducted. Also, one of the project

purpose was to make planning & decision-making transparent and understandable, by highlighting areas providing multiple ES and areas preferred by citizens and stakeholders.

This methods are transferrable to other cities as well. For example, Helsinki, as most big cities, requires information concerning land use in great detail, hence applying a similar SMCDA would be feasible. In Helsinki, the University of Helsinki, for example, has carried out habitat research using Zonation, which provides added, detailed information of the biodiversity hot spots in the area. However, many of the high-level methods can be very time and resource-intensive that can be difficult to integrate to master planning schedule.

Swedish case study

This breakout started with an input presentation about the case study by Johan Svensson (SLU) and Ola Inghe (SEPA). The following paragraphs present summarises some key information discussed in the session, while detailed information can be found in the case study booklet.

One background of the case study is the application of the investigation area to the UNESCO MAB program. Accordingly, the mapping and assessment of ES took place in the context of planning and implementing sustainable development in the investigation area. In the case study, the focus was on reindeer husbandry in the Vindelälven-Juhtatdahka river valley, considering the Sami culture of reindeer husbandry, forest habitat, forest management and forest in a landscape context (see Case Study Booklet). Particularly, the reindeer was analysed in its different aspects: provisioning (e.g. meat, antlers, skin/fur, bones, and milk), regulating and maintenance (i.e. grazing, trampling, and bark scraping), cultural (i.e. physical intellectual, spiritual and symbolic interactions, and Sami cultural identity).

Basic information on the investigation area (Vindelälven-Juhtatdahka river valley)

The study area, which has an extension of 13.300 km², ranges from coastal boreal to high alpine. It includes the River *Vindelälven*: fourth national river, in Sweden, that is without hydropower plants. It is a forest dominated landscape of which 32% is also protected area (mainly forest area in the mountains) with high biodiversity values. Forest industry is dominating the landscape, with forests owned by the State (39%), private companies (34%), and private household owners (32 %). In particular, managed forests are predominant resulting in the prevalence of middle age forests while natural forests are generally fragmented. In addition, a key challenge is the rising of marine coastline (response to the missing glacier load after the last glacial period). Besides forestry together with some small-scale farming, the study area is the home range for Sami people (and reindeer husbandry). In Sweden Sami are exclusively authorized to herd reindeers. Reindeer herds move every year from the coast to the mountain and back. The herding rights include the right to graze the reindeers everywhere in the areas of the Sami community (regardless of the ownership and management of the land). Finally, the study area includes the City of Umeå, which is the biggest city in Norrland (one of the three traditional lands of Sweden).

Main points of discussion and conclusions

The participants discussed the case study with its coordinators and stakeholders Jim Persson and Göran Jonsson, both reindeer herders from a Sami Community. The main outcomes are summarised in the following section.

Stakeholder involvement

Overall, the stakeholders involved in the process for UNESCO MAB application were more than 50 different organisation, including state regional and local authorities, Sami communities, NGOs, Fishing, Wildlife, and Forestry. In particular, the forestry sector is very important and dominating stakeholders; on the other hand, the Sami communities represent a minority group whose interests and needs are often not heard or somehow neglected.

In its initial stage, the stakeholder involvement for the application for UNESCO MAB started in fact as a top-down process dominated by the manager of application. This process, however, did not succeed in achieving the desired outcomes. After a year, the process was restarted (with a new manager) and redesigned as a more bottom-up process. Among other aspects, the process incorporated socio-cultural data, i.e. the reindeer herders mapped the reindeers grazing ranges and their transition routes. Interestingly, this socio-cultural information from reindeer farmers could be confirmed by systematically collected, and long-term data from scientific research on the socio-ecological challenges in the areas, such as the studies on the decrease of forest floor lichen described hereafter.

Identified trade-offs in the investigation area

In study area key trade-offs exist between reindeer husbandry, transportation, tourism, forestry and mining. In particular, from the reindeer husbandry perspective, several key challenges arise from the forest management. Among others, a major challenge is related to availability of lichen, which is a key resource for reindeers: it is their feed in winter. The reindeers need open, old forests (dominated by Scots Pine) where they can find feed and rest, rather than mid-aged forests that offer less feed for reindeers. Studies carried out in the study area have shown that forest floor lichen (important feed for reindeers) cover in forests have decreased by 70% in 50 years. There is not enough grazing sites for reindeers, with additional costs in terms of artificial feeding, and transportation needed. In fact, there is a need of active forest management with thinning to keep the forest open for reindeers. However, current forest management (mainly by private forest companies in the low lands, these are the winter grazing areas for the reindeers) consists of cutting down, soil scarification, planting Norway spruce or Scots pine, which produce little lichen.

Indeed, a key aspect here is the fact that the Sami have the right to graze reindeers on the land – but the management is by the land-owner. Thus, when a forest company plans a clear cutting of a forest, there is a mandatory process involving the local Sami community. These regulations, however, do not apply to private forest owners. In addition, the accessibility to land for natural long-range reindeer migration is limited due to natural (e.g. steeps) and man-caused barriers (e.g. railways, highways, cities). Generally, the magnitude of different land uses, e.g. forestry, wind mills,

mines, built infrastructure, in combination with natural disturbances such as predators, creates a difficult situation, which becomes even further difficult with climate change.

Finally, from a sustainability perspective, perhaps the most crucial aspect is the role that reindeer husbandry has had in shaping the entire landscape for several millennia. It is important in fact there is a strong spatial coupling whereby the decrease of winter grazing areas in the lower parts would cause changes also the biodiversity rich mountain regions – because of the change in the reindeer population. This is an example of the need for integrated investigations on the landscape scale to understand land change dynamics.

Session 5: Discussing “Dissemination & Communication, and Implementation”

This Session was aimed at exploring the needs and requirements associated to the steps of “Dissemination & Communication” and “Implementation” in the MAES process in the three case studies. More specifically, it served to discuss the main challenges and ways forward in the integration of the MAES results to address specific questions in the case studies. Moreover, “Dos and Don’ts” on how to communicate and disseminate the MAES results were examined.

Following are the key points emerging from the two case studies.

Hungarian case study

Specifically, the project ‘Ecosystem services of karst protected areas – driving force of local sustainable development (Eco Karst)’ builds on the opportunity to use the natural heritage of protected areas as an economic development factor. Ecosystem types are mapped, ES identified, assessed and, where applicable, economically valuated and spatially visualized. The results of ES assessment will then be a basic resource for the discussion on increasing pro-biodiversity business (PBB) opportunities within local small and medium-size entrepreneurs. Involving various public and private actors into capacity building, networking and know-how transfer, local PBB action plan will be developed by participatory approach. The aim is to contribute to a better balance between nature conservation and local entrepreneurship.

The below specific policy questions were raised in the case study (selected from the list of ESMERALDA policy questions):

1. How can the data & knowledge gained through MAES be used by local planners (...)?
2. (...) Are there measures planned to overcome the potential bias of ESs perceived as another business opportunity to “Harvest from nature” without sustainable management?

To be able to map ES capacities and use the results for stakeholder communication, there is a need to better define the concept of sustainable ES capacity. In our understanding, sustainable ES capacity means on one hand the highest yield or use level that does not negatively affect the future supply of the ES (Hein et al. 2016¹), on the other hand a yield or management that does not negatively affect the ecosystem condition underlying the service supply. To ensure that, ecosystem condition (in most cases, biodiversity) indicators are applied and potential trade-off between provisioning ES and biodiversity are analyzed.

For the same consideration, in protected areas use of certain ES is often restricted with legal or institutional tools. When mapping ES capacity, such restrictions were applied as an additional spatial

¹ Hein L, Bagstad K, Edens B, Obst C, de Jong R, Lesschen JP (2016) Defining Ecosystem Assets for Natural Capital Accounting. PLoS ONE 11(11): e0164460. <https://doi.org/10.1371/journal.pone.0164460>

layer on the biophysical capacity map, the logic of that is shown in Figure 5. This, in addition to considering trade-offs, helps avoid misinterpretation of ES capacities as potential exploitation of marketable goods on protected areas.

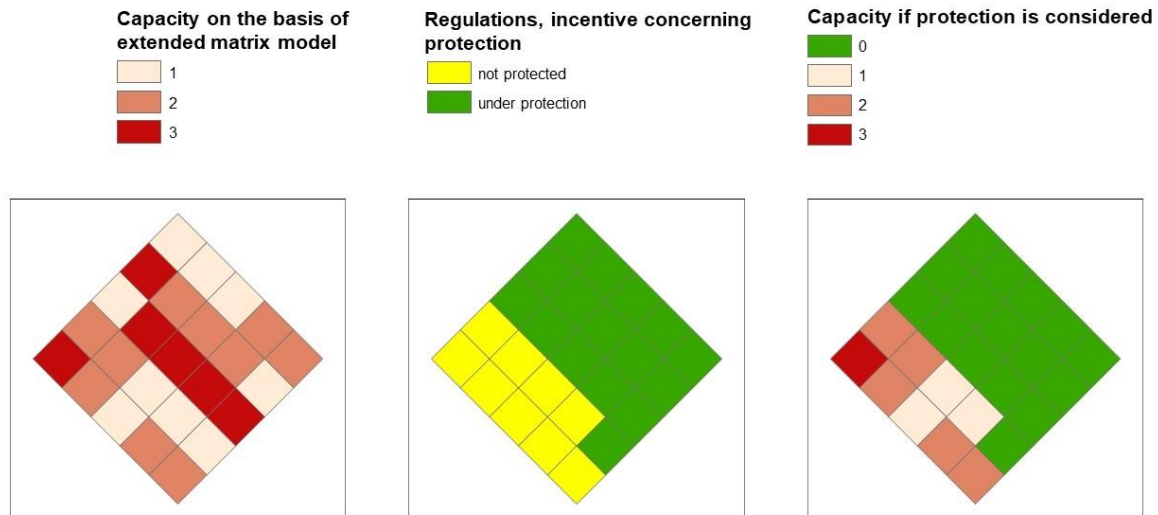


Figure 5. Incorporation of regulative restrictions of ES use into ES capacity maps in the Eco Karst project.

Main points of discussion and conclusion

How to implement the results to address question related to businesses and citizens.

Communication to stakeholders is a process of social learning: the aim is to help people with contrasting interest have better understanding of multiple aspects in the end.

- Such processes often offer opportunity to raise awareness of the real value of nature and to resolve existing conflicts between sectors.
- It is key to understand that local people are extremely important to protect local natural capital, e.g. in the Bükk case, protection of karstic water depends on the locals, while it is used by 1 million people in a much wider area.
- Time scale matters: focus should be shifted from short to long term interests.
- Spatial scale also matters: according to the experiences of several projects carried out by the Bucharest University, provisioning and cultural services were more valued at local level while regulating were more valued at higher levels (regional, national).
- When planning business opportunities, legal constraints have to be considered: land ownership and land management regulations often create restrictions for potential new businesses.

“Dos and Don’ts” on how to communicate and disseminate the results:

- Most important message for stakeholders is not the details of models and maps but the actual exercise of thinking together and aiming for a common understanding of the value of ecosystem services and sustainability.

- To help systemic understanding, create some sort of aggregated ES map.
- Focus on trade-offs and show the interlinkages between ecosystem conditions, ES, nature conservation and different human activities and policies affecting them. If possible, analyse ES trade-offs and synergies in a structured way, e.g. use a matrix with all ES against all ES.
- Aim at ES optimization.
- Use simple language: they will not understand technical terms.
- Find the bridge people (see notes from session 4) to multiply the effect of your message and reach other sectors too.
- Fine tune your approach and method in each particular situation to get better understood.
- Don't go with your ready solution to the stakeholders but listen to them and make them think – then translate and interpret their ideas. This way it is possible to create sense of ownership and local support.
- Help stakeholders interpret the maps, let them understand the interlinkages. On the other hand, don't overestimate the message of the map – it's visualization of a lot of assumptions.
- If legal regulations are incorporated in the maps, communicate that clearly.
- Not just the good examples worth sharing but the obstacles too!

Finnish case study

In the case of the city of Järvenpää, results of the ES mapping and assessment were disseminated and communicated during various events linked to green infrastructure.

Main points of discussion and conclusion

- Easier to communicate to people that have experience with the concepts. Not many people are used to work with map based data and a strong focus on green.
- Limited evidence that Stakeholders from other city departments used the data and maps as factual information. Potential is high, but people are always busy, thus if it is not a simple readymade tool, people might not use it.
- Politicians (according to stakeholder present) know that there is such a study related to the master plan, much good information and ideas, hence it could be good that politicians access it, but need a clear summary, and maps with names, simplifying the information.

Examples in Communicating ES studies in other Member States:

- Finland: the concept of biodiversity seems a bit negatively connoted, thus people do not like to work with it. ES as such might be vague, but when it is properly explained, it is a suitable conceptual framework to explain the meaning of Ecosystem Services to the public. However, in communication, recreational and ecological values are framed as such.
- Belgium: the ES concept connects people from different disciplines, e.g. farmers and biologists, by finding shared values, and shared narratives. However, often without explicitly framing it as ecosystem services.

- Poland still faces challenges with planning as there are no master plans but rather regional plans on smaller scale. Hence, assessing ES becomes difficult as the holistic focus is not needed. Here, more input from government would be needed, as current efforts are restricted on research. Poland thus follows the international agreements to map and assess ES for biggest cities within 10 months.

Enhancing discussion/communication between researchers and city stakeholders:

Presence of researchers in meetings/workshops could be an asset: this is not happening often yet. At the moment, consultants take over most of spatial planning projects. Therefore, a format where consultants, researchers and spatial planning organization collaborate could enhance communication.

A comprehensive summary of results (not more than four pages) for policy makers and governmental actors is needed. This is something they may have time to read. For spatial planning in Jarvenpää, communication went well during all stages, also the international attention that Jarvenpää receives with this invitation to ESMERALDA shows that communication was successful.

Collaboration is crucial as joint methods are needed, where ES are selected together with stakeholders, not to forget any very important services. Here, researchers need to be involved in the process. However, sometimes, researchers tend to complicate things. **Don't simplify the problem, but communicate it simply.**

Swedish case study

The break out started with the presentation by the case study coordinator of an article published the 8th March 2018 in the local newspaper *Västerbottens-Kuriren*. It was a response to an article against the candidacy for UNESCO MAB that appeared a month earlier. Interestingly, the response article was signed by 30 persons from 26 organisations, including regional and local authorities, tourism, nature conservation, academy, forest companies, Sami communities etc. Content wise, the articles addressed all the burning issues. Starting from the title, it refers to the UNESCO MAB as an "elevator" for the nature and the local people. Following, it emphasized that there will be no land-use restrictions and recognise that there will be sustainable initiative and business development for the future. Actually, the river valley could be a "beacon" for other areas with similar premises. Indeed, a key aspect is the fact that the authors comprise representatives of large and small businesses, society and service, protected areas, recreation areas, tourism as well as strong and internationally recognised researcher institutes. In turn, this was possible as a result of the long process of stakeholder involvement with more than 160 different meetings with the local people and organizations. By including engaged stakeholder, the process has in fact succeeded in establishing an arena for long-term sustainable development.

Interestingly, the emphasis of the project remains on “Juhtatdahka” –reindeer husbandry – as a rather unique living example of a sustainable land use for sustainable societies. The term Ecosystem Services was used in the communication. Its ultimate goal is to “empower” the area by supporting, maintaining and developing the specific natural and cultural values. An example of this is the expanding tourism industry, with tourists that look for “qualities of life” through amenity values. Potentially, the tourism industry can expand without negative impact on the Sami culture and reindeer husbandry land use. *But it’s a challenge.*

Main points of discussion and conclusion

With the direct anchorage with the County Administrative Board of Västerbotten and the Municipality Boards involved in the UNESCO-MAB-process, the outcomes of the ES mapping and assessment process will contribute to regional and local ES understanding and use as input data in territorial planning. Yet, for exploring and solving the conflict risks and elucidating integration and synergy opportunities among reindeer husbandry and other land uses, appropriate ES mapping and assessment will be needed for stakeholder-informed and sustainable operational landscape planning. At a national level, the case study is particularly valuable in terms of continuing building of know-how on ES applications with the Swedish EPA research and communication programs.

At an international level, the UNESCO MAB format offers indeed an excellent platform. Through the MAB-program and the following steps towards formal reserve membership for the Vindelälven-Juhtatdahka site, the specific case study can push forward the inclusion of ES-applications as key ingredients in the global MAB-network with the SDG and Agenda 2030 as the main framework. Yet, ES mapping and assessment of natural and cultural values of the Scandinavian mountain and northern boreal forest landscape, in particular, those associated with the Sami culture and reindeer husbandry, still has some steps to take – but it is a promising route to explore.

The case study is a good example on the integration of different methods, scales and stakeholders. Yet, key barriers were due to pressure from different and new land users – tradeoffs. At the same time, key aspects that contributed to the success of the process include the co-creation of maps and the fact that stakeholders were compensated for their work. In terms of co-creation, for example, the path to the assessment was discussed and agreed upon from the start, resulting in the strategic decision to focus on reindeer husbandry.

Session 6: Reporting key points from sessions 4 and 5 + Q & A

The main outcome was the sharing in plenary of the key points that emerged during the breakout discussion on the case studies with respect to “Network creation and Involvement of stakeholders” (**Session 4**), and “Dissemination & Communication” and “implementation” (**Session 5**). Marion Potschin-Young (Fabis) chaired the session.

Hungarian case study

- A network analysis of people and institution is crucial step to identify key stakeholders, and only then can the real involvement start. This is very useful to uncover additional key actors and reach a much larger group. Actually, the results could be a surprise: the key actors are not necessarily those from the institutions that are thought to be most influential sector (e.g. forest rather they are the animal keepers).
- Importance of building trust also by addressing key stakeholders that act as ‘Bridge People’ to reach larger group of people. Creating ownership is crucial; before asking you should really take care of the persons to explain the scope of the project. From the early stages, try to find the issue that will make them want to cooperate.
- In terms of, communication and implementation, having identified the stakeholders and produced the relevant ES maps, how to communicate the results is essential. To motivate stakeholders’ involvement it’s important to understand their needs: e.g. identified a couple of challenges, ownership issues are a key barrier to implementation but could also create opportunities.
- More than the details of the maps, their communication was far more important. Thinking with the stakeholders, listening to them and not going with ready solutions but actually listening to them (in their language). Focus on the systemic thinking that the specific trade-offs.
- As more case studies apply the same methods, perhaps in slightly different ways, there is potential for learning from each other experience. Importance of sharing not only good example but also mistakes.

Finnish case study

- From the stakeholder point of view, their involvement should start at the very beginning (e.g. in the first stage, the stakeholders were the planner; so we started working with them from the beginning cooperating all the time).
- Regarding citizen involvement, different participation methods should be applied to reach different segments of the society, e.g. citizen workshop, online tool to gar, traditional survey for kindergartens and schools.
- It is difficult to involve people - only eight people out of 40.000 inhabitants - with online tool, much more people but you target only part of the population. We still need all kinds of approaches to involve different types of people who can provide different input. For example,

in the case study it was found that ecological connectivity is more important for the citizens than for the city planners and sectoral departments.

- In terms of implementation, it is difficult to engage stakeholders when there is no actual decision-making going on. Even if there is interest in the outputs, there is not enough time to focus on them. Thus, the importance of having a summary of the research results: one map and a very short summary - clear message - not simple message but simple communication.
- A concrete suggestion is: Don't simplify the problem keep the problem as it is but try to communicate it simple.
- Finally, the case study was a collaborative process between researchers and planners interacting regularly, which turned out to be very beneficial way of working for both sides.

Swedish case study

- Part of the UNESCO MAB initiative, the case study covers a large area with multiple interests but the focus was on reindeer husbandry that reflects the local traditions and values. The UNESCO MAB process has been going on for several years, with more than 160 public meetings. It started as a top-down process but with little success, so it started all over again with a more bottom-up and participatory fashion. I think the failure at the beginning was kind of the cause for the success later on.
- The process included several stakeholders from different sectors of the society in addition to benefiting from several ongoing projects in the areas.
- The use of the ES concept with focus on reindeer husbandry was crucial for the success of the process. Reindeer husbandry in fact takes place over a large area, involving multiple sector and actor; and ES approach can help address situation of trade-offs and potential conflicts through appropriate landscape planning.
- It is important to have long-term scientific data to be used together with local profile of ES with a strong participation component, for example, in scenario analysis - what happens if we chose this or that direction?

Session 7: Stakeholder panel discussion - Engaging citizens & business

The session was aimed at exploring how to move from current practices to novel and more effective approaches in engaging citizens and business as well as communicating and implementing ES mapping and assessment results. Specifically, the session explored how to improve the role of stakeholders and citizens in planning & decision making related to ecosystem services; how to improve and engage the business sector towards ES mapping & assessment and responsible use of its results; how to improve the communication between stakeholders, citizens, researchers, politicians, planners and businesses.

For the panel discussion involved the stakeholders from Hungarian, Finnish, and Swedish case studies as well as Simone Quatrini from the ETH Zurich. The ESMERALDA community was interested in learning about the practical experience-based knowledge from stakeholders about the engagement of citizens and businesses. The discussion, which was moderated by Leena Kopperoinen and Arto Viinikka (SYKE), could potentially target a wide range of policy domains and sectors including: nature conservation, climate, water and energy, marine policy, natural risk, urban and spatial planning, green infrastructure, agriculture and forestry, business, industry and tourism, and health.



Figure 6. Stakeholder panel

Main points from the discussion

The panel discussion was divided into three blocks, stakeholder in general, citizens and businesses. For each block, the stakeholder panel members were presented with a list of potential questions they could answer with reference to the themes policy domains and sectors presented above.

Stakeholders in general

According to the panel, relevant stakeholders are those involved in the land uses where potential investment is taking place. Thus, they depend on the context and on the scale of the landscape/ extent of the area. Different users as farmers or businesses, which make use of the resources should be considered as well as local communities and authorities. However, it is not just the question who is involved from the policy perspective but it is very important to find a common ground and to find ways that are acceptable to everyone. It was found important that the scientists should not just come and claim to conduct a study, rather the stakeholders should get a say in the study itself. All of this was found relevant for example for the policy sectors natural risk, nature conservation and agriculture and forestry. However, the panel members agree that these aspects always need to be specific to the context.

In particular, the stakeholders from the Swedish case study pointed out that some issues need to be addressed globally, which makes it very difficult to identify stakeholders. As example they mentioned climate change, which is having significant impacts on their lives and reindeer husbandry. They emphasized that many actors and stakeholders need to be involved. Similarly, at a national level, they acknowledged the importance and the challenges of involving several stakeholders given that they travel long distances together with their grazing reindeers a lot of different areas and thus different stakeholders are involved. The stakeholder from the Hungarian case study explained that the state of the national park depends on forestry management, local tourism activity and nature conservation thus including authorities, business and citizens. Foresters do their regular work with regard to their regulations and planning, usually the old fashioned way (e.g. clear cutting). Thus, the main challenge is rising awareness and promoting a mind change towards sustainability. However, as their current practices are sustainable according to the Hungarian law, this is a difficult task (the ECO KARST project may help). The stakeholder from the Finnish case study also mentioned the issue with the “*old*” fashioned way. The stress lied on the “old” and referred to the age and respective mind-set of a great share of the policy makers.

In conclusion, the panel agreed upon the fact that “we” are still a minority and we are facing a lot of mainstream policies and economic development that takes place at the expense of our planet and natural resources. Thus, there is an imbalance in terms of discussion with stakeholders, even though it is improving.

Citizens

A panel member explains that we all as citizens have important power, making decisions on what to buy (as consumer). This decision provides vote and data. In countries where choices are given to consumers, the consumer can decide sustainable. It was identified as relevant that one does not try to reinvent the wheel but learn from knowledge that we already collected in the past. In combination with the modern technology almost everything is feasible – living in harmony with nature. Stakeholder found that the civil society in several case study areas nowadays is quite liberal, modern and environmental thinking. The panel explained it is necessary to have opinion of many people, not only few. The local knowledge is very valuable, e.g. about traditions which regard to animal keeping. Therefore, many local people from the villages should be involved, collecting local information on land use. This kind of stakeholder involvement usually works better via personal communication, no online doodle or questionnaire. Of course, this is very time consuming. Jim Persson from the Swedish case study outlined their recent situation. He, as a reindeer farmer start in 2011 to identify important areas for grazing. He consulted other members of the community and they marked the important areas, drawing in maps. Afterwards, two people sat down writing conclusions on their findings. When everything was finished, the maps indicated their picture on the priority of the different land/land usages. Later GPS technology was included and more or less the same picture arose. As a result more people started to listen and hear their voice.

Businesses

The stakeholders from the Swedish case study share their personal experience. Around 20 years ago, working with reindeers brought a good income. Nowadays, it is very hard to make money from reindeers. If one could still keep what is earned from the reindeer husbandry, one would have a good living but the income is split among different sectors, e.g. politics and forestry. Another important aspect, which is also closely connected with the economic stand, is the health in the communities, which live from and with reindeer husbandry. A very bad and alarming development can be seen with regard to the health of the reindeer hunters. The number of suicides is higher than average and increasing.

In the Hungarian case study area, most business belong to the state. There are several small or medium sized business around. However just very few belong to the private sector. An exception is the management of the grasslands. Contracts exists between the authorities and small local business with regard to grazing and haymaking. As the society is dependent on work places and thus industry, one always needs to make compromises between these interests and green structures.

Finally, it was pointed out that it is not very useful to generally think of business as entity out there. Businesses are rather the response to our demand as consumers, promoting sustainable business through sustainable choices. Overall, it became clear that one should really take time and elaborate this matter carefully.

Session 8: Final Guidance Documentation and other final ESMERALDA products

The aim of the session was to present the structure and template of the ESMERALDA Final Guidance Documentation, to agree upon an appropriate name for it, and to assign pending writing tasks to project collaborators. Moreover, the session served to present the final version of the ESMERALDA “Online tool” and the ESMERALDA Glossary, including further actions required by the consortium.

Final Guidance Documentation

The session started with an input presentation by Pavel Stoev (PENSOFT) who illustrated the temple of the Final Guidance Documentation including example of its online version (see figure below). The Final Guidance Documentation is also accessible via the provisional address esmeraldaguidance.devtest.science.

Main points of discussion and decisions

- The very last date to deliver information to fill into the website is the **end of April**.
- Before submitting any information: Check who is the responsible person for the whole page; then provide info to the responsible person for the whole page who will contact Pavel. NB. At the bottom of the templates it is possible to check who is responsible for content.
- Regarding filling content of the website: most of the pages require visuals, when submitting visuals, **make sure they are copyright free**.
- As soon as something is ready, send to page coordinators and Pavel.

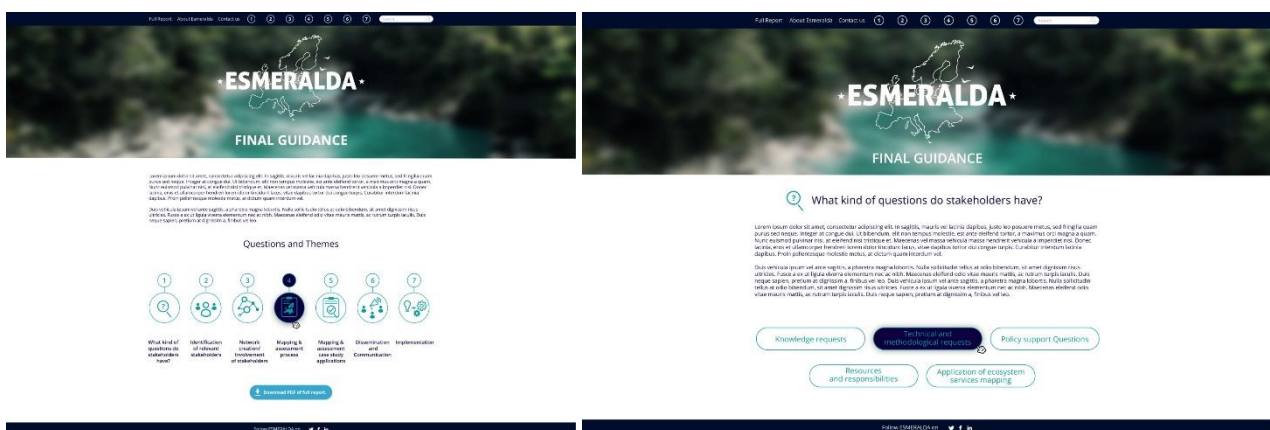


Figure 7. Illustrative screenshots of the Online Final Guidance Documentation

ESMERALDA Online Tool

An update was given by Steffen Reichel (PLUS) who briefly described the development of the ESMERALDA Online Tool. Specifically, methods and applications have been collected, based on the online questionnaire and compiled excel sheet. The rationale behind the “Online Tool” is thus to connect methods with studies and/or science and grey literature. This has been achieved by the structuring the querying logic thorough a number of filters.

The latest version of the database is not online yet, but will be in one week time (provisional database address is database.esmeralda-project.eu). The database has undergone many changes since the first version. There has been discussion how to organize/explore the database in the last months. Now the database entries are also classified in terms of policy questions, Zurich colleagues are doing the same re-structuring in terms of tiers. This should be ready by the end of the **March 2018** in order to have it ready for Brussels.

Regarding the database user experience, it is possible for users to choose to look for literature or methods, and then select information through the filters. There are many extra filters that can be added to the query, this however could be overwhelming for the user. Therefore, an alternative way to access information is through the case study booklets. The case study booklets can be accessed via a set of structured information on scale, domain, ecosystems assessed, etc. All this information can be translated into a database query with precompiled filters so the tool finds similar cases/literature. One of the new filters ready for use is **policy questions**.

In conclusion, the key aspect that need to be addressed before the Final Conference in Brussels include (1) finding an appropriate name for the database, (2) integrating tier level (to be done by Zurich team), and (3) polishing the User Interface to improve accessibility (to be done by Steffen).

Main points of discussion and decisions

- All coordinators should check the case study booklets information in the database/site.
- While we cannot guarantee the possibility to incorporate a new data in the future (this depends on where the database will be stored), it is still possible to add new data now; the online questionnaire is still working and has been improved.
- A decision must be taken on where the tool will be allocated for the afterlife of the project. Which community could host it? Several options available: ESP, OPPLA, BISE...
- A key challenge is how to deal with the fact that the ESMERALDA databases uses an older version of the CICES, i.e. 4.3 and not 5.1. After a long discussion, it was agreed to keep the ESMERALDA online database based in version 4.3 and to provide clear information for user that need to apply other versions, e.g. the translation link.
- Presently, the links among the different ESMERALDA products are not so clear: we need more and clearer links between the method documentation, the booklets and the methods databases. For example, the only access is through the tool and the online database is very focused on methods, but there should be access from other sections. It was suggested that we need to

check when we are testing what kind of results we can get of the tool and try to make entry points from all possible levels. Moreover, we should try to get the focus out of methods, and this should be perhaps reflected in the name of the tool, away from “methods”.

- Regarding the method application cards, Stoyan Nedkov (NIGGG-BAS) agreed to coordinate the update of the application cards, including the translation form the old to the new methods.
- Leena did not receive too many replies whether the case study sheets are ready or not. This question was sent at the end of last year, got only a couple replies. The authors of the method cards must check whether they agree to publish the method cards. All the other codes used in Prague and Madrid are not valid anymore, should the method coordinators check this? The method leader should go through this, check if it is updated. But make sure to give Leena a confirmation that it is ready to be updated.
- Some partners have encountered issues with the internal communication, it was agreed that Pensoft would send a test email to all within the fortnight.

ESMERALDA Glossary

The last part of the session began with an update on the development and status of the ESMERALDA Glossary by Marion Potschin-Young (FABIS). The glossary was constructed based on OpenNESS, which was the results of a two-year consultation process. In ESMERALDA, the Glossary has been expanded by adding more terms related to mapping. Yet, the glossary still needs to be updated also based on the experience we all have in our own areas. If a specific term is used in the Deliverables, the authors should make sure the definition is included in the glossary. If there are doubts about different understandings of a definition, this should be discussed with Marion. All terms used should be in accordance with the content of the glossary. If there are discrepancies about the terms in the glossary, it is still possible to fill questionnaire in survey monkey, being clear about the reasons for overwriting existing terms and be ready to discuss it with the coordinator Marion Potschin-Young (FABIS). In conclusion, it was pointed out that new set of terms from the methods compendium has been added to the final glossary (40 terms). Moreover, there is a glossary out form the ETC/BD with focus on ecosystem condition. This glossary should be checked against the ESMERALDA, to see if there is something what we are missing.

Main points of discussion and decisions

- Within ESMERALDA, we are aiming at creating one of the most comprehensive glossaries in the ES community. Actually, there are already many projects using the glossary ESMERALDA; so perhaps we should consider the option of publishing, maybe with Pensoft? A suggestion was to turn the glossary into a data paper.
- Regarding definition coming from the IPBES, it was agreed to include the five-six most important terms into the glossary and clarify how we are using them in ESMERALDA.
- Generally, when a new definition is added to the glossary, authors should point out where it comes from and give credit to the original definition.

Session 9: Discussing final Deliverables

Final Deliverables (WP4)

Deliverable on the Integrated Ecosystem Assessment (IEA) (D4.8, due in month 42)

The structure and content of D4.8 was presented by Marion Potschin-Young, focusing on how the case studies included in the document can be related to the IEA framework, methods and policy questions.

- Input documents had been circulated: D4.7 outlines the structure and content of D4.8, MS22 is also a component of it;
- Background to the development of the framework: MAES report already discusses IEA with the official MAES diagram for IEA published – this is our starting point, but with attempt to include the graph very recently published by Burkhard et al²;
- Purpose of the deliverable: it will be the final IEA framework document of ESMERALDA and will show how it can be used in a series of case studies; and,
- Feedbacks received by email were presented.

Discussion aiming to reach common understanding of the term 'integrated assessment'

The following questions were raised during the discussion.

- Clear definition of integration is needed: integration is multifaceted with different dimensions, but what does it really mean in terms of ES assessment? How do you integrate e.g. ecosystem condition / values / stakeholders? What dimension of integration we talk about in ESMERALDA?
- Narrow context vs integration: integration also means a comprehensive assessment, avoiding focusing on a single ES or just a few productive provisioning ones – instead, all important ES of the landscape has to be integrated. This is a very important communication and decision making tool.
- Social aspect: the current framework¹ lacks a strong social aspect – stakeholders – although they are very important as knowledge producers and for ground checking and use results. Stakeholder involvement allows adaptive co-management, the problem 'changes' as you involve more perspectives.
- Potential misinterpretation of ES resulting from stakeholder integration: e.g. too much production focused attitude. In such cases, it is a social learning process where all opinions are valid and instead of bringing ready solutions, as many different opinions as possible are brought together. This will create the integration aspect, to make them understand system-level linkages. Selection of stakeholders is important.

² Burkhard B, Santos-Martin F, Nedkov S, Maes J (2018). An operational framework for integrated Mapping and Assessment of Ecosystems and their Services (MAES). One Ecosystem 3: e22831. <https://doi.org/10.3897/oneeco.3.e22831>

- Trade-offs: one should be able to map EC and ES too to show trade-offs – that could be a core idea of integrated assessment. Point is to understand the conflicts and synergies between ES.
- Integration from methodological point of view: there are methods which can be used for integration and others which are already integrated by definition.
- Different levels of integration: e.g. integration within elements of MAES, integration between EC and ES, integration of the whole process, integration between mapping and assessment, integration of the stakeholders and policy etc. – these levels should be explained.
- Communication: also a potential point of integration, e.g. the example of micro-plastics - a completely scientific finding became widely known due to communication.

The framework published by Burkhard et al. (2018) describes the *integration of mapping into assessment* – perhaps it would be more balanced if we called it this way, because in fact real 'integrated ecosystem assessment' is (should be) much wider term, you can't assess an ecosystem only on the base of its condition and ES mapping. It might worth writing a paper as comment to the one describing the IEA (Burkhard et al., 2018) in the One Ecosystem special issue.

Discussion about individual sections on case studies

During the next 7 weeks authors of the individual sections will:

- Familiarise themselves with the overall framework
- Describe the problem with which the case study deals and discuss its approach against the IEA:
 - What is the entry point to the framework from the case study perspective (which part of the framework the case study is dealing with)?
 - What methods are being used?
 - Which policy question the case study is addressing?
 - What do they integrate?
 - Would it have been done differently if they used the IEA framework – in what way would it be different?
- By end June the deliverable has to be submitted, 15 May is the deadline for case study contributors.
- Chapter authors were reminded to also respond to the exercise on IEA tested sent around by Marion prior to the Eger meeting.

Example of Polish case study was presented by Marion, indicating methods and policy questions. Authors gave a quick feedback whether this is possible for their case studies.

The deliverable will be presented like an edited book, a potential publication has to be decided.

Final Deliverables (WP5)

The breakout started with an overview of the tasks within WP 5 provided by Blal Adem Esmail (UNITN). Specifically, it was recalled that during the project, 14 case studies have been discussed: 9 for testing the first version of the flexible methodology and 5 for testing the final version.

Additionally, 17 case studies were collected but not used. For all used case studies, a Booklet and Method Application Cards were developed. Testing was done through discussions with ESMERALDA team members and stakeholders during the project meetings. Following, the discussion focused on the revision of the structure and contents of the Deliverable D5.4 due on Month 42.

Discussion on Deliverable 5.4.

During the Trento workshop, it was agreed upon to key decisions: structuring the Deliverable 5.4 “Guidelines & recommendations to support the application of the final methods by policy and decision makers and business and public sectors” following the Final Guidance Documentation. Moreover, it was agreed upon appending the Method Application Cards to the Case Study Booklets, which provide crucial information about the context of application.

Accordingly, towards achieving the Deliverable 5.4, a first step was to propose an updated structure for the Case Study Booklets - with clear sub-sections and related classification categories - in order to enhance their readability. The proposed subsections and related classification categories were thus discussed during the breakout session in Eger. In general, it was agreed that we would avoid fields that could be interpreted in various ways. We need to clearly specify what information is needed in those categories. Once we agree on structure and categories, every case study coordinator should update his/her own Case Study Booklet. It shouldn't be too much work: existing material should provide enough input.

Finally, to increase the incentive for people to contribute to this work, making an official publication discussing all the ESMERALDA case studies was strongly advised. A powerful and catchy publication would be great. Moreover, although we officially only need to write this Deliverable for the commission, our aim is to make it accessible and interesting for a bigger public.

Specific points of discussion and decisions

- **Section 1.1. An overview of the study area:** Keep only the three categories, leaving out ‘Other information’ such as population and land cover types that are more specific than the biome level and not covered by the case study.
- **Section 1.2. Objective of ES mapping & assessment:**
 - For each case study, specify the main theme (out of the nine proposed), plus indicate the other two max three themes to which the study also makes a contribution. So, for example, in the Latvian case study, the primary theme is “Marine policy” and the other two secondary themes are “Nature conservation” and “Business, industry and tourism”.
 - The word ‘spatial’ in the theme ‘Urban spatial planning’ causes confusion. If we remove ‘spatial’ here, we also need to change it in other ESMERALDA products. If that is easy we can do it, if not might not be worth it.

- Discussion on that we need to make a distinction between objectives and domains. The current list includes more domains instead of objectives. Maybe we could change the word 'objectives' in title and explain what is behind and what the purpose is of this section. We should also consider selecting main domains, related sectors and specific objectives. The project coordinators will think about if we'll change it or not.
- **2.1 Typology & # of stakeholders:** Explain what is meant by different categories (e.g. 'Decision makers': are decision makers elected politicians only? People work for agencies don't have political mandate for instance). Suggestion to change 'Decision makers' into 'Competent authorities' and 'Citizens' into 'General public'. Generally, don't make too many subclasses and perhaps wait for typology of stakeholders to be proposed by WP 2.
- **3.1.2 Conditions:** Replace 'Conditions' by 'Ecosystem conditions' in title. Specify that "Yes/No?" means "Was the of ecosystem conditions assessed in the study?" Finally, specify that the applied method can be reported in the field "Data".
- **3.2.1 Identification of ES:** Delete category 'Mix'
- **3.2.2. MAES: biophysical methods, socio cultural methods, economic methods**
 - Need to give list of all ES; don't make more matrices
 - Need for quick overview that is easy to understand. After introduction tell which methods were applied in this case study. Refer to the booklets for specific information.
 - List with methods to tick is enough. Need to click more methods.
- **3.2.3 Integration of MAES results:** Need for more explanation on what is meant with linking or actual integration. What tiers? Add services. Make it very clear for people who have to complete it. Aren't you always integrating, if you use more than 1 method? Is linking when your use the result of one method into another? Check how it is exactly explained in other ESMERALDA texts. How we phrase here should be in line with other deliverables. Suggestion to change answer option in making choice between linking and integration and have good explanations.
- **4.2 Implementation (i.e. impact on policy & decisions):** Need to mention different results here. List is too long and not clear. In the accompanying scheme, results are split into 3 different result types. Pathway 1 corresponds with section 4.1, this one can be deleted. Pathway 2 and 3 are different they need to be kept. This section gives a tool to compare different case studies. It shows impact on different levels. Case study coordinators give own interpretation to each pathway.

Session 10: Discussing the final conference, publications, and life after ESMERALDA

The aim of the session was to update on the status of the One Ecosystem Special Issue and other publication ideas as well as to discuss activities foreseen after the completion of the ESMERALDA project (platforms, networks, etc.). The session also served to present and discuss outline and content of the final ESMERALDA Conference in Brussels.

Status of the One Ecosystem Special Issue and other publication ideas

So far five papers have been published in One Ecosystem Special Issue (Open Access). Nine papers are in progress in (ARPHA). All accepted papers that have been submitted before end of April are included to special issue (editorial). This requires including Esmeralda into acknowledgements (with funding reference). After April, papers can still be published in One Ecosystem. However, at this point authors must pay submission fee. Article about the overall process of ESMERALDA has been suggested. Everyone who is interested can contribute as authors.

Structure of the final conference

The EU Commission has high expectations about the outcomes of the project. ESMERALDA should be profiled as success story that should be taken into account when organizing the final conference in Brussels. This means interesting speakers and presentations from the EC point of view. The conference will be held 11-13.6.2018 in Brussels.

EC wants to stress the integration and use of multiple EU projects and their outcomes. For example, ecosystem and natural capital accounting is next step after ESMERALDA and the outcomes should be linked to that. At least one representative from every EU-country should attend to the conference, but the maximum is at this point two. Inge, Joachim and Benjamin will send the invitations. Participant can also be ESMERALDA WG member. In conference there might be press release, but this is not sure yet.

Some practicalities related to final conference:

- Venue is close to EU parliament.
- The cost of the hotel is 130 € / night (you need to fill a specific and send it to Inge).
Alternative accommodations will also be included but may be far away.
- Place of the welcome reception is still under negotiation
- Call to conference participants: If possible, bring some food/drinks from your country (e.g. Natura 200 areas or nature reserve) for tasting in the conference.

Life after ESMERALDA

The discussion started with Leena Kopperoinen (SYKE) presenting key points related to maintaining the stakeholder network in the future. Countries are in very different situation in terms of existing networks. Some countries have multiple active networks, but other does not have much yet. To improve the existing networks and to create new ones the main thing is to understand the benefit of having networks. Countries where networks exist could provide examples of the benefits of the networks. Here we should be able to show the benefits in practice. If national network building seems to be too difficult at the beginning, country could first set up the regional or local networks and extend to national after that. Here are listed some of the prerequisites related to network maintaining highlighted in the discussion:

- Importance of resources and enthusiasm. People who are motivated should take the responsibility.
- Importance of the regular meetings to keep the network active. However, we should not invite always the same people to join the meetings, but rather try to invite new people also
- Network group should be still small to be effective to support national mapping & assessment

Network maintaining will be part of final guidelines. This could be managed through existing platforms such as ESP or OPPLA. Negotiations with both existing platforms are pending. The partner for FSD (Sara Mulder) will ask if it is possible to arrange some kind of network webpage through ESP. Discussion are underway with OPPLA people about the possibilities and expenses.

It was discussed that we could try to arrange network meeting in the next year without ESMERALDA to see how this networking goes. However, this requires funding and yet there is no idea where to get it. It was also suggested that countries having e.g. regional ES projects could invite experts from ESMERALDA. This could be partial solution for maintaining networks from researcher's side. Still we need also stakeholder side.

Finally, concerns were raised regarding the individual privacy rights with respect to the list of stakeholders. In general, there will be changes in legislation (EU GDPR legislation) that is still unclear how it will affect e.g. different platforms and their policy related to personal data. In the future you cannot store individual information anymore e.g. e-mail list and to use it other purposes. Pensoft is following the development of the EU GDPR and will inform this in final conference.

Maintenance of the ESMERALDA Products after the project

Pensoft will maintain websites at least 5 years after ESMERALDA. BISA, OPPLA, ESP are possibilities to maintain ESMERALDA data and products as we need database were the data is physically stored. OPPLA is good option but not do this free (annual fee). Discussions with OPPLA are pending. Pensoft will be discussing with them. ESP is also relevant platform and according to Sara ESP happy to host the ESMERALDA database. Sara Mulder presented ESP network (<https://www.es-partnership.org/>)

and reasons to become a member including the fact that you can easily connect other ES colleagues and WGs active in different themes, have access to conferences, publications and possibility to publish in different journals, have access ESP platform (get URL), increase the visibility of your country, and have the possibility to direct questions to other ESP members.

APPENDIXES

Appendix A1: Workshop programme

Appendix A2: Participants List

Appendix A3: Field excursion

Appendix A1: Programme overview

This appendix contains the programme of overview of the ESERALDA Workshop VIII “Testing the final methods in policy- and decision-making (II)”, held in Eger, Hungary, 19th – 22nd March 2018.

ARRIVAL DAY: Monday, 19.03.2018			
Time	Event	Format	Location
16:00-18:00	Executive Board meeting	(for EB members)	
18:30-20:00	Welcome reception	Everyone welcome	

DAY 1: (Case studies) Tuesday, 20.03.2018			
Time	Event	Format	Location
08:30-09:00	Registration		
9:00-9:10	Welcome and introduction	Plenary	Liget I
9:10-9:30	Session 1: Update on ESERALDA status & progress	Plenary	Liget I
9:30-10:00	Session 2: Perspective on using ES mapping and assessment in the private sector	Plenary	Liget I
10:00-10:30	Group picture + Coffee break	(30 min)	Hotel Eger & Park
10:30-11:00	Session 3: Introducing Hungarian, Finnish, Swedish case studies	Plenary	Liget I
11:00-12:15	Session 4: Discussing “Network creation and Involvement of stakeholders”	Breakout	Liget I, Eger room I & II
	Hungary case study	Finland case study	Sweden case study
12:15-13:30	Lunch break	(1 hr 15 min)	Hotel Eger & Park
13:30-14:45	Session 5: Discussing “Dissemination & Communication, and Implementation”.	Breakout	Liget I, Eger room I & II
	Hungary case study	Finland case study	Sweden case study
14:45-15:15	Session 6: Reporting key points from sessions 3 and 4 + Q&A	Plenary	Liget I
15:15-15:45	Coffee break	(30 min)	Hotel Eger & Park
15:45-16:30	Session 7: Stakeholder panel discussion - Engaging citizens & business	Plenary	Liget I
16:30-17:15	General Assembly	Plenary	Liget I
19:00-	Working Conference Dinner		

DAY 2: Wednesday, 21.03.2018			
Time	Event	Format	Location
08:45-10:00	Journey to Bükk National Park	by bus	Hotel Eger & Park
10:00-12:00	Guided visit	guided visit	Woody pasture of Cserépfalu
12:30-14:00	LUNCH BREAK (1 hr 30 min)	1 hr 30 min.	Cserépfalu
14:00-15:00	Guided visit	guided visit	Répáshuta
15:00-16:00	Journey back to Eger	by bus	
19:00	Optional dinner (at own cost)	by bus	Noszvaj

DAY 3 (ESMERALDA products): Thursday, 22.03.2018			
Time	Event	Format	Location
9:00-10:30	Session 8: Final Guidance Documentation and other final ESMERALDA products– Overview, status and implementation	Plenary	Liget I
10:30-11:00	Coffee break	(30 min)	Hotel Eger & Park
11:00-12:15	Session 9: Discussing final Deliverables	Breakout	Liget I, Eger room I & II
	WP3 and WP4		
12:15-13:30	Lunch break	(1 hr 15 min.)	Hotel Eger & Park
13:30-15:00	Session 10: Discussing the final conference, publications, and life after ESMERALDA	Plenary	Liget I
15:30	Departure back to Budapest		Hotel Eger & Park

Appendix A2: Participants list

This appendix contains the list of participants in the ESMERALDA Workshop VIII “Testing the final methods in policy- and decision-making (II)”, held in Eger, during 19-22 March 2018.

#	Name	Surname	Affiliation	Country
1	Steffen	Reichel	University of Salzburg	AUSTRIA
2	Inge	Liekens	VITO	BELGIUM
3	Stoyan	Nedkov	NIGGG-BAS	BULGARIA
4	Pavel	Stoev	Pensoft Publishers	BULGARIA
5	Tamara	Kirin	CAEN (Croatian Agency for Environment and Nature)	CROATIA
6	Manfred	Lange	The Cyprus Institute	CYPRUS
7	Jan	Darek	Czech Globe - Global Change Research Institute	CZECH REPUBLIC
8	Mario	Torralba	University of University of Copenhagen Kassel	DENMARK
9	Miguel	Villoslada	Estonian university of Life Sciences	ESTONIA
10	Arto	Viinikka	SYKE	FINLAND
11	Eira	Linko	City of Järvenpää	FINLAND
12	Kaisa	Saarikorpi	City of Järvenpää	FINLAND
13	Leena	Kopperoinen	Finnish Environment Institute SYKE	FINLAND
14	Angie	Faust	Leibniz Universität Hannover	GERMANY
15	Ina M.	Sieber	Leibniz Universität Hannover	GERMANY
16	Benjamin	Burkhard	Leibniz Universität Hannover	GERMANY
17	Bastian	Steinhoff-Knopp	Leibniz Universität Hannover	GERMANY
18	Sabine	Bicking	LUH / CAU	GERMANY
19	Simone	Quattrini	ETH Zurich	GERMANY
20	Tamás	Kállay	REC	HUNGARY
21	Péter	Szuppinger	REC	HUNGARY
22	Cecília	Füzi	REC	HUNGARY
23	Ildikó	Arany	MTA ÖK	HUNGARY
24	Réka	Aszalós	MTA ÖK	HUNGARY
25	Béla	Kuslits	MTA ÖK	HUNGARY
26	András	Schmotzer	Bükk National Park Directorate	HUNGARY
27	Alon	Lotan	TAU-Hamaarag	ISRAEL

28	Blal	Adem Esmail	University of Trento	ITALY
29	Anda	Ruskule	Baltic Environmental Forum	LATVIA
30	Mario	Balzan	MCAST	MALTA
31	Damian	Łowicki	Adam Mickiewicz University in Poznań	POLAND
32	Cristian Mihai	Adamescu	Universtity of Bucharest	ROMANIA
33	Simona	Stašová	Ministry of Environment of the Slovak Republic	SLOVAKIA
34	Mateja	Šmid Hribar	Anton Melik Geographical institute, Research Centre of Slovenian Academy of Science and Arts	SLOVENIA
35	Fernando	Santos Martin	Universidad Autonoma de Madrid	SPAIN
36	Ola	Inghe	Naturvårdsverket (Swedish EPA)	SWEDEN
37	Johan	Svensson	Swedish University of Agricultural Sciences	SWEDEN
38	Göran	Jonsson	Ran Sami Community	SWEDEN
39	Jim	Persson	Ran Sami Community	SWEDEN
40	Sara	Mulder	FSD	THE NETERLANDS
41	Marion	Potschin	Fabis Consulting Ltd.	UNITED KINGDOM
42	Roy	Haines-Young	Fabis Consulting Ltd.	UNITED KINGDOM
43	Abigail	Burns	UNEP-WCMC	UNITED KINGDOM
44	Andy	Arnell	UNEP-WCMC	UNITED KINGDOM

Appendix A3: Field excursion

The field excursion to the Bükk National Park took place on **Wednesday 21st of March**. The national park is protected since 1976, to safeguard the rich fauna and flora, as well as geological and cultural heritage of the area. Important geological features of Bükk include various karst formations within its limestone mountains - particularly caves (once inhabited by pre-historic people), swallow-holes, and ravines. In the morning, the Workshop participants visited the **woody pasture of Cserépfalu**, a target area of the Hungarian case study. After the visit and lunch at the **Visitor Center of Cserépfalu**, the participants visited **Répáshuta** in the heart of the national park as well as hiked from the village to see neighbouring protected areas and the Balla cave.

