ESMERALDA

Clustering of EU Member States according to their prerequisites and needs to perform ES mapping and assessment

Deliverable 2.1

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ESMERALDA

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for policy and decision making

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Preface

The objective of ESMERALDA Work Package 2 is to develop and facilitate a stakeholder process throughout the project and to create a European network to facilitate a dialogue among relevant communities. To achieve this, the sub-objectives are:

- To identify relevant stakeholders from the scientific and user communities, as well as national and international funding bodies and to develop a stakeholder engagement plan;
- To identify and evaluate what is required in EU member states and in different sectors in order to achieve the EU 2020 targets;
- To create a functional collaboration network for the support of project activities, process of dialogue and knowledge co-creation;
- To develop both country and case study-specific profiles based on needs and opportunities;
- To cluster all member states by level of readiness for implementation of mapping and assessment activities in terms of availability of data, tools and personnel with appropriate knowledge and expertise;
- To assess the practical means and provide guidelines to support EU member states in implementation; and,
- To provide continuous support to responsible authorities in the EU member states and ensure the continuation of the network beyond ESMERALDA.

The aim of this Deliverable 2.1 is to present what is the status of the EU member states in regard to achieving the EU Biodiversity Strategy's Action 5 targets for mapping and assessment of ecosystems and their services.

Summary

The Deliverable 2.1 report presents how ESMERALDA project has identified the stakeholders of ecosystem service mapping and assessment activities in EU member states as well as analysed the status of each EU member state in those activities.

Based on the analysis member states have been clustered in three groups, which were named front-runners, mid-level countries and beginners. ESMERALDA project will develop and offer member states support actions that are fit for the needs and prerequisites of these different clusters of countries. This report describes the clusters, their needs and the issues in which specific support seems to be necessary. The conclusions of this report may be subject to partly deficient information, which is why they need to be interpreted suggestively.

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1. Introduction

Action 5 of the EU Biodiversity Strategy to 2020 calls member states to map and assess the state of ecosystems and their services in their national territory with the assistance of the European Commission. The Horizon 2020 ESMERALDA project was funded to ensure this assistance to all EU member states taking into account their different levels of implementation as well as their prerequisites and challenges in regard to reach the targets set in Action 5. To be able to provide needed support the ESMERALDA project started with an in-depth evaluation of the status of ecosystem service (ES) mapping and assessment in the EU member states by collecting information on already implemented activities, identifying national stakeholders involved in these activities and engaging them in analysing the challenges and possible solutions.

The most important stakeholders have been identified and their integration in the process has started. These people consist of different actors involved in the implementation of Action 5 as well as those who will be the potential users of the information generated under Action 5.

It is also crucial to identify what type of support is most valuable. EU country fact sheets were developed in ESMERALDA based on the input of the MESEU[1] (Mapping of ecosystems and their services in the EU and its Member States) project, MAES documents and technical reports amongst others – altogether 32 documents were analysed to compile the first fact sheets. This information was updated by different project partners who collaborated with the countries' MAES contacts and other stakeholders from science, policy and practice. They provided an overview of MAES-related activities in each country and their policy context. In addition, more than 60 case study fact sheets have been produced using a template developed in ESMERALDA.

To bring the official MAES contacts of EU member states and researchers together and to deepen the view on the gaps and possible solutions to overcome hurdles in ES mapping and assessment, a stakeholder workshop was arranged in Riga, Latvia, 13-16 October 2015. Two days of discussions gave insight into the different situations across Europe.

All the above information was used to cluster the 28 EU member states according to data availability, state of EU2020 targets implementation, ES mapping and assessment activities and related projects. This report presents the process of gathering this baseline information as well as the results of an analysis of the information, based on which the final clustering was done.

2. Methods & analysis

Because the ESMERALDA project's aim is to support and coordinate ecosystem service mapping and assessment activity, there was need for plenty of baseline information from each member state. To collect that information, the project has produced:
- Stakeholder network information from all member states;
- EU country fact sheets based on the status of ecosystem service mapping and assessment activities in each country and the needs and opportunities to carry out the task;
- Case study fact sheets of implemented ecosystem service mapping and assessment studies.

Based on the collected information, the member states were clustered into three groups to allow efficient and practical organization of testing workshops and successive supporting actions. The methods used to achieve this target are presented below.

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[1] http://www.ecnc.org/projects/ecosystem-services-and-biodiversity-assessment/mapping-of-ecosystems-and-their-services/

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2.1. Collection of data

2.1.1. Identifying national stakeholders of ecosystem service mapping and assessment activities
To identify the most suitable stakeholders and to make a rough evaluation of the ecosystem service mapping and assessment activities and related research and policy activities in the member states, a table 'Stakeholder Network, review of current activities' was created in collaboration between the project partners SYKE and JRC. The evaluation was aimed to provide a general overview with which the status of ES mapping and assessment in each country, as well as the key people involved in related work, could be easily detected.

The MAES, MESEU and TRAIN reports and personal communication with Joachim Maes, JRC, formed the basis for the initial information collection in the table. Identified relevant documents were reviewed and information collated at SYKE. The ESMERALDA Executive Board checked the resulting table and added all extra information they possessed. Thereafter the initial table was split into country-specific tables, which were sent on 6 June 2015 to the ESMERALDA partner organisations to be checked and complemented country-wise. Some partners had committed themselves to take care of also other than their location country. Partners were asked to return the tables by 14 June 2015. The stakeholder network table is stored and updated in the internal area of the ESMERALDA Internal Communication Platform (ICP)[2].

The stakeholder network table comprises following information:
- Member State name and acronym
- Status of mapping in the country:
    1. In initial phase, much support needed
    2. On-going, still support needed
    3. Advanced, only little support needed
- Scale of mapping:
    1. National
    2. Regional
    3. Local
- Type of support needed:
    1. Setting up a national network
    2. Policy and stakeholder identification
    3. Technical mapping support a) data, b) GIS, c) mapping methods
    4. Lacking personnel with appropriate expertise
    5. Other
- Needed support relates to:
    o WP2 stakeholder mapping / networking
    o WP3 ES mapping methods
    o WP4 ES assessment methods / tools
- Names and affiliation information of key people in the country related to ES mapping and assessment and the activity involved in (currently or in previous years) (e.g. MAES, MESEU, TRAIN, other)
- Stakeholder group
    1. Scientific
    2. Administration
    3. Private enterprise
    4. National funding body
    5. International funding body

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[2] See: http://www.esmeralda-project.eu/. The internal website is accessible only with respective login details.

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- Name of the contact person in the ESMERALDA consortium

The stakeholder information was used when selecting who should be invited to the ESMERALDA stakeholder Workshop 01 which was held in Riga, Latvia, on 13-16 October 2015. The stakeholder information is also needed for the establishment of the country-specific support groups for ES mapping and assessment activities (ESMERALDA Milestone 13). Together with the ESMERALDA partners, these stakeholders are considered to form the first support groups. Their most essential task is to facilitate the discussion between the member states and the ESMERALDA project, so that each country will receive the most appropriate support. The objective of the ESMERALDA project is to have supporting stakeholder groups established in each member state by the end of December 2015.

2.1.2. Creation of country profiles

The work for producing the country profiles and the fact sheets thereafter started as the very first action of the ESMERALDA project already before the kick-off meeting in Kiel on 4-7 May 2015. Mapping and assessment of ecosystems and their services have started along the MAES activities in several countries during the past years. In addition to actual MAES work, there have been MAES-related sub-projects supporting the activity, the most important of which have been the MESEU project and TRAIN workshops. The MESEU project collected experiences from different ecosystem mapping methods from a variety of case studies in European countries. TRAIN provided concrete training in applying a small set of selected mapping methods. Quite a large number of people have participated in MAES case studies or the MESEU work, either as project partners, external experts or in the TRAIN workshops. Therefore, a lot of material of mapping and assessment activities in EU member states was readily available at the beginning of the ESMERALDA project.

All available material from MAES, MESEU, TRAIN and other known activities from EU member states was collected and reviewed. Country-specific information was extracted to create the first country profiles based on available mapping and assessment information. At this stage, the information was merely copy-pasted not to waste any piece of knowledge.

At the beginning of June 2015, the compiled country profiles were sent to the ESMERALDA consortium partners to take care for their respective country, i.e. Finnish partner SYKE got the profile of Finland, German partner CAU got the profile of Germany, etc. Because the ESMERALDA project does not have partners in each of the 28 EU member states yet, some partners took the responsibility of checking information for several countries. For example, following the ESMERALDA concept of "partner countries linked via regional hubs", BEF in Latvia checked information for Lithuania and Estonia in addition to Latvia. The checked country profiles were asked to be returned by 14 June 2015. Feedback was not received from all partners. In those cases, the work had to be continued relying that possible mistakes will be corrected and missing information updated later during the course of the project.

2.1.3. Producing country fact sheets

The country fact sheets were produced based on the initial country profiles and the stakeholder network review carried out in June 2015. Information from the partners and from the profiles was compiled in July 2015. For large parts, the same structure as in the MESEU reports was used for the country fact sheets, too.

The structure of the country fact sheets is as follows:

1.   Country's status of MAES activities, prerequisites and needs
2.   Policy activities

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    2.1.   The current implementation plans and execution of the Biodiversity Strategy and in particular concerned with Target 2, Action 5

    2.2.   The position of (the) case study / studies in those plans

    2.3.   List of the case studies done in the country

    2.4.   The possible future use of (the) case study results in Target 2 - Action 5

    2.5.   Stakeholder involvement

    2.6.   Executive institutes involved by the National Government

3.   Research activities

    3.1.   The Ecosystems covered in the country

    3.2.   The Ecosystem Services covered in the country

    3.3.   The indicators per ecosystem / ecosystem service (cells in the (MAES) matrix)

    3.4.   Quantification methods of the indicators

    3.5.   EU Directive reporting indicators & data used

    3.6.   Scientific analysis

    3.7.   Maps, reports, papers, (language)

4.   Names of key people in the country related to ES mapping and assessment

5.   References

The contents of the country fact sheets were kept on a rather general level providing enough knowledge for further assessment of the stage in which each country is with its mapping and assessment activities. This knowledge was needed in the following phase of work, which was the clustering of countries.

In addition to the EU member states, some other countries are also willing to enhance MAES type of activity. These countries have been included in the process as far as possible. Country profiles and later on fact sheets were offered to be developed in these countries, too, when there has been information and people knowing about the activities in such countries. Countries that are integrated in the ESMERALDA work outside EU member states are, for example, Norway, Switzerland and Israel.

Most of the country fact sheets were uploaded on the ESMERALDA Internal Communication Platform (ICP) by 31 July 2015. The fact sheets have been once or in some cases several times checked and revised by the MAES country contacts and ESMERALDA consortium members in autumn 2015. Based on the checked fact sheets, the member states were preliminarily clustered according to their opportunities and needs related to ecosystem service mapping and assessment before the ESMERALDA stakeholder workshop 01 in Riga, Latvia.

2.1.4. The case study fact sheets

In addition to country fact sheets, more detailed information about the implemented case studies in the member states were collected using a template. The MESEU and TRAIN outcomes proved to be good starting points, but the case study descriptions were not complete and detailed enough for the purpose of ESMERALDA. Information of the case studies presented in the MESEU technical report Annex 2 could be used as baseline, but also further information was needed from the scientific and grey literature output of the case study projects or from contractors to get a full picture of the activities.

The case study fact sheet template was produced to serve the baseline information needs of all relevant work packages of ESMERALDA: WP3 Mapping methods, WP4 Assessment methods and WP5 Methods testing. The template was circulated a couple of times among the work package leaders to get their ideas for improvement included and their needs met. Another important

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requirement was to make the fact sheet template easy and quick to fill in, so that people would be willing to provide all the required information.

The case study fact sheet template was sent to all member state stakeholders, ESMERALDA partners as well as researchers in the field using, for example, the FP7 OpenNESS project mailing list. The recipients were asked to provide information on as many case studies as they want, but starting with case studies directly related to MAES activities. The case studies could be from different scales (national – regional – local) and represent different thematic contexts.

The case study fact sheets have been uploaded on the ESMERALDA internal communication platform and their update is continued throughout the project.

2.2. Analysis

In Workshop 01 in Riga, Latvia, most of the work was carried out in break-out groups. These were formed on the basis of the pre-clustering of the member states based on their status in MAES-related activities at national level.

The member states were first divided into 1) those in an initial phase of activities, 2) those where activities are on-going but support is still needed and 3) advanced. After this, member states in different phases were blended and distributed evenly in the three Groups A, B and C, to enhance knowledge exchange between countries in different stages of progress. To stimulate the network development, participants from the same member state – both stakeholders and consortium members - were directed into same groups. This allowed interaction and engagement with colleagues and stakeholders from everyone's own country.

During the facilitated break-out sessions, EU2020 targets implementation and activities in member states, gap identification and prerequisites for carrying out the task were discussed. The topics included engagement level of national authorities, involved stakeholders, capacities and resources, issues related to specific mapping and assessment methods (biophysical, social and economic) and finally possible solutions. Solutions were classified based on whether they were related to justification of MAES activity, to communication issues, to education and capacity building or to technical support. (See more in Kopperoinen et al. 2015. ESMERALDA Milestone 12 report "Workshop (WS1) in Riga, Latvia, 13-16 October 2015. Gap analysis and identification of solutions"). The workshop discussions have been documented and they will be analysed in a structured way. The results of this analysis will be presented in the Deliverable 2.2 "Overview of gaps and recommendations to overcome them", which is due 31 January 2016.

For this Deliverable 2.1 all country fact sheets were analysed. In addition, case study fact sheets from respective countries as well as the minutes and the report of the Riga workshop were used as complementary material. The method used was a qualitative content analysis. In the first phase of the analysis, thematic categories were created indicating the scientific progress in ES mapping and assessment, progress in policy implementation and stakeholder involvement as well as problems related to data, funding or human resources. The following categories were used:

1) Status of MAES work
- Is MAES currently implemented in the country?
- Is there any policy in place for operationalizing the outputs of MAES (for nature-based solutions, for GI implementation, etc.)?
- Is a national MAES report available?

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2) Status of networking and stakeholder involvement
- Does a national platform facilitating ES work and bringing together stakeholders exist? A platform can be, for example, a specific website, an ES association, a working group or regular events, seminars or workshops.
- Is central administration (for example, ministries, state institutes) involved in the ES work?
- Are governmental institutes involved (for example, an environment agency, a nature agency or research institutes under the ministry)?
- Are regional administration and officials actively involved?
- Are scientific organisations, such as universities or research institutes, actively involved?
- Are non-governmental organisations involved?
- Are business, companies or industry involved?
- Are local communities involved?

3) Resources available
- Are financial resources for ES mapping and assessment activities sufficient?
- Are human resources sufficient? Are there any problems in relation to lacking personnel with appropriate expertise or brain drain?

4) Status of national assessment work
- Have any of the following assessment methods been used at national scale (literature, expert judgment, statistic information, maps and models, workshops / interviews, economic valuation, conceptual thinking / models)?
- Has a selection been made of ecosystems to be included in the mapping and assessment?
- Is there a prioritization of ES to be included in a national assessment or has a classification been selected for the assessment (for example, CICES)?
- Is there a national indicator framework ready and published for mapping, assessment or accounting?
- Has underlying data been identified for such a framework?
- Have EU Directive reporting indicators and data (or biodiversity / ecosystem data) been proposed or used to measure the condition of ecosystems?

5) Status of mapping
- Are maps available at national scale for some ecosystem services?
- Are maps available at national scale for habitats or ecosystems?

6) Status of data
Is there a national clearing house with data on MAES available? (With a clearing house it is meant that there is a website dedicated to MAES related activities (such as the http://www.biodiversity.fi/en/home or the Dutch atlas of natural capital).)

- Is data available, updated and sufficient for ES mapping and assessment?
- Is data compatible (for example, different databases and statistical sources)?
- Is data streamlined, harmonized and used consistently (for example, no big regional differences, similar precision etc.)?

7) Are there case studies available that could serve as examples (upscaling) for a national assessment?

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8) Is a nation-wide mapping and assessment project planned for 2016 or beyond?

The country fact sheets were systematically analysed in terms of these categories and the results were recorded into an analysis table. In the second phase, the analysis table was turned into a score sheet in which countries were given points for different elements indicating progress in ES mapping and assessment, policy implementation or existence of good prerequisites in terms of data, financial and human resources. Belgium was analysed separately for Flanders and Wallonia. This is because the Flemish government has just finished a regional ecosystem assessment which covers half of the country (and 65% of the population of Belgium). The regional assessment is the first assessment in Europe which started after the establishment of the working group MAES. It used the MAES typologies and an adapted conceptual framework and can thus be considered as the first MAES type assessment in the EU. Therefore, we considered it useful to report separately on Belgium. A similar regional assessment was carried out for Alentejo (Portugal) as a test case for a wider national MAES assessment which will start in December 2015. Therefore it can be relevant for further deliverables to report also this regional assessment separately from the national Portuguese assessment.

In the third phase of the analysis, the resulting score of each member state was used to place them into the right cluster (Figure 1). The highest score was received by Belgium / Flanders and UK (24 points each) and the lowest by Cyprus and Slovenia (0 points each) (Figure 1). The aim was to divide countries into three clusters as done in the pre-clustering phase according to the level of progress in ES mapping and assessment. The pre-clustering of member states was used as the starting point, but the clusters were updated according to the scores each member state received in the score sheet. 15 was the break-value between the most advanced and the average group and 5 between the two less advanced groups.

The resulting three clusters were renamed as *front-runner, mid-level* and *beginner countries*. The results of the analysis are presented cluster-wise in the following chapter.

3. Results: Country clusters

3.1. Advanced countries

- Belgium, Flanders (BE-FL)
- Belgium Wallonia (BE-WAL)
- United Kingdom(UK)
- Finland (FI)
- France (FR)
- Netherlands (NL)
- Germany (DE)
- Luxemburg (LU)
- Portugal (PT)
- Spain (ES)

Nine European countries were categorised as advanced in terms of their status in the mapping of ecosystem services. These so called *front-runner countries* share a very similar phase in the implementation of EU2020 targets, MAES work and face similar challenges and issues in the mapping and assessment of ecosystem services (Table 1). The front-runners include countries in the central-western Europe (BE, NL, LU, FR, UK) in the north (FI) and south (PT, ES). No eastern European countries were classified nor reviewed themselves as advanced.

The front-runners have led the way in the implementation of the MAES work. In all of these countries some or several methods of national scale assessment have been applied. The front-runners have developed national ecosystem indicator frameworks and identified priorities in the

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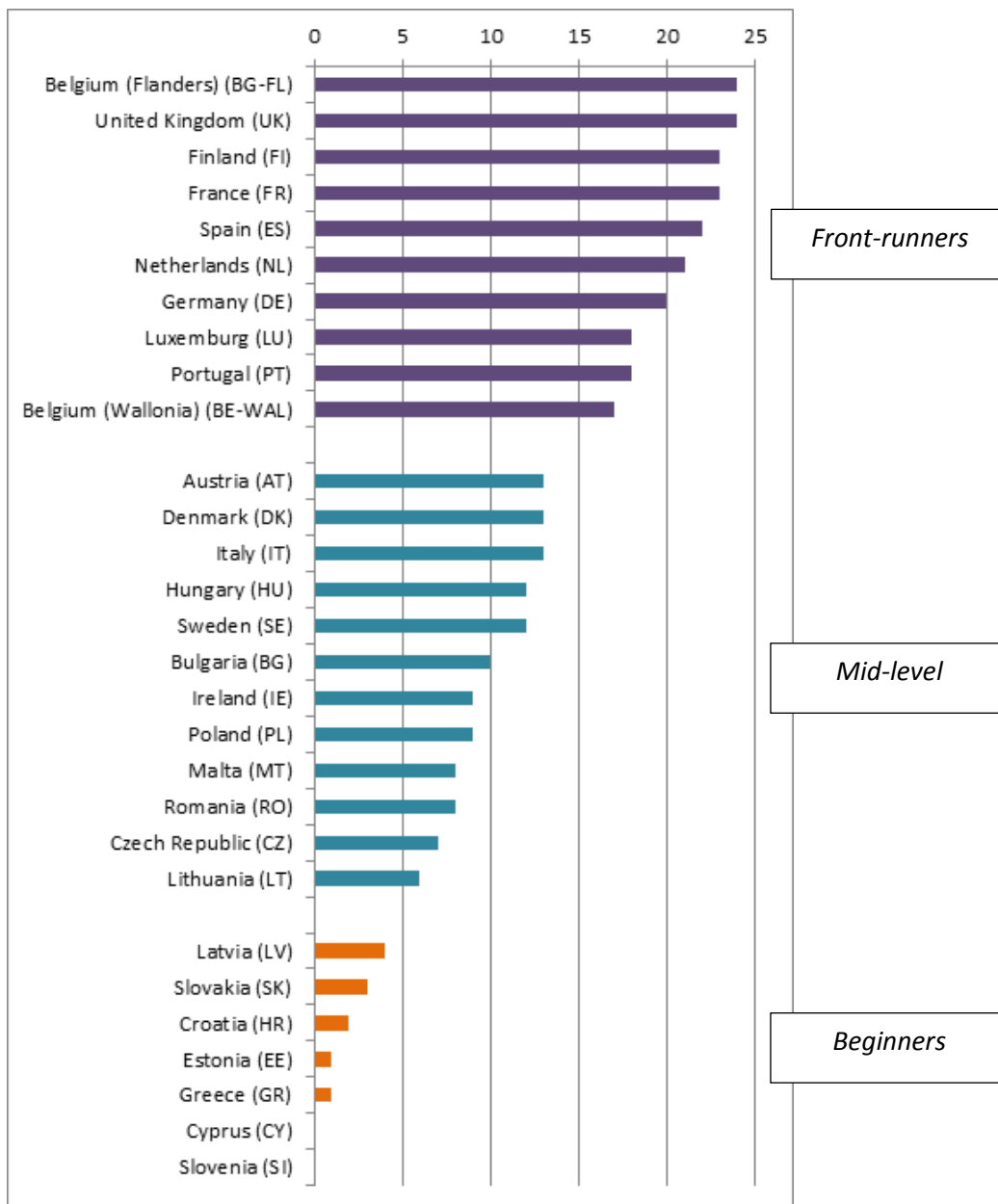
Figure 1. Scores of each country and their placement in the three clusters.

mapping and assessment work. Availability of data is estimated to be high or at least sufficient. In the front-runner countries, preliminary national scale mappings and assessments usually exist of some ecosystem services. In addition, ecosystem mappings and assessments have been piloted at a regional or local scale.

Support to the ES mapping and assessment work has not been limited to the field of science, but has been supported by the central governments. In some of the front-runner countries there are even policies supporting the operationalization the outputs of MAES (UK, FR, ES, PT, BE-WAL). In addition, stakeholder engagement is at a very high level. National meetings, seminars, working groups and platforms have been organised to bring together different stakeholders. Besides policy and science,

stakeholders and authorities, in most front-runner countries also NGOs, business partners and local communities have actively taken part or been interested in the processes.

The front-runners have made significant methodological development and, in general, have a good expertise and skills on ES. The good overall state of mapping means that attention is increasingly turned into methodological details (social mapping, for example) or data gaps. Consequently, these countries also have a good knowledge on their own strengths and weaknesses to carry out the remaining ES mapping and assessment work. This is apparent in the country fact sheets, where the front-runners stand out by detailing their prerequisites and needs and often providing a plan on how the needs will be met in the future.

Table 1. Score sheet of front-runner countries (y = **yes, n** = **no, -** = **unknown).**

		BE-FL	UK	FI	FR	ES	NL	DE	LU	PT	BE-WAL
1. MAES status	**MAES implemented**	y	y	y	y	y	y	y	y	y	y
	Policies supporting MAES	n	y	-	y	y	n	n	-	y	y
	National MAES report	y	n	y	n	y	n	-	y	n	n
2. Networking, stakeholder involvement	**National platform available**	y	y	y	y	y	y	y	n	y	y
	Central administration	y	y	y	y	y	y	y	y	y	y
	Governmental institutes	y	y	y	y	y	y	y	y	y	y
	Regional administration	y	y	y	y	y	-	y		y	y
	Science	y	y	y	y	y	y	y	y	y	y
	NGOs	y	y	y	y	y	y	y		y	y
	Business	y	y	y	y	y	y	-	y	y	y
	Local communities	y	y	y	y	y	y	y	-	y	y
3. Resources available	**Financial resources**	y	y	y	y	n	y	y	y	n	n
	Human resources	y	y	y	y	y	y	y	y	n	n
4. Status of national assessment work	**National scale assessments**	y	y	y	y	y	y	y	y	y	y
	Selection of ES	y	y	y	y	y	y	y	y	y	y
	Prioritization of ES or classification (e.g CICES)	y	y	y	y	y	y	y	y	y	y
	Indicator framework	y	y	y	y	y	y	y	y	y	n
	Data identified	y	y	y	y	y	y	y	y	y	n
	EU Directive reporting indicators & data	y	n	-	y	-	n	y	y	y	n
5. Status of mapping	**National scale maps on ES**	y	y	y	y	y	y	y	y	n	n
	National scale maps on ES or habitats	y	y	y	n	y	y	-	y	n	n
6. Status of data	**A national clearing house with data on MAES**	y	y	n	n	y	y	-	n	n	y
	Data available	y	y	y	y	y	y	y	y	y	y
	Data compatible	y	y	y	y	-	y	y	n	n	y
	Data streamlined	n	y	y	y	-	n	n	n	n	n
7.	**Case studies available**	y	y	y	y	y	y	y	y	y	y
8.	**Nation-wide mapping and assessment project planned for 2016 or beyond**	-	-	-	-	-	-	-	-	-	-
	Final score	24	24	23	23	22	21	20	18	18	17

3.2. Countries with on-going activities, but needing support

- Austria (AT)
- Denmark (DK)
- Italy (IT)
- Hungary (HU)
- Sweden (SE)
- Bulgaria (BG)

- Ireland (IE)
- Poland (PL)
- Malta (MT)
- Romania (RO)
- Czech Republic (CZ)
- Lithuania (LT)

Countries that have on-going activities but still need support in performing ES mapping and assessment formed a cluster named here as the *mid-level countries* (Table 2). This cluster includes 12 countries and all parts of Europe are represented: east (HU, BG, PL, RO, CZ, LT), north (DK, SE), south (IT, MT) and the central Europe (AT).

In the mid-level countries, ES mapping and assessment work has been initiated on the national level, thus MAES work is on-going. In comparison to the front-runners, the mid-level countries have not proceeded to an equally advanced level on the national scale. Typically, there have been pilot studies on a regional or local level that are being used as a stepping stone towards developing methodology and indicators for national mapping and assessment. In a part of the mid-level countries, national scoping studies assessing the status of mapping, data availabilities and knowledge have been produced (AT, BG, CZ). There are fairly straightforward plans on how to proceed in the task in the future and some of the countries have ongoing national level projects (IT, IE, PL, MT). In some of the mid-level countries, national scale mapping and assessment already exist for some ES (AT, DK, IT, HU, BG, IE, CZ) and ESS (DK, CZ). The availability of data in the mid-level group countries is high, however, efforts are needed on the national scale in data streamlining and harmonising.

Besides scientific work on ES, there have also been policy and networking activities to a certain extent. In most mid-level countries, central governments have shown at least some interest in the MAES work, which is manifested by the involvement of different government institutes in the coordination and implementation. Key stakeholders are often identified and in some of the countries platforms and nodes for broad networking exist (IE, PL). However, many countries recognise especially the need for more extensive networking with businesses, local communities and policy makers across sectors (CZ, PL, LT). In some of the countries, the ES work has been very scientifically oriented and the responsibility of expert organisations (for example, PL, CZ, DK).

Table 2. Score sheet of mid-level countries (y = yes, n = no, - = unknown).

		AT	DK	IT	HU	SE	BG	IE	PL	MT	RO	CZ
1. MAES status	**MAES implemented**	y	y	y	y	y	y	y	y	y	y	y
	Policies supporting MAES	n	n	y	n	y	n	n	n	n	-	n
	National MAES report	n	n	n	n	n	n	n	n	n	n	n
2. Networking, stakeholder involvement	**National platform available**	-	n	n	-	n	-	y	y	n	-	n
	Central administration	y	n	y	y	y	y	y	y	y	y	n
	Governmental institutes	y	n	y	y	y	y	y	y	y	y	n
	Regional administration	-	n	y	-	y	-	-	-	-	-	n
	Science	y	y	y	y	y	y	-	y	y	y	y
	NGOs	-	n	-	-	-	-	-	-	-	-	n
	Business	-	n	-	-	-	-	-	-	-	-	n
	Local communities	-	n	-	-	-	-	-	-	-	-	n
3. Resources available	**Financial resources**	-	y	-	n	y	n	n	-	-	y	n
	Human resources	-	y	-	y	y	-	n	-	-	y	y
4. Status of national assessment work	**National scale assessments**	y	-	-	-	-	y	-	-	-	-	y
	Selection of ES	y	y	y	n	y	y	y	y	y	-	n
	Prioritization of ES or classification (e.g CICES)	y	y	y	n	y	y	y	y	n	-	n
	Indicator framework	y	y	n	n	n	n	n	n	n	-	n
	Data identified	y	n	-	y	n	n	n	n	n	-	n
	EU Directive reporting indicators & data	y	n	y	y	n	n	-	n	y	-	n
5. Status of mapping	**National scale maps on ES**	n	y	n	n	n	n	n	n	n	n	y
	National scale maps on ES or habitats	y	y	y	y	n	y	y	n	n	n	y
6. Status of data	**A national clearing house with data on MAES**	n	n	n	n	n	n	n	n	n	n	n
	Data available	y	y	y	y	y	y	y	-	y	-	-
	Data compatible	-	y	n	y	-	-	n	-	n	-	-
	Data streamlined	-	y	n	y	n	n	n	n	n	-	-
7.	**Case studies available**	y	y	y	y	y	y	n	y	y	y	y
8	**Nation-wide mapping and assessment project planned for 2016 or beyond**	-	-	y	-	-	-	y	y	-	y	-
	Final score	13	13	13	12	12	10	9	9	8	8	7

3.3. Countries in the initial phase of ES mapping and assessment

- Latvia (LV)
- Slovakia (SK)
- Croatia (HR)
- Estonia (EE)
- Greece (GR)
- Cyprus (CY)
- Slovenia (SI)

The remaining group of seven countries were analysed to be in a very initial stage of mapping and assessment of ES and therefore categorised in the *beginners cluster* (Table 3). The beginners include eastern (LV, SK, HR, EE, SI) and southern European countries (CY, GR).

Table 3. Score sheet of beginner countries (y = yes, n = no, - = unknown).

		LT	LV	SK	HR	EE	GR	CY	SI
1. MAES status	**MAES implemented**	y	n	y	y	n	n	n	n
	Policies supporting MAES	-	n	n	-	n	n	n	n
	National MAES report	n	-	n	n	-	-	n	n
2. Networking, stakeholder involvement	**National platform available**	-	n	-	-	n	n	n	n
	Central administration	y	n	-	-	n	n	n	n
	Governmental institutes	y	y	y	y	-	-	n	n
	Regional administration	-	-	-	-	-	-	-	-
	Science	-	-	-	-	n	-	-	-
	NGOs	-	-	-	-	-	-	-	-
	Business	-	-	-	-	-	-	-	-
	Local communities	-	-	-	-	-	-	-	-
3. Resources available	**Financial resources**	-	-	-	-	-	n	n	-
	Human resources	-	-	-	-	-	n	n	-
4. Status of national assessment work	**National scale assessments**	-	-	-	-	-	-	-	-
	Selection of ES	y	-	n	n	-	-	n	n
	Prioritization of ES or classification (e.g CICES)	y	-	n	n	-	-	n	n
	Indicator framework	-	-	n	n	-	-	n	n
	Data identified	-	-	n	n	-	-	n	n
	EU Directive reporting indicators & data	-	-	n	n	-	-	n	n
5. Status of mapping	**National scale maps on ES**	n	-	n	n	-	-	n	n
	National scale maps on ES or habitats	n	-	n	n	-	-	n	n
6. Status of data	**A national clearing house with data on MAES**	n	-	n	n	-	-	n	n
	Data available	-	y	-	-	-	-	-	-
	Data compatible	-	n	-	-	-	-	-	-
	Data streamlined	-	-	-	-	-	-	-	-
7.	**Case studies available**	y	y	y	-	y	n	n	n
8	**Nation-wide mapping and assessment project planned for 2016 or beyond**	-	y	-	-	-	y	-	-
	Final score	6	4	3	2	1	1	0	0

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The beginners cluster is the least advanced in terms of MAES work and are only in a very initial stage in the national scale mapping and assessment of ES. Many of the countries have only started the national organisation and planning of activities (for example, CY, SI). Some countries have concrete plans of launching national projects in 2016 (GR, LV) and in some of the countries, there have already been regional and local level pilot projects (for example, LV, SK, EE).

Similarly, also national networking is only at a very early phase in most of the beginner countries. In some of the countries, stakeholders have been identified, but there have not yet been actions to involve them in the MAES process or only very initial networking activities have taken place.

While being only at a very early phase, the beginner countries have a range of problems they are facing as well as needs for support. For instance, the beginners need very practical support in the technical skills and methods of ES mapping and assessment. Sometimes very rudimentary skills and training are needed. Some countries state they have problems of finding skilled personnel or are suffering from brain drain. Likewise to human resources, many countries state they have problems with financing the activities. In terms of data, there may be problems with data availability, but especially in relation to compatibility and streamlining. Beginner countries are also in need for support in national networking and facilitating cooperation between different stakeholders. Sometimes these activities are yet to be built from the very beginning.

4. Conclusions

4.1. General conclusions

Providing enhanced mapping methods and assessment tools is an important step for the implementation of Action 5. ESMERALDA can effectively build on a great deal of existing scientific capacity, data and knowledge. The main challenge will be to mainstream biodiversity and ecosystem services into all levels of decision-making (policies, plans, programmes and projects), as well as economic accounting and reporting. This requires awareness raising and capacity building in all member states, at different scales, and among the different stakeholders. It also requires building ownership of the MAES process which is set up as collaboration among researchers, civil servants at EU and national levels officials, and other stakeholders. With ownership it is meant that Action 5 should not be seen as something that is imposed top down by the European Commission but that Action 5 and MAES are perceived as important and provide added value at local, regional and national scales. Ultimately, the identified stakeholders find each other in a lasting community of practice that will help contribute to improve the knowledge.

4.2. Conclusions for ESMERALDA's support and coordination activities

The three clusters described in this report are the first step towards better identification of member state prerequisites and needs in the ES mapping and assessment work. Dividing countries in clusters is needed to better design ESMERALDA's future tasks to correspond to the country specific needs. In addition, the three clusters are helpful in developing the understanding of how different countries can best support each other and, consequently, planning networking activities to support this goal.

Although the *front-runners* seem capable of carrying out national scale ES mapping and assessment, ESMERALDA will be helpful in providing support on technical and methodological details and filling in the gaps in networking and stakeholder identification. In particular, many of the front-runners seem

to be in need of coordination and streamlining of the existing activities. Lessons learned by the front-runners, in turn, can bring significant support to the rest of the European countries, if effectively communicated across national borders.

The *mid-level countries* need the help of the ESMERALDA project especially in activities related to stakeholder identification and national level networking. In such tasks, the experiences and lessons learned by the front-runners can be very helpful. The mid-level countries, in turn, can provide helpful support to the beginners group and help them overcome problems. In particular, the strong representation of the eastern countries in the beginners group emphasise the need of peer support of the mid-level countries to their neighbouring states.

Some mid-level countries also identified needs in terms of support in the practical mapping, such as broadening the pilot studies on national level, filling in the gaps in national level mappings and streamlining regional activities. Some of the countries may also benefit in support to and examples of how to collect and inventory data on ES.

The ESMERALDA project has plenty to give to the *beginners group*. The work packages focused on mapping methods (WP3) and assessment tools (WP4) can bring very hands-on experience and training on GIS methods and data management options. The work package on stakeholder networking (WP2), in turn, is helpful in providing concrete tools for national platform building and systematic engagement of the stakeholders. In all of these tasks, lessons learned by front-runners and mid-level countries will provide valuable examples on successful and less successful practices. Here, the ESMERALDA project has a critical role as the platform through which ideas are communicated, but also adjusted and evaluated in terms of national contexts and needs.

4.3. Final remarks

This deliverable report presented a general clustering of all 28 EU MS according to their prerequisites and needs to perform ES mapping and assessment. The clustering was mainly based on information derived from the country fact sheets, collected during 2015. The clustering provides a valid general overview of EU-wide developments, but due to data reservations it should not be used for country specific evaluation without caution. The clustering as well as the country fact sheets are based on expert opinions of a limited number of people and information that has been available while completing the fact sheets. Based on this material, it has not been possible to record all information systematically from all member states. In addition, a lot of information may have gone unnoticed if published only on the national language or not informed to the ESMERALDA project group. In order to analyse the needs and prerequisites of individual countries, as well as help them to respond to the challenges, the project will engage in a more in-depth analysis of different countries. The next deliverable report of the project will present more detailed country profiles and guidance for preferred future trajectories.

5. Acknowledgements

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6. References

Kopperoinen, L., Hellgren, D., Viinikka, A., Ruskule, A., Strigune, D. & Kuzmova, I. (2015). Workshop (WS1) in Riga, Latvia, 13-16 October 2015. Gap analysis and identification of solutions. Milestone 12. EU Horizon 2020 ESMERALDA Project, Grant agreement No. 642007.