



**Enhancing ecosystem services mapping  
for policy and decision making**

# **Country Fact Sheet: Sweden (SE)**



**December 2015**

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**Enhancing ecosystem services mapping**

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## Preface

This country fact sheet is prepared as part of task 2.1: Stakeholder identification and initial analysis of activities. The initial analysis draws upon information collected by Esmeralda project partners and previous relevant work on ecosystem mapping and assessment activities and policy and research activities in connection to that. The goal was to consider at least Draft Agenda MAES WG 2015-03-06-rev; MAES WG 06 March 2015; MESEU Final Technical report 2013-14; MESEU Inception Report 2014-15 (Final 29-01-2015); MESEU update March 2015; MESEU Synthesis Report 2012-2014 (14-01-2015); NCA Draft Reference Document for Consultation 06-01-2015 and written communication on undertaken MAES related activities by Joachim Maes (see point 5 references for tracing the source of information for this particular fact sheet). Specific for this document is the identification of obstacles and opportunities (table 1).

## 1. Country status of activities, prerequisites and needs

**Table 1: Country status of activities, prerequisites and needs**

Status of mapping ecosystem services in the country (1-3)*	Scale of mapping (1-3)**	Type of support needed (1-5)***	Needed support relates to (1-3)****
2-3. On-going, little support needed	1. National 2. Regional	5. Not specific – primarily restricted by resources 1, 4	[WP 2 and 4. WP2, 3 and 4
<p>* 1. In initial phase, much support needed, 2. On-going, still support needed, 3. Advanced, only little support needed</p> <p>** 1. National, 2. Regional, 3. Local</p> <p>*** 1. Setting up a national network, 2. Policy and stakeholder identification, 3. Technical mapping support (data, GIS, mapping methods), 4. Lacking personnel with appropriate expertise, 5. Other</p> <p>**** WP2 stakeholder mapping/networking, WP3 ES mapping methods, WP4 ES assessment methods/tools</p>			
<p><b>Prerequisites and strengths for carrying out the mapping and assessment of ecosystem services:</b> Methods tested within MAES-forest pilot. Preliminary results of projects within the national research programme: The value of ecosystem services and upcoming results of Scoping study Nordic assessment to feed into IPBES. Communication activities within identified stakeholder networks, public and private sector</p>			

## 2. Policy activities

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

ISweden will incorporate ES assessments within the regional action plans for Green Infrastructure: <http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Hallbarhetsarbete/Gron-infrastruktur/>.

A running project on communication of ESS: <http://www.naturvardsverket.se/ekosystemtjanster> and a research programme “The value of ESS”: <http://ecosystemservices.se/>.

All projects aim for one of the milestone targets adopted as part of Sweden's system of environmental objectives, *The importance of biodiversity and the value of ecosystem services are, by 2018, to be generally known and integrated into economic positions, political considerations and other decisions in society, where it is relevant and reasonable to do so.*

Government Bill: A Swedish strategy for biodiversity and ecosystem services. <http://data.riksdagen.se/fil/039414A3-66DD-4ABE-929E-53E5E25AD707>

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

The Forest case study will serve as guidelines in up-coming regional assessments. Guidelines (national level) for valuation of ESS and examples of local ESS assessments are being developed within the national communication project:

<http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6690-1.pdf?pid=15998>

## 2.3. List of the case studies done in the country

BRYHN, A., LINDEGARTH, M., BERGSTRÖM, L. & BERGSTRÖM, U. (2015) Ekosystemtjänster i svenska hav – Status och påverkansfaktorer, Havs- och vattenmyndighetens rapport 2015:12. (Swedish with summary in English).

SNÄLL et al. (2014). Mapping and assessment of ecosystems and their services – The Swedish Forest Pilot. (English)

SVENSSON, J AND MIKUSIŃSKI, G. (in prep). SLU National monitoring for assessing and valuating ecosystem services in Fennoscandian alpine and boreal landscapes, NILS ESS. (English)

SCHULTZ M. (in prep). Scoping study Nordic assessment to feed into IPBES

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

See individual case study fact sheets.

## 2.5. Stakeholder involvement

Swedish EPA, The Swedish Agency for Marine and Water Management - SwAM, Swedish University of Agricultural Sciences - SLU, The Swedish Museum of Natural History, County Administrative Boards (21)

# 3. Research activities

## 3.1. The Ecosystems covered in the country

Scoping study Nordic assessment to feed into IPBES

The value of ecosystem services

Upcoming: Managing the landscape (SEPA call: <http://www.swedishepa.se/en/Legislation/For-forskare-och-granskare/Sok-forskningsbidrag/Stangda-utlysningar/Managing-the-landscape/>)

### **3.2. The Ecosystem Services covered in the country**

Provisioning - biomass (Tree biomass production), biomass (Bilberry production) and Regulating – atmospheric composition and climate regulation (Soil carbon storage).

Supporting: Biogeochemical cycling, Primary production, Food web dynamics; Biodiversity, Habitat, Resilience.

Regulating: Climate and atmospheric regulation, Sediment retention, Regulation of eutrophication, Biological regulation, Regulation of toxic substances.

Provisioning: Food, Raw material, Genetic resources, Chemical resources, Ornamental resources, Energy.

Cultural: Recreation, Aesthetic values, Science and education, Cultural heritage, Inspiration, Natural heritage.

Marine ESS: s are assessed but not geographically explicit, see case study fact sheet

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

In preparation.

### **3.4. Quantification methods of the indicators**

#### **Forest pilot:**

Data: Nation-wide forest data set from the National Forest Inventory and the Survey of Forest Soils and Vegetation. The sample size was 3900 plots distributed across 798 tracts.

Methods: Tree biomass production was estimated as the yearly change in tree biomass (kg m<sup>-2</sup> year<sup>-1</sup>), calculated over a period of 5 years. Soil carbon storage was measured as the amount of carbon (g m<sup>-2</sup>) in the topsoil. Bilberry production was measured as the percentage of each plot covered by bilberry, *Vaccinium myrtillus*. Biomass was calculated with biomass functions and was the sum of the biomass from the stem, twigs and branches, the stump and roots. Soil sampling was carried out on around 50% of the inventory plots. Bilberry production was converted to proportions after correcting for the area where berries could not grow, e.g. the area of stems and boulders

### **3.5. EU Directive reporting indicators & data used**

Sweden will use data flows from environmental monitoring schemes, as those used in the reporting under the habitats directive: the National Forest Inventory and the Survey of Forest Soils and Vegetation and under the Marine framework directive.

### **3.6. Scientific analysis**

See respective case study fact sheet

### 3.7. Maps, reports, papers, (language)

BRYHN, A., LINDEGARTH, M., BERGSTRÖM, L. & BERGSTRÖM, U. (2015) Ekosystemtjänster i svenska hav – Status och påverkansfaktorer, Havs- och vattenmyndighetens rapport 2015:12. (Swedish, English summary).

SNÄLL et al. (2014). Mapping and assessment of ecosystems and their services – The Swedish Forest Pilot. Report 6626 SWEDISH EPA. isbn 978-91-620-6626-0. issn 0282-7298 (English)

## 4. References

BRYHN, A., LINDEGARTH, M., BERGSTRÖM, L. & BERGSTRÖM, U. (2015) Ekosystemtjänster i svenska hav – Status och påverkansfaktorer, Havs- och vattenmyndighetens rapport 2015:12. (Swedish, English summary).

SNÄLL et al. (2014). Mapping and assessment of ecosystems and their services – The Swedish Forest Pilot. Report 6626 SWEDISH EPA. isbn 978-91-620-6626-0. issn 0282-7298 (English)

The value of Ecosystem services (Swedish). Seven projects are funded studying how the value of ecosystem services is to be integrated, where relevant, into decision making in society.  
<http://ecosystemservices.se/>

SVENSSON, J AND MIKUSIŃSKI, G. (in prep). SLU National monitoring for assessing and valuating ecosystem services in Fennoscandian alpine and boreal landscapes, NILS ESS, (English summary): <http://www.slu.se/en/departments/ecology/research/grimso-wildlife-research-station/research-projects/ecosystem-services-in-northern-sweden/>

Communication of ESS (Swedish):  
<http://www.naturvardsverket.se/ekosystemtjanster>

Guidelines ESS valuation (Swedish):  
<http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6690-1.pdf?pid=15998>

A Swedish strategy for biodiversity and ecosystem services, Government bill (Swedish):  
<http://data.riksdagen.se/fil/039414A3-66DD-4ABE-929E-53E5E25AD707>

Green Infrastructure (Swedish):  
<http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Hallbarhetsarbete/Gron-infrastruktur/>