



BEES

BElgium Ecosystem Services

„What’s the largest multinational of Europe?

There is no other that produces so much food, provides us with so many services and products, and offers so many jobs.

...it is Nature.

Any other multinational of that magnitude would be politically canonised; in fact, it would be too big to fail.”

Gerben-Jan Gerbrandy,
Rapporteur of the European Parliament Committee
on the ‘Environment, Public Health and Food Safety’
20th April 2012, Strasbourg

OECD Environmental Outlook to 2050¹

“Continued degradation and erosion of natural environmental capital is expected to 2050, with the risk of irreversible changes that could endanger two centuries of rising living standards.” The projections highlight the need for immediate and urgent action to change the course of our future development, since natural systems have “tipping points” beyond which damaging changes become irreversible: e.g. species loss, climate change, groundwater depletion, land degradation.



Links between biodiversity and employment⁴

An impressive number of jobs are provided directly and indirectly by biodiversity and ecosystem services: the number (and percentage) of jobs highly dependent on ecosystem services amounts to 927 million (35%) in developing countries, and 14.6 million (7%) in the EU.

NATURAL CAPITAL AND ECOSYSTEM SERVICES

Our society depends on a vast flow of goods and services from the ecosystems we live in. These ecosystems - communities of plants, animals and microorganisms interacting as a system with the abiotic components of their environment - are part of biodiversity and our natural capital, which are essential for our well-being and our prosperity, our economy and our health.

NATURAL VALUES AND THE ECONOMY

The values of most ecosystem services are underrepresented in societal decisions. In many cases essential values such as natural regulation, worth for future generations, cultural and natural heritage, intrinsic values, benefits to the local and/or global common good, public health, remain overlooked or are neglected during decision-making.

Because those multiple values of nature are not fully taken into account, poorly weighed decisions result in further degradation of our life-sustaining basis. Ecosystem services are being replaced by mostly expensive artificial solutions, thus increasing organisational and

However, our natural capital is eroding faster than ever. Ecosystem functions and quality are being degenerated to the point that ecosystems can no longer provide the wide range of goods and services our society depends upon: provision of food, clean air, clean water, pollination of crops, protection against flooding and erosion, etc.

financial pressure on society, all the while missing out on opportunities for green economic development and innovation. This loss of ecosystem quality represents enormous social and economic costs, mainly deflected to the poor and to future generations². The concept of social and planetary boundaries provides a framework for achieving social equity and environmental sustainability³. As ecosystem services directly relate to a broad scope of local policies and societal sectors (fig. 1), accounting of ecosystem services provides the means to predict and manage economic, social and ecological consequences of local decisions.

RESTORING NATURAL CAPITAL – VALUE FOR MONEY

Purely economic decisions on natural capital have proven to be counterproductive and undesirable, while promoting the sustainable supply of ecosystem services can be economically efficient. Economic analysis therefore can provide strong additional arguments for investing in natural capital. ‘According to statistical experts working for TEEB, the Economics of Ecosystems and Biodiversity study, every year, we lose 3% of our gross domestic product through loss of biodiversity. Each year, Europe therefore loses EUR 450 billion!’⁵. The damage to our well-being and economy from a global or even local ecosystem collapse (shifts in climate, ocean currents, soil fertility collapse, etc.) would be incalculable. However, what we do know is that the socio-economic risks of ecosystem

degradation are rapidly increasing⁶ as are the tremendous importance and urgency of restoring our natural capital. Investment in natural capital has a direct economic benefit and will be complemented, if thoughtfully executed, by many non-economic benefits. In the end, the cost of natural capital restoration pales in comparison. Again, ecosystem services assessments provide the necessary information to legitimise and optimise investment in natural capital. In order to safeguard and increase the economic, social and ecological values of our natural capital in the long run, ecosystem services should be accounted for. Economic as well as non-economic valuation of ecosystem services will underpin and improve decision making at multiple levels.



US\$ 122 billion/year

Private expenditure in the USA on wildlife related activities (observation, fishing, and hunting)⁷. This forms approximately 1% of the USA's GDP.

EUR 3.9 million/year

Cost of pollination by bumblebees in Dutch tomato cultivation⁸. Depending on the method used, manual pollination would cost an additional EUR 16.8 to 42 million.

5,100 jobs

Number of jobs related to the 5700ha National Park ‘Hoge Kempen’ (Belgium) in 2009. That same year companies with a nature related activities linked at the national park realised a turn-over of EUR 191 million.⁹

About BEES

BEES is an informal and voluntary community of policy makers, practitioners and scientists working on ecosystem services. The steadily growing network now has over 150 members and 5 active thematic workinggroups. The aim of BEES is to improve capacity-building by policy-practice-science exchange. The BEES-briefs communicate outcomes from activities and discussions within this Belgian community of practice. BEES-brief 1 restates the importance and urgency of ecosystem services research and practical implementation for different policy domains.



ASSESSING ECOSYSTEM SERVICES: PART OF GOOD GOVERNANCE

Since we cannot manage what we cannot or do not measure²⁴, ecosystem service assessments should be implemented to help increasing socio-economic and environmental benefits and to avoid significant costs and risks due to the lack of mainstreaming biodiversity and ecosystem services into relevant policies. Ecosystem services play a key role in a wide range of policies such as public health, food and water security, education, climate change adaptation and mitigation, economic recovery and innovation, greening the economy, sustainable landscape planning, resource use efficiency, etc. (fig.1).

Mapping (spatial assessment) is crucial for evaluating potential positive and negative impacts of policy options on our natural capital assets and distribution of costs and benefits between stakeholders. Mapping ecosystem services enables the concept to be applied as a land use and spatial planning tool in many decision-making processes.

An ecosystem services-approach does not replace existing policies, it anticipates an increase in long-term resilience, it helps reduce risks (e.g. from failing natural systems), reduce public costs (e.g. for replacing degraded natural services), identify synergies that contribute to better-informed decisions, promote equity, sustainability and participation, etc.

THE CHALLENGE: CROSS-POLICY COOPERATION & BUILDING CRITICAL MASS

Ecosystem services may have percolated through numerous policy documents (biodiversity strategies²⁵, green economy²⁶, resource efficiency²⁷) nevertheless, urgent action is still needed. Advances are being made on various policy levels (international, national and local), in different domains (policy, science, private sector), and in a range of

fields (mapping and assessment, use of green infrastructure, natural capital accounting). The common ground is that we need to recognise what values are important to us, demonstrate how decisions can be improved socially, ecologically and economically, and capture those values in decisions and actions.

FIGURE 1: NON-EXHAUSTIVE ILLUSTRATION OF ECOSYSTEM SERVICES' LINKS TO VARIOUS POLICY ISSUES

- | | | | |
|------------------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
| Flood control ¹⁰ | Mental health ¹³ | Pest control | Bio-based product ²¹ |
| Drinking water ¹¹ | Medical research ¹⁴ | Soil quality | Jobs ²² |
| Spatial planning | Climate adaptation ¹⁵ | Pollination | Tourism, recreation ²³ |
| Green infrastructure ¹² | Climate mitigation ¹⁶ | Financing | Energy |
| Transport | Food feed, fuel, fiber ¹⁷ | Resource efficiency ¹⁸ | Culture |
| Clean air | Raw materials supply | Green economy ¹⁹ | Innovation, biotechnology |
| Obesity | Biomass | Bio-economy ²⁰ | Biodiversity policy. |



RECOMMENDATIONS

The Belgium Ecosystem Services (BEES) community, a growing informal community of researchers, policy representatives and practitioners working together to tackle methodological, conceptual and practical challenges²⁸, aims at guaranteeing an effective use of the ecosystem services concept. The BEES community therefore advises to:

Acknowledge the significance of biodiversity and ecosystem services to society

Decision makers at all levels should assess the impact of policy decisions on ecosystem services and communicate the role of biodiversity and ecosystem services for the economy and society.

1



Treat ecosystem resilience as paramount

As numerous drivers affect the dynamics of ecological processes and ecosystem functions, even beyond their functional tipping points, decision making processes should take into account and pay due attention to ecosystem resilience and invoke the precautionary principle in cases of significant uncertainty.

3

Recognise the importance of ecosystem services in land use policies

There are synergies between particular bundles of ecosystem services as well as trade-offs, and often different groups of people are affected positively or negatively by specific policy decisions. The distribution of benefits and costs is important across all scales (social, spatial and temporal) and should be taken into account. Mechanisms and instruments to address conflicts need to be implemented.

2

Capture the value of ecosystems and their services

Include natural capital and ecosystem service flows in financial regulations and incentives, and in public and private accounting systems.

4

Support the mapping of ecosystems and their services

Ecosystem services mapping is essential for the identification of trade-offs and synergies between the supply and demand of ecosystem services at multiple geographical scales. Ecosystem services mapping (research) should be supported.

5

Acknowledge the existence of multiple values of biodiversity and ecosystem services

Sound decisions should integrate all types of value, including less quantifiable ones such as intrinsic value, welfare, good life and liberty of choice, etc. and not be limited to (seemingly) obvious and tangible values.

6



Always consider bundles of ecosystem services

Optimization of just one or too few ecosystem services carries the risk of overlooking or even provoking important trade-offs, or neglecting specific stakeholder preferences. This could result in the loss of other ecosystem services and unexpected consequences for the people affected.

8

Measure better to manage better

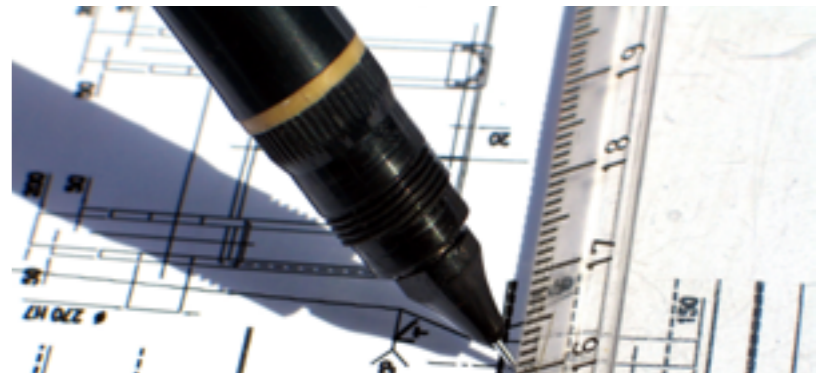
Develop and use standardised methods and criteria for the measurement, mapping and monitoring of biodiversity and ecosystem services at various temporal and spatial scales to better assess their state, trends and sustainable use, and promote their integration into policy instruments.

10

Promote transparency and equity in decision-making processes

Valuation exercises should acknowledge the existence of multiple types of values and should be explicit about the approach used, its decision-making context and underlying assumptions.

7



Adopt a transdisciplinary approach

Transdisciplinary cooperation and communication is key to efficient implementation and innovation. Standalone economic, ecologic or social approaches will not suffice²⁹. Scientists, policy representatives and stakeholders need to act together.

9

REFERENCES

- 1 OECD Environmental Outlook to 2050: The Consequences of Inaction - ISBN 978-92-64-12216-1 © OECD 2012
- 2 Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington D.C.
- 3 World Social Science Report 2013: Changing Global Environments. OECD Publishing and UNESCO Publishing, Paris.
- 4 Nunes, P.A.L.D. et al., (2011) "The Social Dimension of Biodiversity Policy: Final Report" for the European Commission, DG Environment under contract: ENV.G.1/FRA/2006/0073 – 2nd, pages vii-205, Venice/Brussels, February 2011
- 5 <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+CRE+20120420+ITEM-007+DOC+XML+V0//EN&language=EN>
- 6 Rockström, J. et al., 2009. Planetary boundaries: exploring the safe operating space for humanity. Ecology and Society 14(2): 32.
- 7 The Economics of Ecosystems and Biodiversity, 2010. TEEB for Business / TEEB for policy makers (www.teebweb.org)
- 8 KPMG, 2012. TEEB for Business
- 9 Bade T., van Erk A., Houben S., Smid G. 2011. Hoge Kempen, Hoge Baten. De baten van het Nationaal Park Hoge Kempen in kaart gebracht.
- 10 Russi D., ten Brink P., Farmer A., Badura T., Coates D., Förster J., Kumar R. and Davidson N. (2013) The Economics of Ecosystems and Biodiversity for Water and Wetlands. IEEP, London and Brussels; Ramsar Secretariat, Gland http://www.teebweb.org/wp-content/uploads/2013/04/TEEB_WaterWetlands_Report_2013.pdf
- 11 Russi D., ten Brink P., Farmer A., Badura T., Coates D., Förster J., Kumar R. and Davidson N. (2013) The Economics of Ecosystems and Biodiversity for Water and Wetlands. IEEP, London and Brussels; Ramsar Secretariat, Gland http://www.teebweb.org/wp-content/uploads/2013/04/TEEB_WaterWetlands_Report_2013.pdf
- 12 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0249:FIN:EN:HTML>; De Nocker L., Broekx S. and Liekens I. (2004). Maatschappelijke kosten-batenanalyse voor de actualisatie van het Sigmoplan. Conclusies op hoofdlijnen, Tussentijds rapport in opdracht van Ministerie van de Vlaamse Gemeenschap, LIN AWZ, Afdeling Zeeschelde, door Vito i.s.m. Tijdelijke Vereniging RA-IMDC, Vito, September, available from www.sigmoplan.be
- 13 Psychological benefits of green space increase with biodiversity, Richard A Fuller, Katherine N Irvine, Patrick Devine-Wright, Philip H Warren and Kevin J. Gaston, August 2007; <http://rsbl.royalsocietypublishing.org/content/3/4/390.full>
- 14 <http://chge.med.harvard.edu/topic/biodiversity-and-medical-research>
<http://chge.med.harvard.edu/resource/cone-snails-excerpt-sustaining-life>
- 15 TEEB (2009) TEEB Climate Issues Update. September 2009 <http://www.teebweb.org/wp-content/uploads/Study%20and%20Reports/Additional%20Reports/TEEB%20climate%20issues%20update/TEEB%20climate%20issues%20update.pdf>
- 16 http://www.unep-wcmc.org/mitigation_57.html
Parish F., Sirin A., Charman D., Joosten H., Minayeva T., Silvius M. and Stringer L. (Eds.) (2008). Assessment on Peatlands, Biodiversity and Climate Change: Main Report. Global Environment Centre, Kuala Lumpur and Wetlands International, Wageningen
- 17 Some twelve plant species provide approximately 75% of our total food supply, and only fifteen mammal and bird species make up more than 90% of global domestic livestock production Harvard school of public health <http://chge.med.harvard.edu/topic/biodiversity-and-food-production>
- 18 Europe 2020 strategy priorities are to become a smart, sustainable and inclusive economy. The flagship initiative for a resource-efficient Europe supports the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth. Its road maps are clearly stated by its vision "By 2050 the EU's economy has grown in a way that respects resource constraints and planetary boundaries, thus contributing to global economic transformation. [...] Biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored." <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0571:FIN:EN:HTML>
- 19 TEEB – The Economics of Ecosystems and Biodiversity for Business – Executive Summary 2010 http://www.teebweb.org/wp-content/uploads/Study%20and%20Reports/Reports/Business%20and%20Enterprise/Executive%20Summary/Business%20Executive%20Summary_English.pdf
Krcnak K.M., Smith D.M., Deutz A. (2011). Putting Nature in the Nexus: Investing in Natural Infrastructure to Advance Water-Energy-Food Security, Bonn 2011 Conference: The Water, Energy and Food Security Nexus – Solutions for the Green Economy, Background Papers for the Stakeholder Engagement Process.
- 20 Innovating for Sustainable Growth: A Bioeconomy for Europe
http://ec.europa.eu/research/bioeconomy/pdf/201202_innovating_sustainable_growth_en.pdf
- 21 http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/files/final-eval-lmi_en.pdf
- 22 Links between biodiversity and jobs : "The number of jobs provided directly and indirectly by biodiversity and ecosystem services is significant, both in the EU and in developing countries. A considerably large proportion of jobs in developing countries (927 million, or 35% of jobs) are highly dependent on ecosystem services, compared to the EU. (14.6 million or 7%)" (Nunes P et al., 2011) (Nunes, P.A.L.D., Ding, H., Boteler, B., ten Brink, P., Cottée-Jones, E., Davis, M., Ghermandi, A., Kaphengst, T., Lago, M., McConville, A. J., Naumann S., Pieterse, M., Rayment, M., and A. Varma (2011) "The Social Dimension of Biodiversity Policy: Final Report" for the European Commission, DG Environment under contract: ENV.G.1/FRA/2006/0073 – 2nd, pages vii-205, Venice/Brussels, February 2011)
- 23 Bade Tom, van Erk Aafke, Hoben Saskia, Smid Gerben. 2012. Hoge Kempen, Hoge baten, De baten van het Nationaal Park Hoge Kempen in kaart gebracht. Triple E productions. <http://www.rkm.be/nl/webshop/boeken-en-varia/hoge-kempen-hoge-baten/34/>
- 24 Sukhdev P (2011) Putting a price on Nature: The Economics of Ecosystems and Biodiversity. Solutions 1(6):34-43.
- 25 European Commission, 2011. Our life insurance, our natural capital: an EU biodiversity strategy to 2020. COM(2011) 244 final United Nations Conference on Sustainability, 2012. The future we want. Outcome of the Conference
Convention on Biodiversity, 2010. Strategic Plan for Biodiversity 2011-2020. COP 10 Decision X/2. (including the Aichi targets <http://www.cbd.int/sp/targets>)
Biodiversity 2020, Update of Belgium's National Strategy (http://www.biodiv.be/implementation/docs/stratactplan/updating-process-nbs/doc-5-biodiversity-2020-update-belgium-s-national-strategy/strat2013_en_final.pdf (temporary))
- 26 ten Brink P., Mazza L., Badura T., Kettunen M. and Withana S. 2012. Nature and its Role in the Transition to a Green Economy.
- 27 European Commission, 2011. Roadmap to a Resource Efficient Europe. COM(2011) 571 final
- 28 Jacobs S., Dendoncker N. and Keune H. (2013), Ecosystem Services – Global Issues Local Practices, Elsevier, New York, ISBN: 978-0-12-419964-4 <http://www.sciencedirect.com/science/book/9780124199644>
- 29 ISSC/UNESCO (2013). World Social Science Report 2013: Changing Global Environments. OECD Publishing and UNESCO Publishing, Paris.



For more information, consult the BEES website:
www.beescommunity.be
or send an e-mail to Dr Hans Keune:
h.keune@biodiversity.be



The BEES community is supported by
a secretariat facilitated by the
Belgian Biodiversity Platform:
www.biodiversity.be



BEES is an open and informal network.
You are welcome to join us:
www.beescommunity.be



Biodiversity.be

The Belgian Biodiversity Platform supports and coordinates
the BEES Community of Practice:
www.biodiversity.be