# IN-STREAM and OPEN:EU Workshop – Sustainability Indicators for Policy Making

## Report on the Workshop of 8-9 February 2011

OPEN: EU

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**OPEN:EU minutes - Susanah Stoessel (Ecologic Institute, Berlin)**

**IN-STREAM minutes - Samuela Bassi, Leonardo Mazza, Doreen Fedrigo (IEEP, London/Brussels) and Holger Gerdes (Ecologic Institute, Berlin)**


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# IN-STREAM and OPEN:EU Workshop

# Sustainability Indicators for Policy Making

How can our progress towards sustainable development be measured? Which sustainability indicators are most needed and which tools are currently being developed in the OPEN:EU and IN-STREAM projects to help in decision making? These were the core questions behind this joint workshop event organised in the context of two FP7 projects: OPEN:EU (One Planet Economy Network: Europe) and IN-STREAM (INtegrating MainSTREAM Economic Indicators with Sustainable Development Objectives). The two workshops held back-to-back brought together experts and policy makers to discuss a number of innovative sustainability indicators and provided a platform for the sharing of experiences and best practices in the use of these tools.

The first workshop presented preliminary results of the **OPEN:EU** project, with a focus on the Footprint Family of indicators (i.e. the Ecological, Carbon and Water Footprints). Its main objective was to gather stakeholders' and experts' feedback on the EUREAPA tool being developed by the project and its link to the policy cycle.

The second day focused on the **IN-STREAM** project, providing key insights and preliminary outcomes of its qualitative and quantitative analyses, linking economic indicators with measures of sustainability and well-being. This was the first in a series of workshops dedicated to specific policy areas, taking place in different European cities. This first event focused in particular on the use of indicators for biodiversity policy and growth.

The presentations summarised below as well as reports mentioned therein are available at the respective project websites:

**OPEN:EU**
http://www.oneplaneteconomynetwork.org/news/open-workshop-brussels.html

**IN-STREAM**
http://www.in-stream.eu/events.html

**OPEN:EU** is a 2 year collaborative research project exploring the question of how the EU can become a One Planet Economy[1] by 2050. It is funded through the European Commission Directorate General for Research under Grant Agreement No. 227065. Further information is available online at www.oneplaneteconomynetwork.org. The OPEN:EU team is comprised of: WWF-UK; Global Footprint Network (GFN); Stockholm Environment Institute (SEI); University of Twente; NTNU (University of Trondheim); Sustainable Europe Research Institute (SERI); Institute for European Environmental Policy (IEEP), University of Twente.

**IN-STREAM** is a collaborative research project to better integrate mainstream economic indicators with sustainable development objectives. It is funded through the European Commission Directorate General for Research under Grant Agreement No. 2111759. Further information is available online at http://in-stream.eu.The INSTREAM team involves: Ecologic Institute (Germany; Project Co-ordinator) , Fondazione Eni Enrico Mattei (Italy), University of Bath, Department of Economics and International Development (United Kingdom) , Charles University Environment Center (Czech Republic) , Institute for European Environmental Policy (United Kingdom and Belgium), Universität Stuttgart: Institut für Energiewirtschaft und Rationell Energieanwendung (Germany) , International Institute for Applied Systems Analysis (Austria) , and Zentrum für Europäische Wirtschaftsforschung (Germany).

[1] *A One Planet Economy is an economy that respects all environmental limits and is socially and financially sustainable, enabling people and nature to thrive.*

# Day 1 – OPEN:EU

## OPENING PRESENTATIONS

### Hester Lilley – Overview of OPEN:EU project

Hester Lilley opened the workshop with a brief overview of the OPEN:EU project, explaining what the project is doing and why. The overall aim of the project is to promote the concept of a One Planet Economy[2] by giving decision makers a set of indicators and a tool to take decisions towards transforming the economy. The key project objectives serving this aim are expressed in three main phases: building 1) the evidence base, 2) applications, and 3) capacity that can deliver a One Planet Economy by 2050. This involves first producing a suite of Footprint indicators which make it possible to assess the environmental impact of consumption and production at the national level. Then developing a scenario-modelling tool called EUREAPA to make the environmental and economic data more accessible and useful to policy makers and civil society. And finally, developing an online network of people based in Europe and beyond to share and agree on solutions. Ms. Lilley outlined the project's current progress and upcoming project events and activities that stakeholders can become involved in.

### Killian Wentrup – Introduction to the workshop

Killian Wentrup introduced the objectives for the workshop – namely, to help users to better understand what the tools being developed as part of the OPEN:EU project can (and cannot) help them do. To this end, the day's focus was on achieving a clear understanding of the purpose, capabilities, and also the limitations of the individual Footprint indicators, the indicators as an integrated Footprint Family, and the EUREAPA tool. Another key objective was to identify the specific stages of the policy cycle in which the EUREAPA tool can be most useful and for which users. The project team's aim was to resolve stakeholders' questions about the indicators' methodologies and the EUREAPA tool, to receive their feedback on the usefulness of project results, and to recruit users for "road testing" the EUREAPA tool.

## SESSION 1: The Footprint Family of Indicators and their usefulness for policy-making

### Alessandro Galli – Ecological, Carbon and Water Footprints: *What are they indicating and what is their spectrum of policy usefulness?*

Alessandro Galli provided an overview of the Ecological, Water, and Carbon Footprint indicators in order to clarify which general areas they are able to cover and how they test against specific policy areas. He defined each of the indicators by explaining its research question, its main message, and its calculation structure. Mr. Galli continued with a comparison of the three indicators in terms of their coverage, and their strengths and weaknesses. In his presentation he also highlighted the advantage of taking a consumer approach to tracking sustainability. He concluded with a summary of the ways in which these three indicators can be useful for those involved in the policy making process.

### Alessandro Galli – Footprint Family suite of indicators: *definition and added value*

Alessandro Galli gave a second presentation focused on illustrating the complementarity and overlap of the three Footprint indicators and what the added value is of integrating them into a "Family" suite of indicators. He also summarised the conclusions of an initial testing of the indicators – individually and also as a Family – against specific EU policy objectives to determine which issues of relevance for the EU the indicators can inform on and also to highlight aspects of the various EU policy strategies that may be in conflict.

[2] *A One Planet Economy is an economy that respects all environmental limits and is socially and financially sustainable, enabling people and nature to thrive*

Mr. Galli explained both the advantages and the drawbacks of bringing the three indicators together under one streamlined ecological-economic modelling framework. Most importantly, a single framework enables us to approach a wider spectrum of topics and to see clearly the trade-offs of certain policy actions and whether they are in fact changing problematic trends. In conclusion, Mr. Galli noted that this first attempt to develop a suite of indicators provides practitioners with a new set of tools, but it is not yet a fully inclusive and comprehensive measure of sustainability. It will be necessary to integrate more indicators into the footprint framework and to complement the footprint analysis with economic and social assessments.

The details of what Mr. Galli covered in his presentations are captured in the OPEN:EU project report entitled: *Integrating Ecological, Carbon, and Water Footprint: Defining the "Footprint Family" and its Application in Tracking Human Pressure on the Planet*, which is available on the project website.

**Discussion**
Subsequent discussion centred on the following:

- *Questions of how the Footprint Family of indicators can effectively track efficiency of resource use:*
  - How can the Ecological Footprint track resource efficiency over time? (i.e. monitor effectiveness of resource use and efficiency policy) For any given product tracked by the National Ecological Footprint Accounts, the Ecological Footprint intensity for unit of product can be calculated over time to determine changes in efficiency. While the calculation is relatively straightforward for the biomass-based component of the Ecological Footprint, it is a bit harder for the carbon uptake component as this requires a conversion from $CO_2$ to sequestration land. While embedded $CO_2$ emissions are calculated year after year, the coefficient used to convert $CO_2$ into uptake land is constant over time. The consequences of this is that while changes in the energy efficiency of a given production process are taken into account by the Ecological Footprint methodology, changes in the carbon uptake capacity of land over time are not currently considered.
  - There was question about the usefulness of the Ecological Footprint for policy makers dealing with issues of biodiversity and land use when the carbon component of Europe's Ecological Footprint is so great that it makes it difficult to test change in Europe's resource use footprint. Participants wondered whether a more land-based indicator not complicated by carbon is needed. Some participants were also concerned about an issue of how to communicate clearly to the public about the results of these indicators when the Carbon and Ecological Footprints both account for carbon, but measure it in different ways. The project team clarified that the indicators within the Footprint Family can be used individually, and that the results of each can in fact be disaggregated (e.g. the carbon component can be separated out of the overall Ecological Footprint number). Users can determine which breakdown of the information is most relevant for them. The project team also further clarified the differences between the Carbon Footprint indicator and the carbon uptake land component of the Ecological Footprint indicator. Participants were pointed to the OPEN:EU project report entitled: *Integrating Ecological, Carbon, and Water Footprint: Defining the "Footprint Family" and its Application in Tracking Human Pressure on the Planet* for additional information.
  - What the Footprint Family can do well is to indicate whether, for example, a shift to biofuels actually reduces a country or region's overall footprint, or if an observed decrease in its Carbon Footprint has simply been traded off for an increase in its Ecological or Water Footprint (due to the impacts of biofuel production on land use or to increased consumption of fresh water for biofuels production).

- It was also noted that the Carbon Footprint is currently only an indicator of fossil carbon emissions and does not fully account for biological carbon impacts.

- *Questions of how the Footprint Family of indicators' consumption-based approach can inform on the issue of Europe's impact on the rest of the world in terms of resource use*
  - Participants were interested to know how new policy targets could be set for the consumption and production patterns that are causing Europe's Ecological Footprint to be so large. They also wondered how a target could be set for land outside the EU that is impacted by Europe's consumption patterns.
  - The project team explained that the environmentally extended multiregional input-output (MRIO) Footprint model used in the OPEN:EU project can help track the full range of products' supply chains by linking Footprint data with information on the economic relationships among the sectors of the different countries' economies. This is explained in detail in the OPEN:EU project report entitled: *Footprint Family Technical Report: Integration into MRIO model*, which will be available on the project website shortly.

- *Questions of how the Footprint Family of indicators' consumption-based approach interacts with the EU's largely production-based policy paradigm*
  - The group noted that EU climate objectives, for example, are based on a production perspective and suggested that it would be valuable to look into which EU policies could use a consumption based indicator approach.
  - One participant pointed out that a consumption-based approach may complicate the responsibilities policy makers hold toward stakeholders in trade and industry.
  - The project team explained that it is not a question of production vs. consumption approach but rather that the Footprint Indicators can provide both of them. The consumption approach is intended to complement rather than substitute the producer approach.

- *Questions of data availability and level of detail*
  - Questions revealed a need to distinguish between the input data that goes into the indicators' calculation and the assumptions that determine how the indicators are converted into their respective unit of measure. Input data for the Ecological Footprint is well covered and comes from the UN FAO and the IEA. Raw data for the Water Footprint is improving and now includes river basin level data. The MRIO model uses GTAP data for its economic data. In addition, Eurostat has expressed interested in participating in the testing for the EUREAPA tool to see if their data could be input into this model.
    What is needed is additional research in terms of some of the key assumptions made behind how we convert emissions of $CO_2$ into appropriation of land needed to absorb $CO_2$ (e.g. the carbon absorption factor of land and oceans in the Ecological Footprint). For instance, the Global Footprint Network works with national governments and research institutes around world to continually improve the quality of the data and to improve the assumptions behind the Ecological Footprint methodology.

- *Questions of other competing or conflicting definitions of the Footprint Family's three indicators*
  - The Ecological and Water Footprint definitions are fixed, as defined by the organisations that created and operate them. The Carbon Footprint, however, is not a methodology in the same sense as the others, because it represents a very straightforward measurement. It has been used over the last 10 years by different stakeholders in different ways – sometimes using a production approach, sometimes consumption-based approach, and sometimes including just $CO_2$ or a broader set of GHGs. In the Footprint Family of indicators, the Carbon Footprint is defined from a consumption perspective and includes the wider set of GHGs ($CO_2$, $CH_4$, $N_2O$, HFC, PFC, and $SF_6$).

## SESSION 2: The EUREAPA tool and its link to the policy cycle

### Stuart Bond – The EUREAPA tool – *what will we be able to do with it?*

Stuart Bond introduced the EUREAPA tool, which is still under development, but for which the project team is already seeking feedback on how to make the tool as relevant as possible for end users. He explained that by providing a small window on the environmentally extended multiregional input-output (MRIO) model, the tool transforms the Footprint indicators into an application that can help policy makers in taking decisions. A mock up of the tool helped to illustrate the tool's main functions – namely, viewing data, benchmarking the impacts of countries and regions in comparison to others, and modelling the effects of changes in policy through both a high-level (macro) scenario modelling function and a detailed scenario modelling function. One feature of particular interest to users will be the ability to export the data views generated by the tool for input into reports.

### Samuela Bassi – The EUREAPA tool in the context of the policy cycle

Samuela Bassi concluded the day's presentations by providing an overview of how the EUREAPA tool fits in the policy making process. She first introduced the policy cycle, divided into ten distinct phases. After reiterating the four main functions of the EUREAPA tool and identifying key user groups for the tool, she presented a schematic of the policy cycle with these mapped against it. This showed that as it is designed now, the EUREAPA tool is most useful in the first half of the policy cycle – namely, in the phases covering problem recognition and exploration, and agenda setting, where the tool can help provide evidence of pressures, benchmarking, and evaluation of policy proposals and their potential for achieving targets. If the tool is further developed, it could potentially be useful also in monitoring, reporting, and evaluation of policies.

### Discussion

Subsequent discussion centred on the following:

- *Questions about where and how in the policy cycle the EUREAPA tool can be most useful*
  - There was general agreement that the EUREAPA tool will be most useful in the early stages of the policy cycle (i.e. in agenda setting, problem recognition and exploration). Participants noted, however, that although it is possible create an academic depiction of a fluid policy cycle, in reality, the policy making process seldom happens in neatly ruled phases.
  - Participants were especially pleased to learn about the ability to use the EUREAPA tool to present all cuts and slices of data to the public.
  - Several participants touched on the issue of getting the EUREAPA tool into the policy cycle in the first place. They emphasised the importance of matching the scale of the tool to the scale of its users' competencies. In other words, in order for policy makers to understand the usefulness of the tool, they must be able to visualise how it applies to their own field of work.
  - An important way in which this work could have a lasting beneficial impact on the policy making process is by encouraging policy makers to refocus on long-term planning, even when under intense pressure to make decisions based on short-term incentives. If this EUREAPA tool is designed in a way that makes it usable for a whole roundtable of users and is presented as something that is simply intended to facilitate the dialogue among a roundtable of stakeholders, it could make a significant contribution to policy-related discussions on the quality of growth.
  - The project team reiterated that the purpose of this tool is not to show the costs of inaction, but rather to highlight which courses of action would help, how we could reach our targets (e.g. achieving a One Planet Economy), and what sorts of policies we would need in order to get there.

- *Questions about the limitations of the EUREAPA tool and footprint analysis as a communication tool*
  - Participants pointed out that the workshop's discussion was mainly focused on the use of indicators for decision making, but that the communication dimension of indicators is equally important – and that this dimension is especially of interest to policy makers in the context of public opinion polls and of international negotiations. Communication also plays a critical role in building the hegemonic narrative, which is essential to getting an issue onto the policy agenda in the first place. It is just as important to have a story to tell as it is to have the right story tellers.
  - A suggestion was to consider making use of rankings based on the outcomes of footprint analyses in order to catch the attention of policy makers. This is often scientifically difficult, but can be very effective on the communication front.
  - One noted drawback of the footprint analysis is that it says nothing about the social footprint of policy making (i.e. effects on social policy, and issues of primary interest to trade unions, for example).
- *Questions about what the EUREAPA tool can and cannot model*
  - Participants wanted to be sure that the "old school" indicators, which take a production-based approach, will also be visible in the EUREAPA tool alongside the consumption-based Footprint Family of indicators. The EUREAPA tool does provide both a production- and a consumption-based viewing option. But the project team explained that the consumption value is in fact arrived at by looking at production and trade. The Footprint Family methodology has in itself the production-based approach and essentially complements the producer approach with the consumer approach.
  - The MRIO model behind the EUREAPA tool is not an economic model in terms of depicting prices. It contains trade data and Footprint data and in using the scenario modelling function of the tool, the user him- or herself must determine change in spend in oil, for example.

## SUMMARY

### Killian Wentrup – Wrap-up

Killian Wentrup closed the workshop with a short summary of the day's discussions. The workshop achieved what it had set out to do in 1) shining a light on the capabilities and limitations of the three Footprint indicators, the Footprint Family of indicators, and the EUREAPA tool; 2) introducing the key purpose and functionalities of the EUREPA tool; and 3) discussing the policy relevance of the tool.

In sum:

- None of the indicators are perfect in themselves. Bringing them together into a "Family" suite results in something more comprehensive, but still not a complete measure of sustainability.
- There are some specific issues that arise around the methodology of the Footprint Family of indicators and the EUREAPA tool in their current stage of development. For example, the treatment of carbon in the Ecological Footprint and the relationship between the Carbon and Ecological Footprints where measurement of carbon is concerned; the consumption-based approach taken by the indicators provides a more complete picture of the issues at hand, but may be difficult to use in assessing production-based policies; and integrating the Footprint Family of indicators with the MRIO model is an innovation which brings much added value, but, in its current form, also comes with a loss of resolution for some of the indicators.
- In designing the EUREAPA tool within the OPEN:EU project's parameters for time and resources, emphasis has been on creating a tool that is easy to use, can be used online and free of charge, and provides users with the ability to input the

results of their data queries into their own work. This necessarily sets some limitations for the tool and the scope and depth of the questions it is able to answer. Furthermore, it is important to note that the underlying MRIO model is not a pricing model and therefore cannot predict outcomes based on changes in prices. Rather, the user can make his or her own assumptions about how changes in prices will affect the consumption of different goods and services and factor this into the settings in the EUREAPA tool.

- In terms of its relevance to the policy making process, at this point in time the EUREAPA tool is envisaged to be most useful in the beginning phases of the policy cycle (agenda setting, problem recognition and exploration, etc.). There is a possibility for further development of the tool in the future to expand its functionalities. However, achieving a detailed level of assessment able to answer specific questions about the cost and benefit of various policy solutions may require the creation of a new tool. There is also the possibility of adapting and/or expanding the Footprint Family of indicators, though not within the scope of the current project.

Participants were encouraged to stay involved throughout the remaining stages of the project and in particular to take part in the upcoming testing phases for the EUREAPA tool in order to provide important feedback on the functionality of the tool and to continue helping the project enhance the usefulness and quality of its results.

## OUTCOME OF DAY 1

With the input the project has gathered at this event we will now be able to:

- Embark on the testing phases for the EUREAPA tool over the next few months and ensure that the final result is fit-for-purpose for its end users.

- Complete further analysis on the policy relevance of the Footprint Family of indicators and the EUREAPA tool.

If you would like to become actively involved in this project, please contact Rachel Brown for general inquiries on the project and Hester Lilley for information on how to participate further in the project:

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# Project Partners

# Day 2 – IN-STREAM

## OPENING PRESENTATIONS

### Lucas Porsch – Presentation and Introduction to the IN-STREAM Project

**Lucas Porsch's** (Ecologic) opening presentation provided the participants with some background and insights into the In-Stream project's main objectives and preliminary results. LP explained that the In-Stream project was conceived as a scientific successor of the 2007 *Beyond GDP* conference and investigate further the relevance of and needs for different indicators in policy-making processes. LP outlined the main objectives of the project, such as the evaluation of different indicators and how they can contribute to the *Beyond GDP* process, the further identification of institutional needs and opportunities - especially for composite indicators, and an investigation of impacts on a range of mainstream economic indicator of efforts to reach different sustainability targets. Specific policy areas which the projects will inform include biodiversity, resource efficiency, green growth and innovation.

After providing a brief insight into the organisation of the In-Stream project, he presented a few examples of preliminary results produced under different work packages, including the ongoing work on the use of indicators in the policy cycle of different policy areas (work package 7 led by IEEP), the results of the correlation analysis between GDP and environmental/sustainability and social indicators (carried out by Bath University under work package 5), the qualitative (RACER & SWOT) analysis of a number of selected indicators including Common Bird Index, Favourable Conservation Status, Marine Trophic Index and Red List index (carried out by IEEP and Ecologic under WP2), and the work on impacts of sustainability targets and strategies on competitiveness (carried out by ZEW).

Finally, Lucas pointed to other elements of the In-stream projects of particular relevance for stakeholders willing to be further engaged in the project, such as the project's website, the upcoming workshops and final conference, and the IN-STREAM newsletter.

The full presentation is available here: http://www.in-stream.eu/download/01_Lucas_Porsch_INSTREAM_Introduction.pdf

### Discussion

The first issue raised during the discussions related to the need to clarify the relation between ecosystems' health/resilience indicators and the valuation of ecosystem services. Without establishing such a relation, it was argued, it will be difficult to factor the value of biodiversity into impact assessments. In a context of ever shorter policy-cycles there is a need for indicators which show the decline of the quality of our ecosystems, which is likely to lead to a further decline of essential services provided by ecosystems in the long term. This may require new indicators, different from the indicators traditionally used for nature/biodiversity conservation.

It was also stressed that spatial aspects tend to be neglected, such as the effect of the Common Agriicuture Policy (CAP) on biodiversity worldwide.

Several participants highlighted that many pressures affecting ecosystem quality come from outside environmental/biodiversity policy. Indicators need to establish a link

between biodiversity and the sectors which threaten biodiversity. A participant underlined the need to develop indicators which support a more efficient use of resources, especially in those sectors which have the highest pressures on biodiversity such as the extractive industries and agriculture - in order to manage environmental impacts throughout the life cycle of these resources and reduce the demand for those materials.

A participant highlighted the role for composite indicators, to inform both biodiverity policy and other sector policies.

Finally, a member of the IN-STREAM steering comittee welcomed the approach of structuring the IN-STREAM presentation along the 3 storylines, and stressed the importance of focusing on resource efficiency (especially mining and agriculture impacts), biodiversity (and the need for taking it into account in other policies), and green growth (including the in light of the latest OECD and UNEP initiatives and of the findings of Rio+20).

### Samuela Bassi – Overview and objectives of the day: the storylines and the focus of this first workshop

**Samuela Bassi** (IEEP) presented the structure and the objectives of the day. She briefly outlined the three storylines along which the IN-STREAM work is presented, i.e. biodiversity, green growth and resource efficiency. With regard to the objectives, Samuela pointed out that this workshop was dedicated to the biodiversity storyline and would therefore focus on biodiversity indicators and their link to a range of different policies. The main aims of the day were to present the In-Stream approach and findings, share views and experiences on how sustainability indicators have been and could be better used, and increase awareness and uptake of sustainability indicators.

The full presentation is available here: http://www.in-stream.eu/download/02_Samuela_Bassi_%20Workshop_Introduction.pdf

### Discussion

One of the participants noted that climate change policy is also very much related to the biodiversity storyline. The project team clarified that there are several areas of overlap between the storylines, and that the division of policies across each storyline was only a tool to present the information. Links across policies will be noted whenever possible.

One of the particpants stressed the importance of taking into account the global context beyond the European Union dimension, and suggested to take into account the global framework of sustainability in the final message conveyed by the project. The team clarified that the focus of the project is at EU level. However global implications can be highlighted when possible.

## SESSION 1: Overview of the qualitative and quantitative results of the project

### Holger Gerdes – Sustainability indicators and their link with policy making

**Holger Gerdes** (Ecologic) presented the preliminary results of the qualitative evaluation of indicators undertaken under work package 2. He outlined the approach chosen to evaluate those indicators (e.g. filters and criteria applied), the use of the RACER methodology ('relevance, acceptability, credibility, easy to monitor, robustness') and presented one example of analysis on the potentially disappeared fraction (PDF) indicator. Finally, Holger announced that the results would be published in March/April.

The full presentation is available here: http://www.in-stream.eu/download/03_Holger_Gerdes_Qualitative_Analysis.pdf

**Benjamin Goerlach – Overview of the quantitative results of the project – the use of sustainability indicators in economic modelling**

**Benjamin Goerlach** (Ecologic – in place of Francesco Bosello of FEEM) presented some of the quantitative results of the project. He explained that the main objective of the quantitative work was to establish quantitative links between environmental/sustainability targets and marco-economic indicators such as GDP, thus trying to emulate the power of economic models in informing on the impact of a economic policy decision on GDP. The rational behind this exercise was to improve the integration of sustainable development topics in existing economic modelling frameworks. Benjamin presented the results of the current strand of work focused on the carbon prices and impact on competitiveness, aiming to assess how the introduction of a carbon price signal can affect different sectors of the economy. He annouced that some results on the issue of sustainability measures in agriculture and competitivness would soon be produced. With regard to the effects of carbon prices on competitiveness, the findings suggested that the carbon price does matter and can affect several sectors, especially the carbon intensive industries. The model allowed to quantify the trade-offs between GHG reduction and competitiveness, and to get a more balanced picture of the impacts of the carbon price on the economy as a whole. The possibility of including water and food security issues is currently being investigated. The inclusion of the social dimension might prove difficult.

The full presentation is available here: http://www.in-stream.eu/download/04_Francesco_Bosello_Quantitative_Analysis.pdf

**Discussion**

With regard to the the links between climate change targets and growth, a participant pointed to the importance of better indicators for GHG emissions for regions and municipalities. He suggested more work should be done to provide local authorities with a methodology to measure their GHG emissions, which would also allow to distinguish important and exported emissions and would take into account GHG other than CO2. The team agreed on the importance of the regional/local dimension. The project is also undertaking some regional analysis (undertaken by ZEW in Germany). A major obstacle to further analysis at regional and/or municipal scales, however, is the absence of good quality and timely data.

Others noted that the use of sustainability indicators/criteria in policy making at regional/local level could also inform the allocation of structural funds, including to climate change mitigation projects. This was thought to potentially compensate for the pressure from infrastructure/building sector lobbies for the building of large scale

infrastructure such as roads, which may further lock regional economies and urban areas in a carbon intensive development path.

Other participants agreed that the regional dimension is important with regard to climate change and that the data/set of indicators available should be improved. However, it was observed, this is not something which could be done in the context of the In-Stream project, as this will require guidance at EU level. It was suggested that European bodies (such as the European Environmental Agency and its European Topic Centre on Air and Climate Change) might need to look into the issue of improving visibility for GHG emissions at municipal level by tailoring their methodology to local settings.

The use of sustainability indicators by countries/regions could also be useful to compare results with EU assessments, as a tool to assess one's performance compared to the EU average.

Another participant suggested that the impacts of carbon prices on competitiveness, in light of the EU 2050 climate change targes, should be taken into account. The team clarified that the project focus in on 2020 targets. Estimates up to 2050 would be difficult as they would have to consider transformative changes which are difficult to forectas and account for in a model. The main aim of the analysis, however, is not to provide future predictions, buth rather to show how different models of carbon pricing affect different parts of the economy.

**Wolf Mueller – The use of indicators for ecosystem and health effects**

**Wolf Mueller** (University of Stuttgart) presented how integrated impact assessments can be used to assess the environmental performance of technologies and policies, and showed how that has been applied for health effects from air pollution. The main characteristics of the assessments were presented, such as integration across sources, pollutants, impacts, environmental media, scales etc. It was noted that the relation between pressures and effects is in general non linear, that effects depend on time and site of the activity, and that the assessment focuses on impacts/damage, not of pressures. Wolf also explained that a bottom-up approach is needed for the assessment and presented the so called 'impact pathway approach' which was developed in the ExternE project series. The approach takes into account all site specific characteristics and applies models for estimating the dispersion and chemical transformation of pollutants. Resulting concentration changes of pollutants across Europe can then be related to impacts on human health and the environment. All spatial levels from local to hemispheric and global are assessed. The approach excludes from the analysis those alternatives that pose higher health risk on individuals or exceed sustainaibility targets as weighting of impacts is only possible for small risks. An indicator for human health impacts (DALY) was also presented, as well as an indicator for biodiversity impacts (PDF). The performance of such indicators based on EEA emission data showed a decrease in impacts. These indicators will be further discussed and applied within the IN-STREAM project.

The full presentation is available here: http://www.in-stream.eu/download/05_Wolf_Mueller_Ecosystems.pdf

**Discussion**

A participant suggested to illustrate the link of this analysis with the storyline with a graph showing the cost per responsible sector. He also stressed the importance of taking a forward looking perspective beyond 2030. This will enable to capture the effet of ageing, and also the effect of biodiversity policy beyond the 'low-hanging fruits'. The team confirmed that data by sector are indeed available, and the possibility of taking into account future effects will be explored.

It was also noted that the use of sustainability indicators will be relevant also for the current revision of the Air Thematic Strategy. Nevertheless, health indicators may give a misleading impression that more ambitious targets are not needed, as exposure of populations to some air pollutants has indeed fallen. This will not adequately reflect the impacts of air pollution on biodiversity, which are still very damaging. Nitrogen deposition for example is a high threat to biodiversity, and is reaching a tipping point, since nitrogen does not decrease but accumulate. A nitrogen footprint would be useful, and indicators for other pollutats should also be explored. It will be important to take this into account in the results of the IN-STREAM project.

A member of the OPEN EU team noted that a nitrogen footprint is being developed by the University of Virginia. (Further exploration of this issue, however, falls outside the scope of the IN-STREAM project).

With regard to the sensitivity of using DALY values, it was noted that the use of values for life is quite common in economic literature and the team should not shy away from assessing the cost of environmental degradation in terms of the economic value of lives lost. Another participant pointed out that a cautious approach needs to be taken to the valuation of the cost of life – especially where the cost of life in developing countries and developed countries is being compared.

With regard to morbidity, it was suggested that it would be of interest to look into the labour productivty impacts. Avoided health expenditures are also a powerful message for policy makers. In the area of air quality, economic arguments are quite strong and should be used to influence policy. With regard to the terrorist risk taken into account in the model, it was suggested that besides nuclear risk, the study should include other aspects such as dams, chemical plants, water supply systems/networks of gas & oil pipes, which are vulnerable too. However, Wolf noted, all of these so-called damocles risks (low probability, high damage risk) are excluded from the analysis. Attacks on nuclear power plants was only chosen as an example.

It was also noted that, beside air pollution, other causes of health problems should be taken into account, such as the presence of chemicals in water.

The team noted that it will explore the possibility of including the effects on labour productivity, although it is yet unclear if this could be done in this project given budget contraints. The impact on pesticides, although interesting, unfortunately falls beyond the work planned for the INSTREAM study. We also underlined the difficulty of providing a value of life when death occurs after a long period of time (e.g. due to pollution), compared to death occurring immediately (e.g. due to accidents) was pointed out.

Other issues adressed in the discussions included the usefulness of indicators to link the loss of biodiversity with the loss of ecosystem services, such as atmospheric cleansing,

and the need to provide aggregated results at European level, as sometimes the effects of air pollution are perceived far away from where the pollution has been emitted.

## SESSION 2: The use of sustainability indicators in policy-making: focus on policies relevant for biodiversity

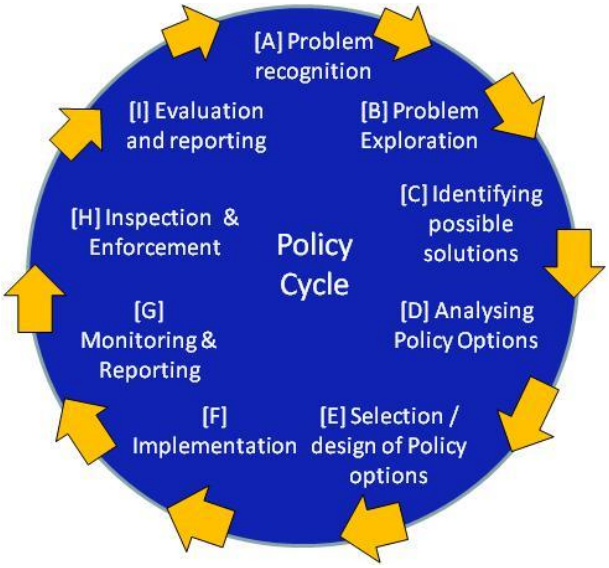
**Leonardo Mazza, Jana Polakova, Patrick ten Brink, Keti Medarova, and Doreen Fedrigo**

A joint presentation from the Institute for European Environmental Policy (IEEP) provided an insight into the approach used for the qualitative analysis in the IN-STREAM project. IEEP also presented a number of preliminary results on the use of sustainability indicators in policy areas of relevance to nature and biodiversity.

The full presentation is available here: http://www.in-stream.eu/download/06_IEEP_Sustainability_Indicators.pdf

**Leonardo Mazza** (IEEP) outlined the objectives of the qualitative analysis, and in particular of the stakeholder consultation. These included the identification of opportunities to improve the use of indicators in policy-making, and of the need for additional/alternative indicators in view of current policy priorities. Leonardo further presented the approach for collecting information on indicators used across relevant policy areas, including the common framework used – i.e. the policy-cycle (see figure below). He also outlined the range of indicators selected and the questionnaire design used for collecting information from stakeholders.

*Fig.1 – The Policy Cycle*

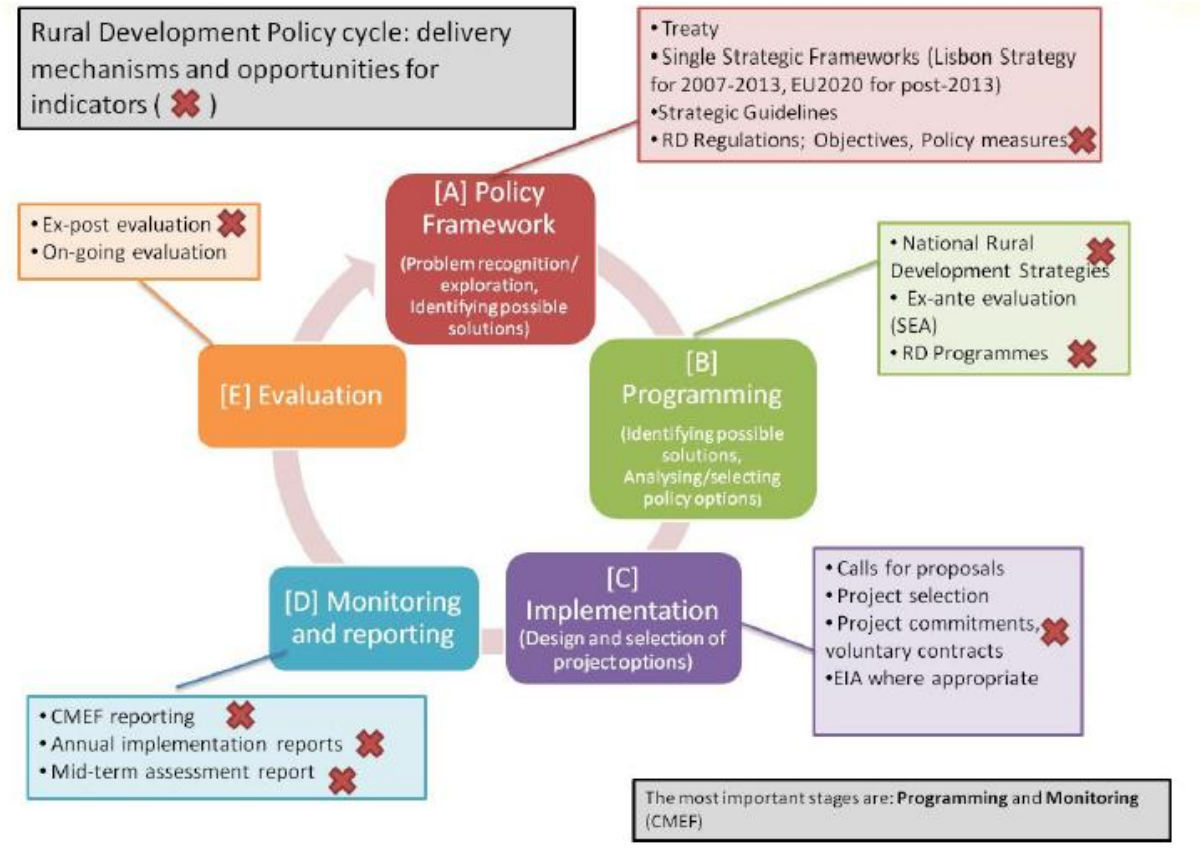



Leonardo's introduction was followed by a range of presentations on several policy areas investigated in the ongoing work. Each presentation provided illustrations of policy cycles for the different policy areas, pointing out opportunities for using indicators in the different phases of each policy area's policy-cycles.

**Jana Polakova** (IEEP) provided an insight into the current use of sustainability indicators in Agricultural Policy – in particular to measure the delivery towards the

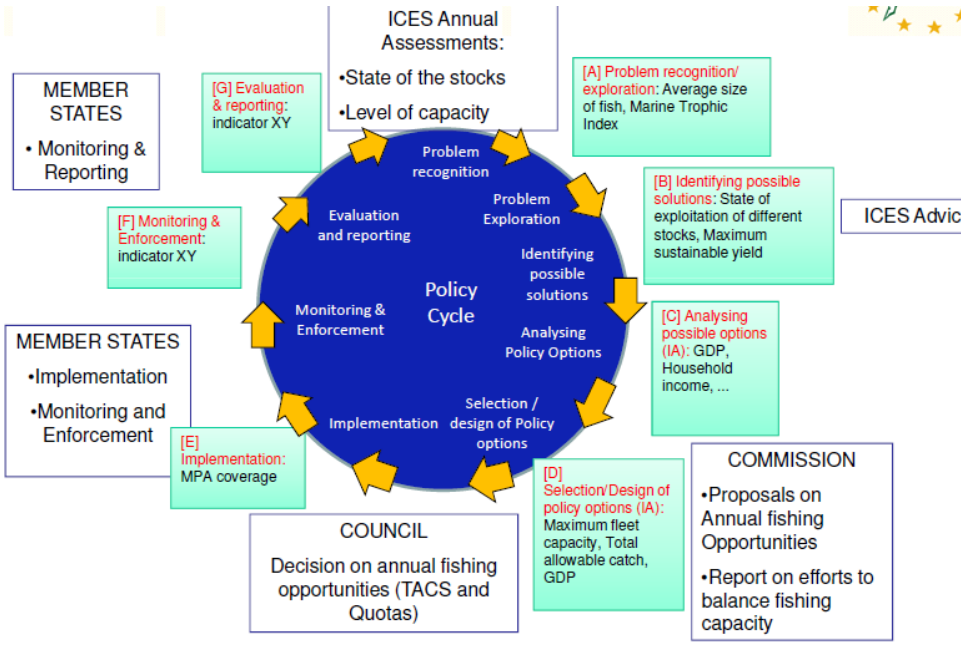
objectives of the CAP Pillar 2. She briefly presented the Common Monitoring and Evaluation Framework of Rural Development 2007-2013 and the suite of indicators that it comprises. The policy cycle for agriculture policy is shown in the figure below:

*Fig.2 – The Policy Cycle for agriculture policy*



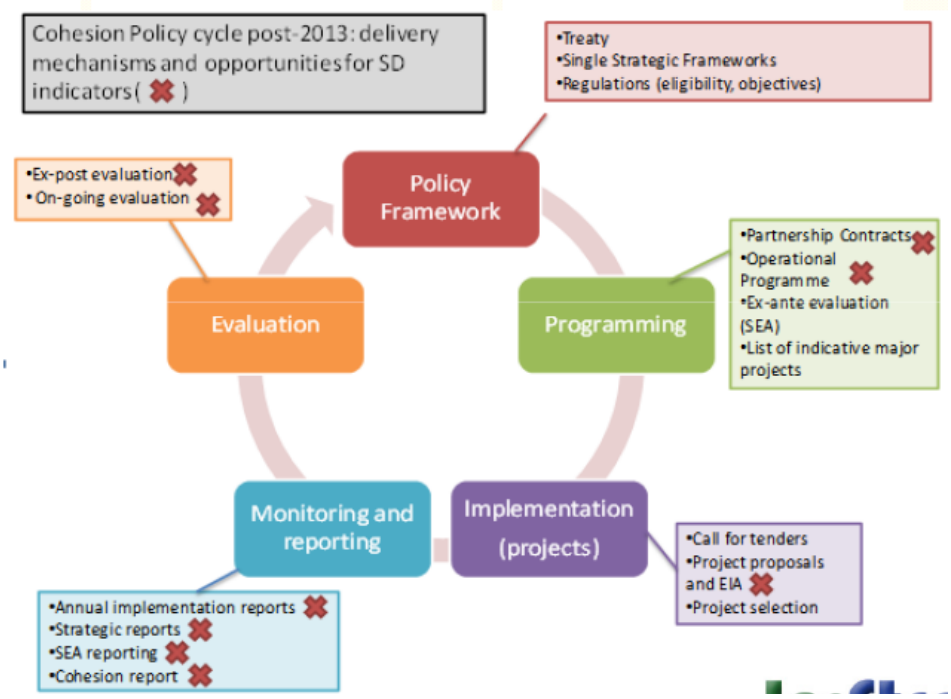

**Patrick ten Brink** (IEEP) (building also on input from his IEEP colleague, Indrani Lutchman) focused on Fisheries Policy, in particular in relation to the specific delivery mechanisms of the European Fisheries policy. He briefly presented the sustainability targets which can be pursued through the use of indicators in this policy area and briefly presented sustainability and biodiversity indicators (e.g. Marine Trophic Index, Average size of fish etc.) which have been used. Patrick stressed the importance of thresholds and response indicators in fisheries policy and suggested how they may be used. The policy cycle and key indicators for fishery policy is shown in the figure below:

*Fig.3 – The Policy Cycle and key indicators for fishery policy*



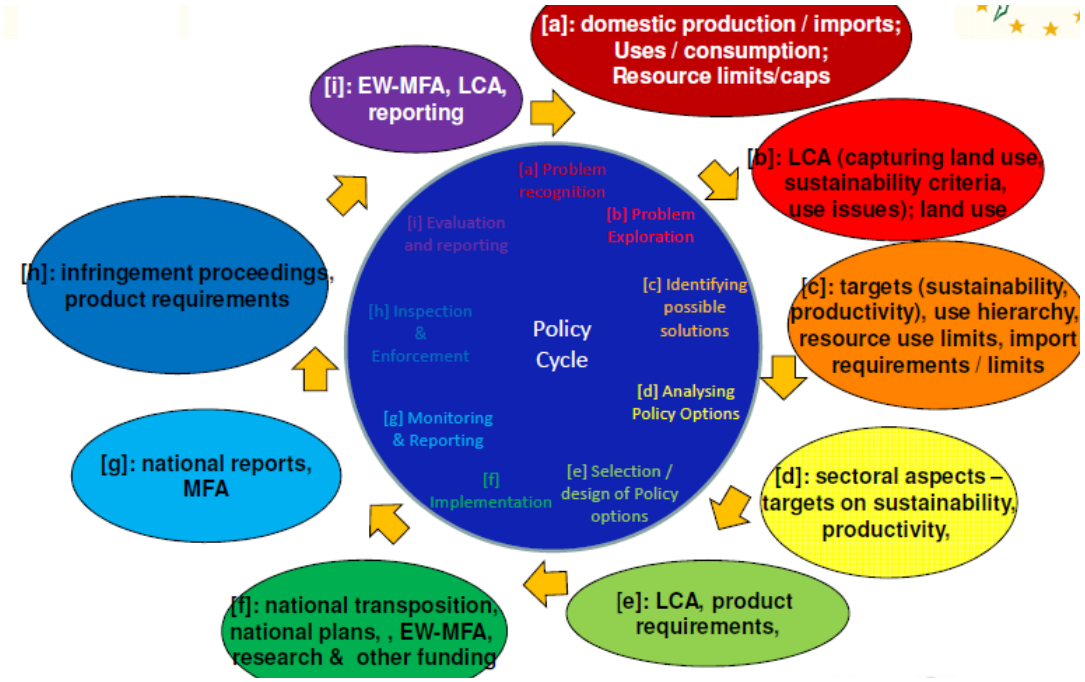

**Keti Medarova** (IEEP) focused on the EU Cohesion Policy, providing some background on the policy's primary objectives and key indicators to determine eligibility for funding and measure progress towards targets/ reporting. The proposed environmental 'core' indicators for 2007-2013 Cohesion Policy were presented. Keti noted these were primarily output indicators, and stressed that impacts/results indicators were neglected. In particular, indicators on biodiversity or resource use were not covered. Keti also presented a few examples of good practice of indicators used in some countries and regions, as well as future challenges and opportunities. The policy cycle for cohesion policy is shown in the figure below:

*Fig.4 – The Policy Cycle for cohesion policy*



**Doreen Fedrigo** (IEEP) focused on resource efficiency and identified the related policies where indicators can have a major role to play, namely in the resource strategy and waste policy, but also in a theoretical EU biomass policy. Focusing on the theoretical biomass policy, she also provided an illustration of the ways in which sustainability targets/ aims can be supported by indicators. She briefly presented some of the key areas of applications for indicators, such as material flow analysis, sustainability criteria/ product requirements and land use and land use change, providing a few examples (e.g. CEN technical standards on sustainability criteria). The policy cycle and key indicators for resource efficiency policy is shown in the figure below:

*Fig.3 – The Policy Cycle and key indicators for resource efficiency policy*




**Sonja Gantioler – Biodiversity and Ecosystem Service Indicators**

Sonja Gantioler's (IEEP) presentation focused on the use of biodiversity and ecosystem service indicators in biodiversity policy. She provided an overview of the different uses which can be made of biodiversity indicators in relation to biodiversity policy (i.e. measure, synthesises and communicate) and explained how recent developments, including the CBD 2010 biodiversity baseline and headline targets, call for the use of biodiversity and ecosystem indicators. Sonja illustrated the difference between single biodiversity indicators, baskets and composite indices and briefly presented a range of biodiversity indicators such as the Red List Index, the Common Bird Index and the Favourable Conservation Status and a number of SEBI indicators. She also provided an insight into potential indicators for ecosystem services for provisioning, regulating and cultural services, highlighting some of the challenges linked to them due to early stages in identification and development.

The full presentation is available here: http://www.in-stream.eu/download/07_Sonja_Gantioler_Biodiversity_Indicators.pdf

**Discussion**

The policy cycle approach was generally appreciated by the participants.

Some stressed the importance of land use indicators, an important issue common to several policy areas.

A participant suggested to link the analysis to interesting stories and key issues, such as (but not only) land use. Another highlighted the importance of ensuring the link with current policies, in order to gain the attention of governments and policy makers. The relationship with the media is also important, although it should be taken into account that media interest in indicators is usually of short duration. Indicators of performances and prices were considered powerful tool to communicate a message.

A participant stressed the importance of using indicators that can be linked to each other, in order to provide messages in different directions/policy areas. It was suggested to use a basket of indicators that are able to tell a story and that are linked to EU and national level interests.

## SESSION 3: Brainstorming sessions on potential and barriers for biodiversity related indicators in policy-making - Presentation of the key outcomes

During the breakout session, the participants were divided in 3 groups, each discussing the use of biodiversity indicators in one policy area among: biodiversity, resource efficiency and green growth

Each group was requested to associate biodiversity/ecosystem indicators with the different steps of the policy cycle of the policy area they were focusing on. To do so, they were asked to select between 5 and 10 biodiversity/ecosystem services indicators (including but not only from a list provided) which are particularly useful for policy-making in this field, and associate them with the most relevant step(s) in the policy cycle. Furthermore, for each of them they had to briefly justify: why the indicator was particularly valuable, why it was placed at the specific stage(s) of the cycle, how the indicator should/could be used, and if the indicator was easy to communicate – i.e. if suitable to be taken up by media.

The groups were also asked to discuss which specific policy issue (e.g. legislation, Strategies, Action Plans etc.) were more amenable to take on board biodiversity indicators, what were the main obstacles/limitations/gaps for using biodiversity indicators in the policy area of their focus and, if time allowed, if they knew of any biodiversity/ecosystem indicator currently not readily available for use in their area and why.

**Sonja Gantioler – Biodiversity & ESS indicators in biodiversity policy**

In the policy cycle exercise, the group located the majority of indicators under the phase 'policy recognition', with a focus on 'monitoring and reporting'. Only few indicators were located on the solution and analysis phase. It was noted that the design of the SEBI indicators might be a reason for this bias, as the focus of SEBI is on state and pressure

indicators, while response indicators are little represented. It turned out that ecosystem service indicators were missing throughout the policy cycle. In this context, the group noted that initiatives such as IPBES have just started and hence have not had an impact on the further development of related indicators yet. It was discussed whether indicators should be more linked to consumer behavior. A suggestion was to focus on analyses of prices in relation to scarcity (taking substitutes into account) as a potential indicator that would be usable for policy recommendations.

With regard to where policy instruments can help to foster the application of indicators, it was stated that the European Commission puts priority on effort-based indicators. Indicators should thus be able to tackle the link between action and results. In this context, both trade-off and synergies should be measured. As for specific policy instruments, it was noted that, at the EU level, the mandatory Impact Assessment (IA) provides an opportunity for the application of indicators - although not all policies are subject to an IA, e.g. the current CAP reform. The group stated that the impact of EU trade policies on (global) biodiversity is not yet sufficiently recognised; indicators could be developed to fill this gap (e.g. % of illegal logged timber in imports). Also, Green Infrastructure was stated as a field where indicators could help to monitor impacts.

As for the existing gaps in the use of indicators, the group mentioned again the EU trade policy as being a 'black box', meaning that its impacts (e.g. on biodiversity) are largely unknown. In this context, it was stated that indicators may not be able to identify *specific* impacts, but that they could help to communicate that there is *an* impact. When it comes to the private sector, it was noted that indicators could be used to measure sustainability of businesses; voluntary self-declaration could be a potential policy instrument in this context. The IUCN Barometer of Life was mentioned as a potential indicator that is particularly suitable for communication (rather than for measuring) and that could be applied in the EU. In general, the group stated that one single biodiversity indicator cannot do the whole job. A set of highly aggregated and very specific indicators is needed to inform policy and the broader public effectively.

With regard to IN-STREAM, it was stated that the value added of the project will be on the question of how biodiversity indicators can be integrated with other policy areas; the respective storylines (biodiversity, resource efficiency, green accounting) should therefore be integrated. Suitable Indicators could be identified/applied to form this common storyline (e.g., indicator on land use). In the end, IN-STREAM should be able to a) show decision-makers how the huge amount of (indicator) information can be used, and b) serve as an instrument to help the wider public understanding what is going on. In the respect, IN-STREAM should identify which indicators are relevant for which stakeholders.

### Doreen Fedrigo – Biodiversity & ESS indicators in resource use policy: focus on biomass

As resource efficiency policy is still relatively undeveloped, a theoretical policy area was selected for discussion. Biomass policy was chosen as it links very well with the other story lines, particularly on the issues of biodiversity and climate change. Initial discussion identified the potential approach taken to such a policy, that is, based on domestic production, imports and exports, a limit on uses of biomass would need to be set, using a

hierarchy of uses (food, materials, and lastly energy) as a guide for setting limits and eventually developing policy responses addressing these.

Given the theoretical nature of the policy, and the relative lack of knowledge of current consumption levels and impacts, many of the indicators chosen were higher level ones such as the ecological footprint, EMC, HANPP, etc. There was therefore a higher concentration of indicators selected for the early stages of the policy cycle – notably in the problem recognition and exploration phases. Another area of high concentration was in the final stages of the cycle, on monitoring, performance and review.

During discussion, it was identified that as the indicators used were focusing on biodiversity, this resulted in a distorted focus relating to impacts. Indeed, land use and water were identified as being of particular relevance as well. Therefore the selection of indicators going forward in the project would need to be considered.

Another set of indicators missing in the list were those related to economics, for example on levels of funding, on FDI, subsidies and prices of materials. It was felt that some indicator development would be needed for some of these. Social indicators were also missing.

A suggestion was made that it could be a good learning exercise to select an indicator to focus on to follow its use throughout the policy cycle and at the different multi-governance levels.

**Benjamin Goerlach – Biodiversity & ESS indicators in climate policy**

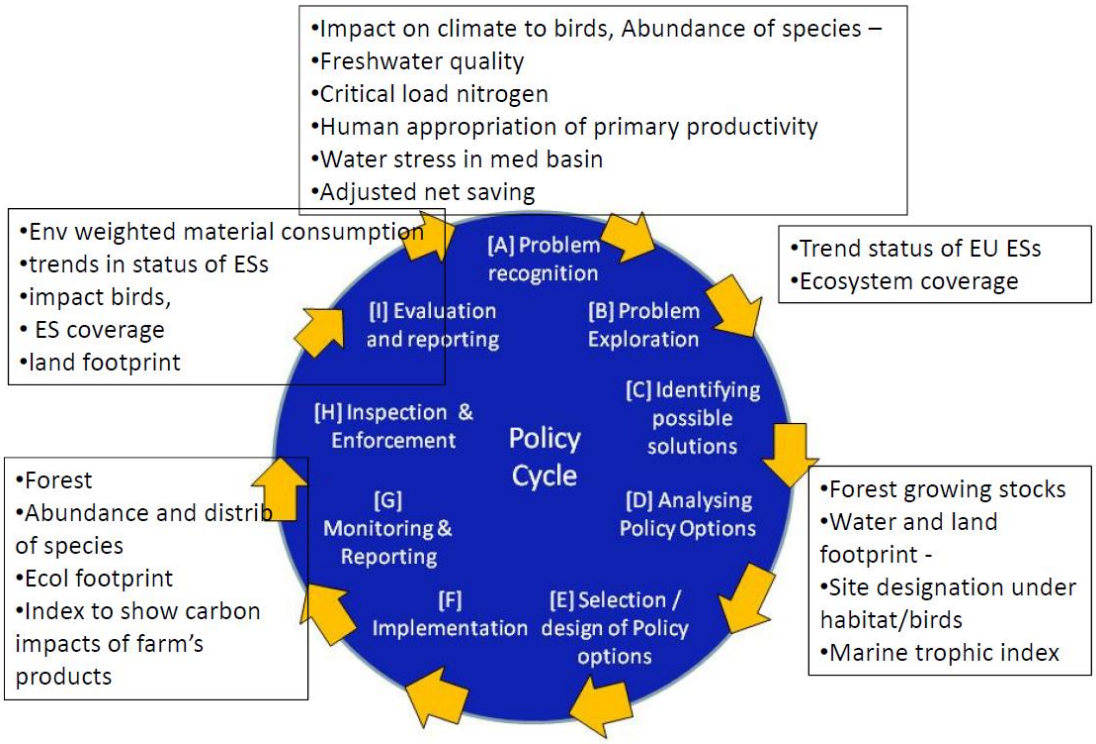
As green growth is potentially a very wide area, the group focused on climate change policy only, due to time limitations. A distinction between adaptation and mitigation policies was first made, as the indicators used and their scope in these two areas can be different.

For adaptation policy, it was noted that an indicator for habitat/species vulnerability due to climate change will be crucial, and should be used in the early stages of the policy cycle.

For mitigation policy, it was noted that it will be important to understand how policies interact with biodiversity, using indicators that can inform on the main threats to biodiversity that can be exerted by a policy (e.g. biofuels). These should be relatively 'rapid' indicators, i.e. able to inform on short term impacts. The team was unsure if such indicators are currently available, as climate change has typically very long-term effects.

Among the key biodiversity indicators of relevance for climate policy, the team indicated: Impact of climate on birds (being the one where the link between biodiversity and climate change is more explicit), Ecological Footprint, Status of Protected Areas, PDF, Red List, and others (see figure below). The team also suggested some new indicators beside those provided for the breakout session, namely: Land footprint, Water footprint, Mediterranean water stress and an indicator able to assess the carbon impact of farm's products.

*Fig.5 Key indicators for climate change policy and their position in the policy cycle (results from the working group)*




Broad indicators like land and water, although not perfect, could be useful as they are quickly available. It was also noted that, in some cases, projections could be more useful than actual figures.

As for the position on the policy cycle, it was noted that the indicators proposed mostly concentrate at the earlier stages of the process, and less at policy performance stages.

It was pointed out that suitable indicators for policy implementation were almost missing from the indicator list provided for the breakout session. It was unclear if this depended on the fact that biodiversity policy instruments were not yet linked to the climate change policy agenda and/or were not considered part of the solution.

In general, the team observed that policy decisions need to clarify why it is important to link policy to biodiversity, and how they will affect the economy. A wider set of indicators is needed to inform decisions.

With regard to communication, the team thought that the impact of climate change on birds would be an easy indicator to communicate. Other well known indicators such as the Ecological Footprint, although relatively popular, are more general and hence less suited to communicate strictly on the link between climate policy and biodiversity.

## SUMMARY

### Patrick ten Brink – Wrap-up

**Patrick ten Brink** noted that most participants acknowledged the added value of the project approach of providing a characterisation of the use of indicators in the different policy cycles and in different parts of the policy cycle. For the policy areas explored by the project, a robust picture of current strengths and weaknesses in integrating the use of indicators in policy making will be produced. Given the wealth of indicators on offer, effort should be focused on identifying ad assessing the indicators which are most promising and can offer a way forward to improve how we 'measure to manage'. The role of indicator frameworks such as the SEEA should also be investigated given its potential for being a 'game changer' in the GDP and Beyond developments.

The discussion throughout the day also highhlighted the importance of understanding the scale at which indicators can /should be used (national-regional) and the different stakeholders group that can benefit from using them. The need to take a global perspective with regard to the measurement of pressures on the natural environment was also stressed.

There was also a general endorsement of the idea of focussing the project's outcomes around the three storylines proposed. While each specific story line, and within them the specific policy areas, has merit in receiving specific attention, linkages and commonalities between them should also be explored and stressed – such as, for instance, the issue of land, which is relevant for all the three areas.

The aim of the policy analysis within the IN-STREAM project, concluded Patrick, will be to chracterise the use of indicators in policy cycles, structure the results along the storyline narratives, highlight strenghts and weaknesses of different apporaches, and identify the most promising indicators to improve the sustainability of policy making.

### Lucas Porsch – Update on the next steps of the project and workshops to come

**Lucas Porsch** briefly summarised the next steps and deliverables of the project. He explained that further work would be carried out as part of the quantitative analysis, and that this part would be finalised soon. Several deliverables are to be published within the next two months and will be accessible through the project's website (http://www.in-stream.eu/docs.html)

The qualitative analysis will continue, with a range of additional interviews taking place as part of the stakeholders' consultation on the use of economic, environmental and social indicators in different policy areas. Three case studies are to be prepared, focusing on interesting approaches on the use of indicators in three different countries. This work will lead to a report providing conclusions and recommendations on the use of indicators in a range of policy areas. A number of workshops will be organised within the next months: a workshop in Prague on 7 April with a focus on resource efficiency, and a workshop in Berlin on 7 July with a focus on Green Growth. A final workshop will take place in Brussels in September. This last workshop will be the opportunity to summarise the analysis, present best practices, point to opportunities for mutual learning across countries/experiences and present and discuss the recommendations.

The full presentation is available here: http://www.in-stream.eu/download/08_Samuela_Bassi_Next_Steps.pdf

**Discussion**

A participant noted the potential for IN-STREAM to inform policy making, in particular the upcoming decisions on the biodiversity agenda and the resource efficiency debate in June this year, and well as the policies related to the green economy. The gap between climate indicators and biodiversiry indicators was percieved as particularly important and should be addressed

To inform policy-making it would be very valuable to link the three storylines, since these issues are interlinked and pursuing objectives in each one of these policy areas in isolation might undermine success in all three of them. This is illustrated for instance by the recent attacks on the biofuels targets. These tensions need to be reconciled by ensuring common policy action.

A participant proposed to strengthen the link with water indicators in the resource efficiency storyline, e.g. by including the water footprint. This could also offer an opportunity to link the IN-STREAM and OPEN EU projects. A joint analysis of a mismatch in the way decisions are taken and the way ecosystems work could offer an entry point to connect both projects.

It was also suggested that the issue of technogloy and innovation should be taken into account in the IN-STREAM analsysis, as this is a area of interest to Dg Research and to several policy areas. The Green Growth workshop should offer the opportunity to look more into these issues and their relationship with indicators.

## OUTCOME OF DAY 2

Several useful insights and information were gathered at this event. With the valuable feedback received so far, the IN-STREAM team will now be able to:

- Refine the biodiversity storyline to reflect the feedback on the indicators most suited to inform policy-making in various policy areas.
- Ensure a better link across the three storylines, highlighting overlaps and synergies in the use of sustainability indicators across them, and the importance of overcoming the isolation of policies in decision making
- Explore possibilities to further link the IN-STREAM and OPEN:EU project
- Strengthen and update the overall qualitative analysis in light of the comments and suggestions received

The team is also looking forward to further comments, ideas and suggestions from participants on IN-STREAM indicators and the policy cycles.

For further information on the project or additional comments, please visit the IN-STREAM website http://www.in-stream.eu/ or contact the project coordinator Lucas Porsch or workshop and policy analysis coordinator Samuela Bassi: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