Nutrient data, a crucial input to environmental assessments

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ESPP – BioRefine workshop, in cooperation with the European Commission
‘Nutrient data monitoring to support decision making’
Ghent (Belgium), 3-4 September 2015
Session ‘Institutional nutrients monitoring and how nutrients data “could” feed current indicators’
The policy context

Source: EEA Multiannual Work Programme 2014–2018
‘In 2050, we live well, within the planet's ecological limits.

Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a global safe and sustainable society.’

Source: 7th EU Environment Action Programme
The overall picture: Efficiency improvements have not secured long-term resilience.

- Protecting, conserving and enhancing natural capital
- Resource efficiency and the low-carbon economy
- Safeguarding from environmental risks to health

Past (5–10) year trends:
- Improving trends dominate
- Trends show mixed picture
- Deteriorating trends dominate

20+ years outlook:
- Improving trends dominate
- Trends show mixed picture
- Deteriorating trends dominate

Source: EEA. SOER 2015 Synthesis report.
Ecosystem Accounting
Ecosystems mapping & assessment
### Experimental Ecosystem Accounting

#### Proposed accounts – Structure

<table>
<thead>
<tr>
<th>primary ecosystem accounts</th>
<th>ecosystem component accounts and related information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem extent account</td>
<td>Land cover account</td>
</tr>
<tr>
<td>Ecosystem condition account</td>
<td>Carbon account</td>
</tr>
<tr>
<td>Ecosystem services supply account</td>
<td>Water resources account</td>
</tr>
<tr>
<td>Ecosystem services use account</td>
<td>Biodiversity account</td>
</tr>
<tr>
<td>Ecosystem capacity account</td>
<td>Drivers of ecosystem condition &amp; change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>structure of accounts under development and discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem capacity account</td>
</tr>
<tr>
<td>Ecosystem asset account</td>
</tr>
<tr>
<td>Augmented input-output table*</td>
</tr>
<tr>
<td>Integrated sector accounts &amp; balance sheets*</td>
</tr>
</tbody>
</table>

* These accounts reflect the integration of ecosystem accounting based information into the standard set of national accounts

EU Biodiversity Strategy to 2020
Mapping of ecosystems and their services (MAES) – Framework

Cause-effect framework for ecosystems

**Drivers**
- agriculture, forestry, water management, settlement, transport, industry, tourism, etc

**Pressures**
- pollution
- nutrient load
- fragmentation, climate change, land take, intensification, overharvesting,

**State / Condition**
- ecosystem state and quality / structure and functioning
- nutrient condition

**Impact**
- loss of ecosystem function / loss of biodiversity

**Response**
- maintaining ecosystem functioning and biodiversity prevention measures, nutrient, pollution reduction
Pressure on agro-ecosystems functioning

Source: European Topic Centre Spatial Information and Analysis 2014
Land accounts – from land cover mapping to accounting

Change matrix (44x43=1932 changes) summarised into flows

<table>
<thead>
<tr>
<th>Land cover flows</th>
<th>1990</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCF1 Urban land management</td>
<td>313</td>
<td>780</td>
</tr>
<tr>
<td>LCF2 Urban residential sprawl</td>
<td>209</td>
<td>4149</td>
</tr>
<tr>
<td>LCF3 Sprawl of economic sites and infrastructures</td>
<td>209</td>
<td>5627</td>
</tr>
<tr>
<td>LCF4 Agriculture internal conversions</td>
<td>209</td>
<td>15695</td>
</tr>
<tr>
<td>LCF5 Conversion from other land cover to agriculture</td>
<td>209</td>
<td>2450</td>
</tr>
<tr>
<td>LCF6 Withdrawal of farming</td>
<td>209</td>
<td>2393</td>
</tr>
<tr>
<td>LCF7 Forests creation and management</td>
<td>209</td>
<td>254</td>
</tr>
<tr>
<td>LCF8 Water bodies creation and management</td>
<td>209</td>
<td>191</td>
</tr>
<tr>
<td>LCF9 Changes due to natural &amp; multiple causes</td>
<td>209</td>
<td>311</td>
</tr>
</tbody>
</table>

Total Consumption of 1990 land cover, km²

No Change: 1149717
Total land cover 1990, km²

No Change: 3500149

Total land cover 2000, km²

No Change: 45473

Total, km²

Land cover changes – ‘Land take’
Pressure on soil and ecosystem functioning

Nutrient data/information & EEA

- EEA is user
- Data/information feeds into
  - ecosystems assessment
  - ecosystem capital accounting
  - food systems assessment (across economy)
- Time series and geographical coverage required
Thank you!

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Explore SOER 2015 online: eea.europa.eu/soer