Evolution of the Environmental “Acquis”

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INSPIRE Policy Foundations

• The **EU 6th Environmental Action Programme 2002-2012**

**Seven Thematic Strategies**

1. Clean Air For Europe (CAFE)
2. Soil protection
3. Sustainable use of pesticides
4. Marine environment
5. Waste prevention and recycling
6. Sustainable use of natural resources
7. Urban environment

+ Mitigation of natural and man-made hazards leading to disasters

**Focus on « knowledge-based » policy making and assessment**
Environmental acquis

• comprises over < 200 legal acts (including international agreements and data streams to the European Environmental Agency) covering horizontal legislation, water and air pollution, management of waste and chemicals, biotechnology, nature protection, industrial pollution and risk management, noise and radiation protection, etc
Information requirements under the environmental acquis

- **Integrated Assessments**: To assess and compare state of, and trends in the environment and the associated pressures, impacts and socio-economic and natural driving forces that either cause or result from these changes.

- **Policy Effectiveness**: To use information on trends and implementation of policies to assess, both *ex-post* and *ex-ante*, the impacts and effectiveness of the policy measures.

- **Policy Compliance**: To check the compliance position and implementation of the policy measures at various levels of government.

- **Policy Implementation**: To implement operational local/regional operational measures for mitigation and adaptation (‘response’ support)
Data sources for Integrated assessments & Policy Effectiveness

- Environmental legislation -> obligation-based reporting — on the state of the environment, compliance or policy effectiveness => input to indicators

- But … but in some cases it can be outdated because the nature of problems have changed since the legislation was adopted.

- Therefore …complemented by collection of data through other channels leading to more relevant and demand-driven environmental information
Sustainable Development Indicators

EU level long-term SD indicators to monitor our economic development while protecting the environment and meeting our social goals

1. Economic development
2. Poverty and social exclusion
3. Ageing society
4. Public Health
5. Climate change and energy
6. Production and consumption patterns
7. Management of natural resources
8. Transport
9. Good governance
10. Global partnership

-Eurostat-
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<th>Sub-themes</th>
<th>Links</th>
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<td>1. Biodiversity</td>
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<td>1a. Population trends of farmland birds</td>
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<td>2. Fish catches outside safe biological limits</td>
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<td>4. Population connected to wastewater treatment systems</td>
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<td>5. Emissions of organic matter as biochemical oxygen demand to rivers</td>
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<td>6. Index of toxic chemical risk to aquatic environment</td>
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<td>4a. Built-up area as a % of total land area</td>
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<td>5. Exceedance of critical loads of acidifying substances and nitrogen in sensitive natural areas</td>
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<td><strong>THEME 7: MANAGEMENT OF NATURAL RESOURCES</strong></td>
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**Example: Management of natural resources**

![Graph showing population index of farmland birds from 1991 to 2002](image)
Collection of data for Sustainable Development Indicators development

- Eurostat approach: maximum use of existing indicator initiatives; OECD etc...
- For environment cross-feeding with European Environment Agency indicators
  - European Environment Agency core set of 37 indicators categorised according to DPSIR:
    - Driving Forces
    - Pressures
    - State
    - Impact
    - Response
### European Environment Agency core set of 37 indicators

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<th>Category</th>
<th>Indicator</th>
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<td>4. Exceedance of air quality limit values in urban areas</td>
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<td>5. Exposure of ecosystems to acidification, eutrophication and ozone</td>
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<td>6. Consumption of ozone-depleting substances</td>
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<td><strong>Biodiversity</strong></td>
<td>7. Threatened and protected species</td>
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<td>9. Species diversity</td>
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<td><strong>Climate change</strong></td>
<td>10. Greenhouse gas emissions and removals</td>
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<td>11. Projections of greenhouse gas emissions and removals and policies and measures</td>
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<td>12. Global and European temperature</td>
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<td>13. Atmospheric greenhouse gas concentrations</td>
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<td><strong>Terrestrial</strong></td>
<td>14. Land take</td>
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<td>15. Progress in management of contaminated sites</td>
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<td><strong>Waste</strong></td>
<td>16. Municipal waste generation</td>
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<td>17. Generation and recycling of packaging waste</td>
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<td><strong>Water</strong></td>
<td>18. Use of freshwater resources</td>
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<td>19. Oxygen-consuming substances in rivers</td>
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<td>20. Nutrients in freshwater</td>
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<td>21. Nutrients in transitional, coastal and marine waters</td>
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<td>22. Bathing water quality</td>
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<td>23. Chlorophyll in transitional, coastal and marine waters</td>
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<td><strong>Agriculture</strong></td>
<td>24. Urban wastewater treatment</td>
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<td>25. Gross nutrient balance</td>
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<td>26. Area under organic farming</td>
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<td><strong>Energy</strong></td>
<td>27. Final energy consumption</td>
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<td>28. Total energy intensity</td>
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<td>29. Total energy consumption</td>
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<td>30. Renewable energy consumption</td>
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<td>31. Renewable electricity</td>
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<td><strong>Fisheries</strong></td>
<td>32. Status of marine fish stocks</td>
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<td>33. Aquaculture production</td>
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<td>34. Fishing fleet capacity</td>
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<td><strong>Transport</strong></td>
<td>35. Passenger transport demand</td>
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<td>36. Freight transport demand</td>
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<td>37. Use of cleaner and alternative fuels</td>
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*INSPIRE a Framework for Cooperation, 23 June 2010, Krakow*
INSPIRE Data Scope (1)

Annex I
1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites

Annex II
1. Elevation
2. Land cover
3. Ortho-imagery
4. Geology
### Annex III

1. Statistical units
2. Buildings
3. Soil
4. Land use
5. Human health and safety
6. Utility and governmental services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities

### INSPIRE Data Scope (2)

11. Area management/restriction /regulation zones & reporting units
12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
19. Species distribution
20. Energy Resources
21. Mineral resources
Environmental phenomena do not stop at national borders!

- 20% of the EU citizens (110 million) live within 50 Kms from a border.
- 60 million EU citizens live less than half an hour (25 kms) from a border.
Natural Hazards - Floods

• In the period 1998-2002 floods comprised 43% of all disaster events in Europe
  – 100 major floods
  – 700 dead
  – Half a million displaced people
  – 25 billion Euros uninsured economic loss

• Along the Rhine, 10 m people live in areas liable to extreme flooding, potential damage estimated at 165 bn. Euros

• 101,000 kms of coastline, population doubled in last 50 years. Assets within 500 mt of coast = 500-1000 bn euros.
Directive on the Assessment and Management of Floods

- A preliminary flood risk assessment
  - Including art. 4 a-f
    - (e) Likelihood of future floods and projected impact of climate change and land use trends
- Prepare flood risk maps by 2013 – with 6 yearly updates
- Flood risk management plans by 2015
Flooding

Information needs

- Meteorology
  (solar radiation, potential, evapotranspiration, wind speed, precipitation, snowmelt, etc)
- Land characteristics
  (infiltration capacity, canopy density, land cover, etc)
- Catchment characteristics
  (slope angle, channel network, channel form, altitude, etc)
- Hydrology
  (Runoff rate, stream discharge, velocity, flood magnitude/frequency/extent)
- Impacts
  (Habitats, households, flood protection systems)

III – 14 Meteorological geographical features
III – 13 Atmospheric conditions

III – 3 Soils

II – 2 Landcover

I-8 Hydrography
  I- 2 Elevation
  III – 7 Environmental Monitoring Facilities

III – 12 Natural Risk Zones

Runoff
Stream discharge

Magnitude Frequency Extent

III – 18 Habitats and biotopes
III – 19 Species distribution
III-10 Population distribution — demography
III- 6 - Utility and governmental services
Etc.

Source: GMES BICEPS Report
Floods – FLAPP findings

- FLAPP* ‘Flood Awareness & Prevention Policy in border areas’

OBSTACLES TO COOPERATION BETWEEN AUTHORITIES IN FLOOD MANAGEMENT

- Different levels of experience and knowledge on both sides of the border may be an obstacle to successful cooperation.
  - Different levels of data availability between counterparts will also result in a lack of meteorological and hydrological data for the whole river system.
  - Another possible obstacle is the use of different, non-compatible models, monitoring techniques etc.
  - In many cases it is not clear for water managers where to get specific knowledge and information.
  - Valuable knowledge at private institutes may be (too) expensive for public water managers.

- Together, these problems can lead to the use of data of different quality on both sides of the border.

Environment and Health

- 20 million Europeans suffer from respiratory problems every day
- 10% of European children suffer from asthma
- In the EU in 2000, about 350,000 were seriously affected due to air pollution caused by fine particulate matter.
- Current levels of ground-level ozone cause more than 20,000 premature deaths each year and dangerous levels of 'smog', linked with high summer temperatures and nitrous oxide emissions, are on the rise.
Directive on Ambient Air Quality

“ Atmospheric modelling and measurements of air pollution demonstrate beyond doubt that the pollution emitted in one Member State contributes to measured pollution in other Member States. This shows that individual Member States cannot solve the problems alone and concerted action at the EU scale is required.”
INSPIRE DATA Themes and Air Quality

Information needs
- Source activities (extent, location, production, energy consumption etc)
- Emissions (emissions rates by pollutant and source activity)
- Dispersion processes (hourly wind speed/direction, temperature, stability, cloud cover, mixing height, temperature, topography, land cover etc)
- Atmospheric concentrations (hourly/daily/annual concentrations by pollutant)
- Exposures and impacts (population, habitats, heritage sites)

Transport
Industry/commerce
Energy production
Waste management
Domestic sources
Agriculture

III – 7
Environmental Monitoring Facilities

PM_{10}, NO_x, SO_2, CO, P_2, Benzene, PAHs, metals

I – 2
Elevation

II – 2
Landcover

III – 14
Meteorological geographical features

III – 13
Atmospheric conditions

Dispersion
Transformation
Deposition

III – 18
Habitats and biotopes

III – 19
Species distribution

III – 10
Population distribution — demography

III – 6
Utility and governmental services
Etc.

Source: GMES BICEPS Report
Soils Thematic Strategy

- Risk prevention, mitigation and restoration
  - Identify risk areas for soil degradation
    - Erosion
    - Organic matter decline
    - Compaction and decrease of porosity
    - Salinisation
    - Landslides

- Soil contamination
  - Identify contaminated sites – posing a risk to human health or environment
Pesticides Directive

- Specific measures to protect the aquatic environment
  - Buffer zones – defined as a function of the risk of pollution (soil, climate, etc.)
  - Measures to limit aerial drift (hedge rows etc.)
- Reduction of pesticide use in sensitive areas
  - Identify and list sensitive areas
    - Non-agricultural areas with high run-off risk or leaching.
- Reporting – info exchange
  - Through to be defined RISK INDICATORS
Health/Biodiversity/Agriculture

Data & Information Requirements

Source: GMES BICEPS Report
Noise Directive

Data & Information Requirements

**Information needs**

- **Airports**
  - (aircraft movements, emissions, airport layout, aircraft noise emissions)

- **Road traffic**
  - (road network, road characteristics, fleet mix, traffic flow, speed, road traffic noise emissions)

- **Railways**
  - (rail network, train volume, speed, train type)

- **Industry**
  - (land use, industrial noise emissions)

- **Exposure**
  - (population distribution, noise insulation, building characteristics, noise levels)

**Take-offs and landings**

- Noise emission characteristics (aircraft type)

**Ground movements**

- Aircraft movements (by time of day)

**Runway layout**

- Runway noise

**Fleet mix (by time of day)**

- Traffic flow (by time of day)

- Traffic speed (by time of day)

- Road layout / location

**Road surface**

- Road traffic noise

**Railway network**

- Train movements (by time of day)

**Train speed**

- Train type

**Railway noise**

- Noise levels (day, night, evening)

**Exposed populations**

- Number of inhabitants

- Noise insulation

- Building height

- Building type

- Noise mitigation

- Area of land (by noise class)

- Population exposures (by noise class)
Information on environment and health is scattered: not easily accessible, often not comparable, and not of the right quality.

Environmental data sets are generally not gathered for exposure and health purposes (i.e., with incomplete georeferencing and little or no cross referencing to human exposure) and so are of limited direct use for health assessment purposes.

Grass roots problem: Geo-traceability ....
Main deficits of current developed indicators for monitoring environmental health policy

• Numerous indicators sets available, mostly aimed at environment OR health, except WHO-EHIS
• No shared institutional infrastructure
• Differences in indicator definitions and construction (geographical scale, age groups, diagnosis, time periods)
• Differences in data collection/reporting systems
• Lack of harmonized data quality control
• Limitations of international reporting mechanisms in providing EH relevant data
• Many different dataholders/reporting obligations
**Marine Strategy Framework directive**

**MSFD**
- Art.4 Marine regions or subregions
- Art.8 Assessment
  - Environmental status
  - Physical, chemical features
  - Habitat types
  - Biological features
  - Hydro-morphology
  - Pressures and impacts analysis
  - Economic and social analysis

**INSPIRE**
- Annex III.16 Sea Regions
  Several Annex I/II/III themes related

- Requires Consistent methodologies
  -> Take account of transboundary impacts and features

Data and Information Needs?

Driving forces

Pressures

State

Impact

Source: GMES BICEPS Report
• **Discovery of Data.** It is difficult for potential users to obtain an overview of what data are available for a particular parameter in a particular region.

• **Access to data.** Those holding the data may not release them either because of confidentiality or security constraints, because they do not or cannot allocate sufficient resources for archiving and maintaining data.

• **Use of data.** Even where data are available, their use or re-use may be limited by the data policy of the owner.

• **Cost of data.** The prices imposed by some data-owners undoubtedly reduces the uptake of these data by users.

• **Coherence of Data.** Developing a complete picture in time and space over a sea-area using data collected by different bodies is complicated by fragmented standards, formats and nomenclature. This is particularly the case when there is a need to study cross-border areas.

• **Quality of Data.** There are no universally-recognised measures of quality, precision or accuracy. Metadata documentation may be sparse or inadequate so potential users do not know what confidence to ascribe to the data.

• **Quantity of Data.** Finally there is some concern as to whether enough data is being collected. The current fragmented nature of data collection makes it difficult to determine whether the right data is being collected, whether it is being collected frequently enough or whether there are gaps in its coverage.
• Streamlining legal requirements
  – Over-arching EU legislation which impacts on the sharing of data and information
  – Information content & reporting in legislation related to the environment
• Building more efficient data and information sharing infrastructures
• Ensure availability of ‘fit-for-purpose’ data underpinning environmental information through adequate monitoring
Thank you for your attention.