How systems approaches are informing and assisting industry and government decision-making

Jacqueline McGlade
European Environment Agency

Evolution of environmental issues and challenges

In the spotlight in		Climate Change	Natural Resources and Waste	Nature and Biodiversity	Environment and Health
1970s/1980s (until today)	Increasing degree of complexity	Reduce greenhouse gas emissions from **power and heating plants**; reduce emissions from **landfills**.	Reduce hazardous substances in waste; Reduce impact from **waste disposal**; reduce impacts from **landfills** and **spills**	Protect individual **species** (eg birds) and **habitats** (eg NATURA 2000).	Reduce **emissions of specific pollutants** into air, water, soil; improve **wastewater** treatment
1980s/1990s (until today)		Reduce greenhouse gas emissions from **transport and agriculture**; increase share of **renewable** energy.	Reduce and recycle **waste**; reduce **waste generation** through prevention approach.	Establish **ecological networks**; manage **invasive species**; reduce pressure from **agriculture, forestry, fisheries and transport**	Reduce **emissions** of pollutants from common sources (e.g. transport related noise and air pollution) into air, water, soil; improve regulation of **chemical substances.**
1990s/2000s (until today)		Establish economy wide approaches, provide behavioural incentives and balance drivers of **consumption**; share global burdens on **mitigation** and **adaptation.**	Achieve sustainable **resource use** (eg material flow, food, energy, water) and **consumption** in the face of increasing demand and competition.	Focus on **ecosystem services** linked to climate change, resource use and health; account for use of **natural capital** in decision in sectoral management; reduce the **global footprint.**	Reduce people's **combined exposure** to harmful pollutants and other stressors link better human health and **ecosystem health**.

European policy for energy efficiency

- ‘The world’s energy system is at a crossroads. Current global trends are patently unsustainable – environmentally, economically, socially.’

- IEA, World Energy Outlook 2008

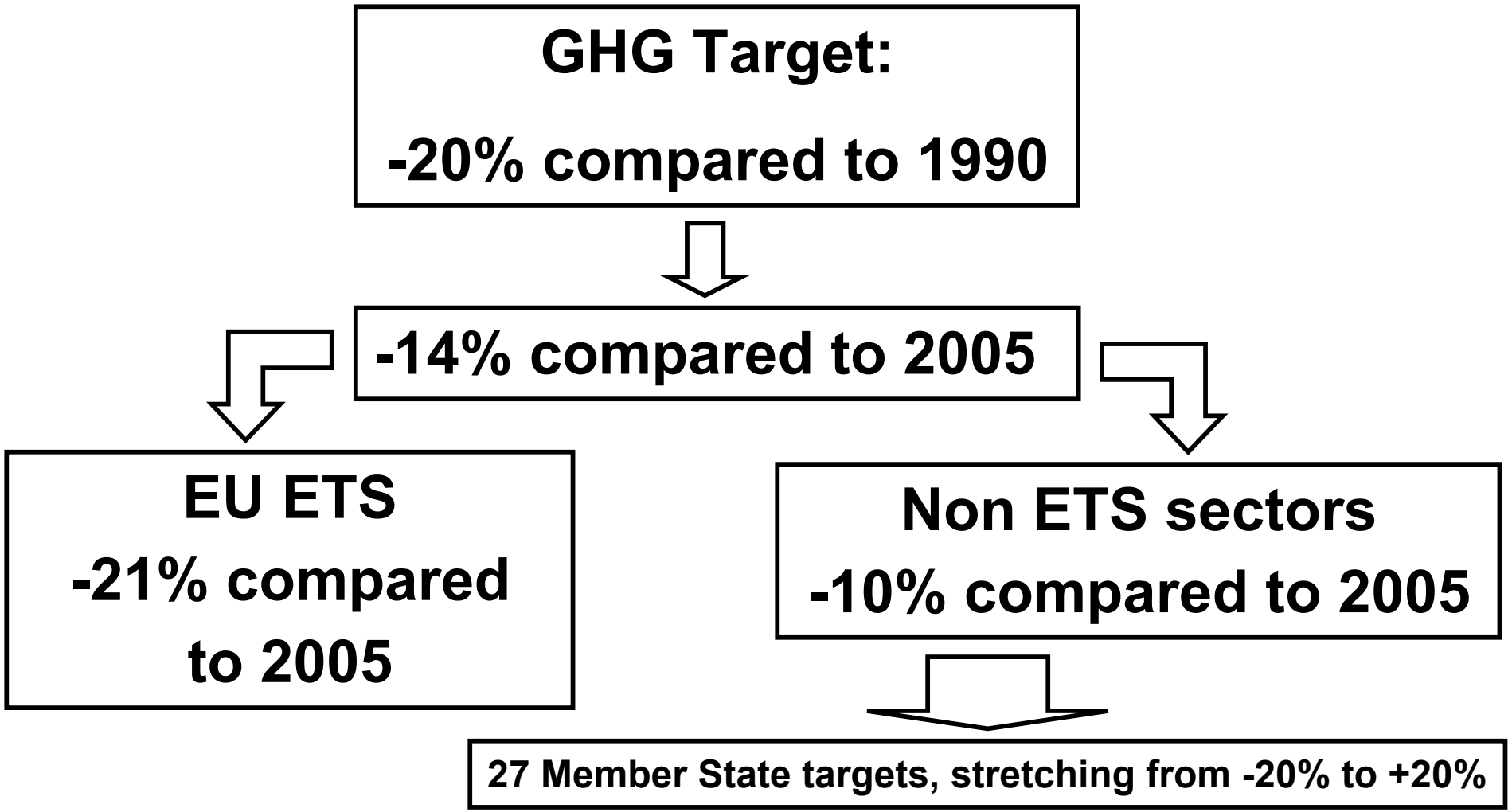
European Environment Agency

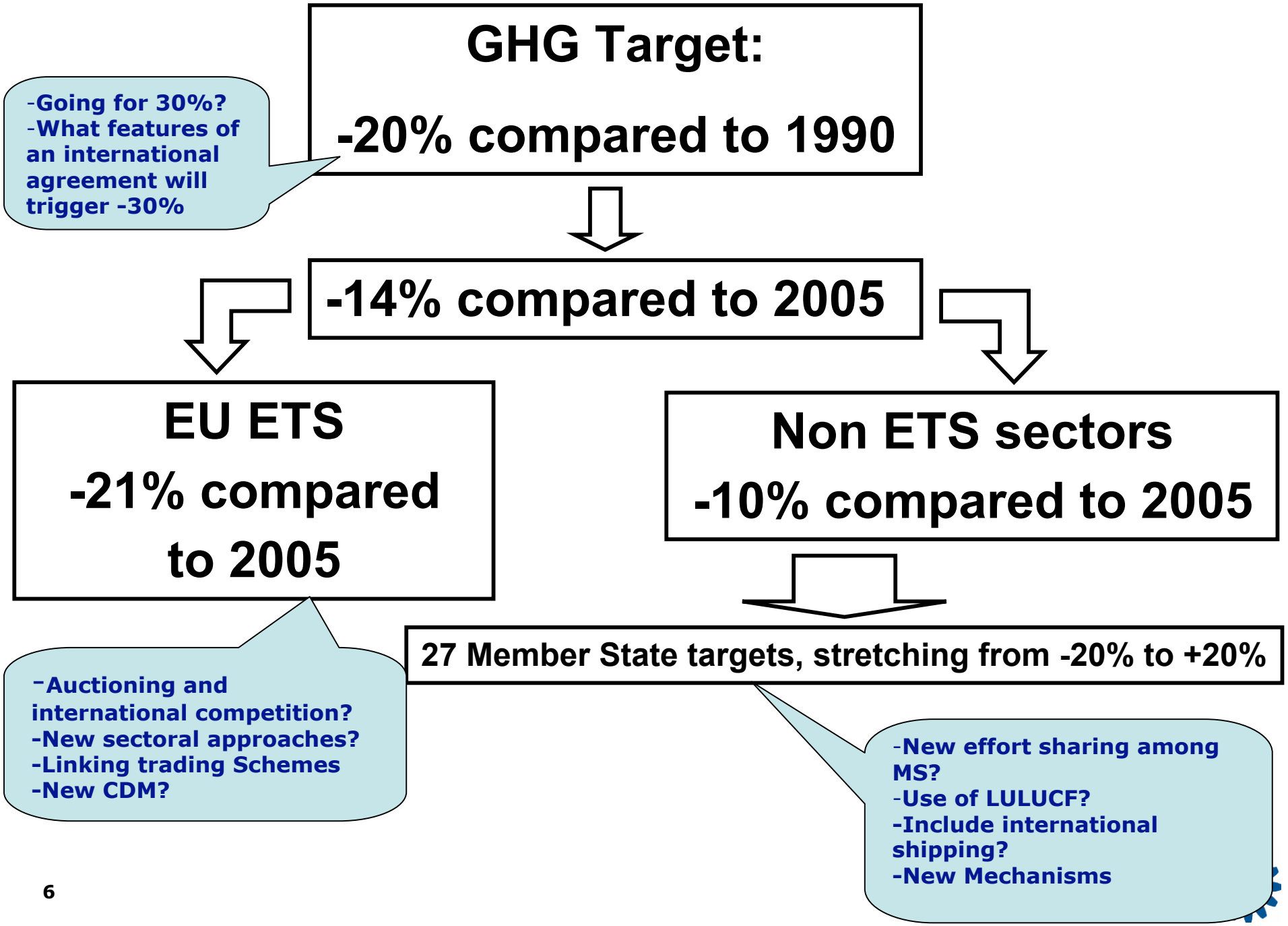
The 2020 targets in the Climate Action and Renewable Energy (CARE) package'

Energy for a Changing World

- 20% GHG reduction compared to 1990
  - Independent commitment
- 20% renewables share of final energy consumption
- 10% biofuels in transport, with
  - production being sustainable
  - second generation biofuels commercially available
- 20% energy efficiency target: non-binding

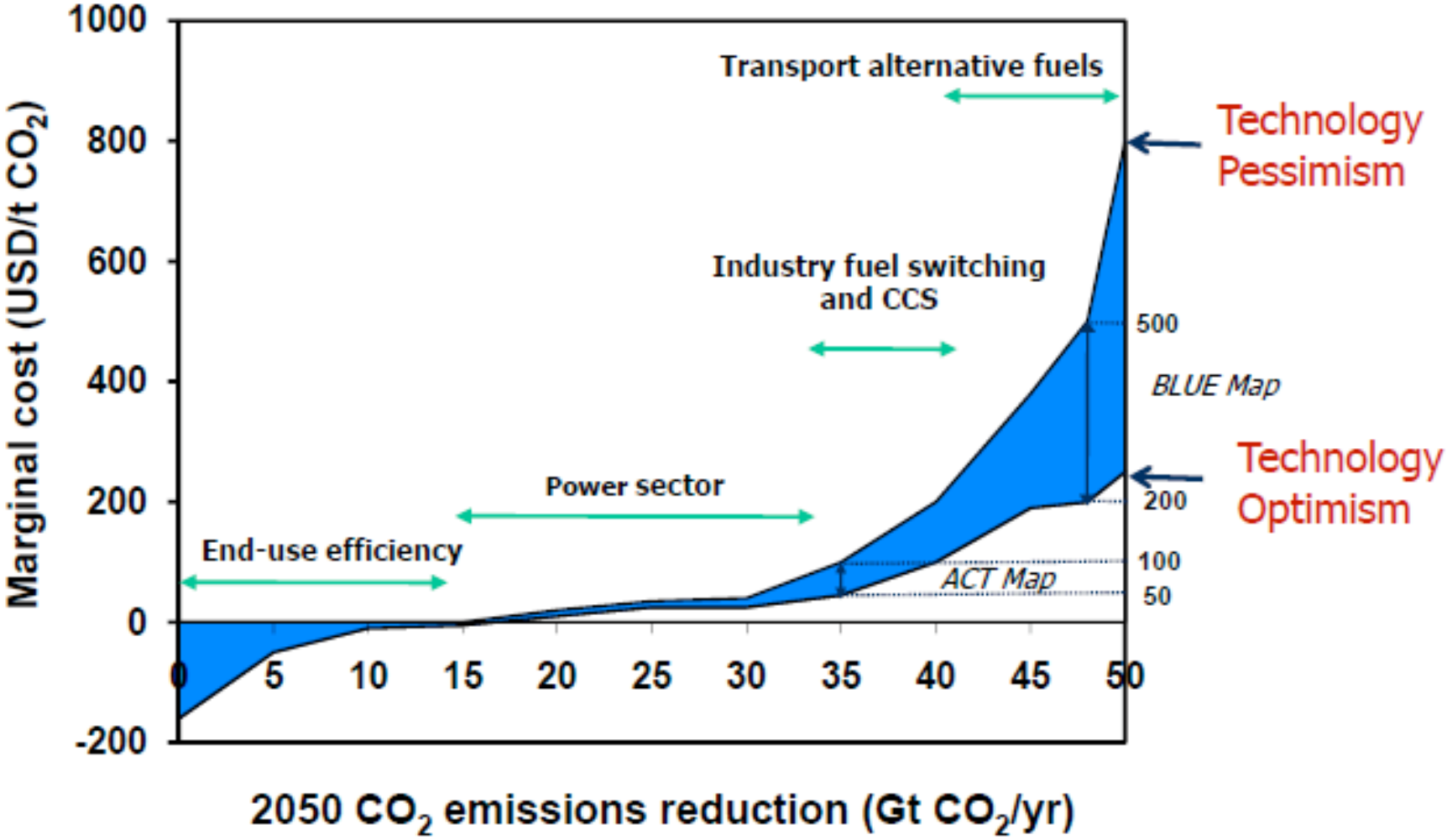
How will the emission targets be met?




GHG Target:
-20% compared to 1990
-Going for 30%?
-What features of an international agreement will trigger -30%
-14% compared to 2005
EU ETS
-21% compared to 2005
Non ETS sectors
-10% compared to 2005
27 Member State targets, stretching from -20% to +20%
-Auctioning and international competition?
-New sectoral approaches?
-Linking trading Schemes
-New CDM?
-New effort sharing among MS?
-Use of LULUCF?
-Include international shipping?
-New Mechanisms

Cost of emissions reductions

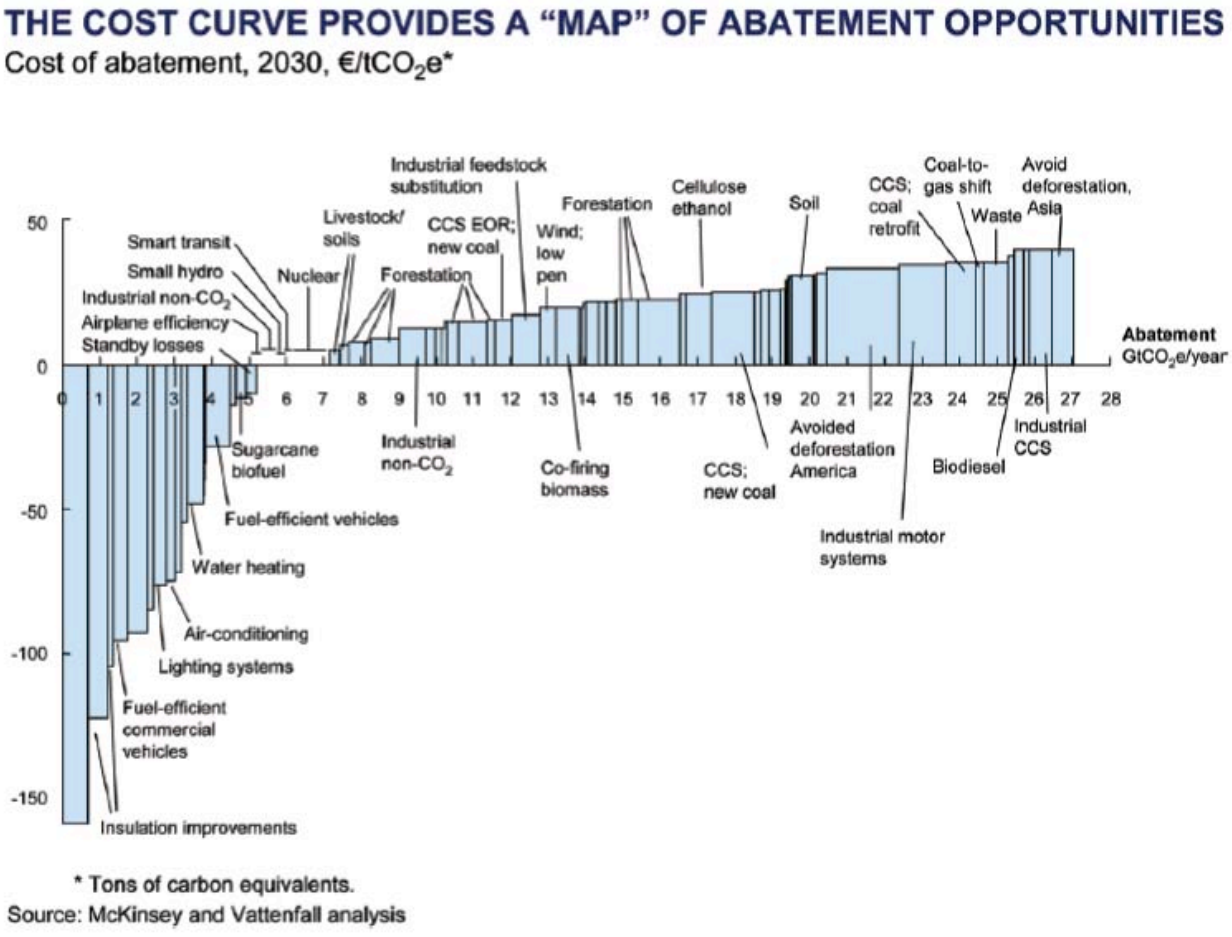
IEA, Energy and Technology Perspectives 2008



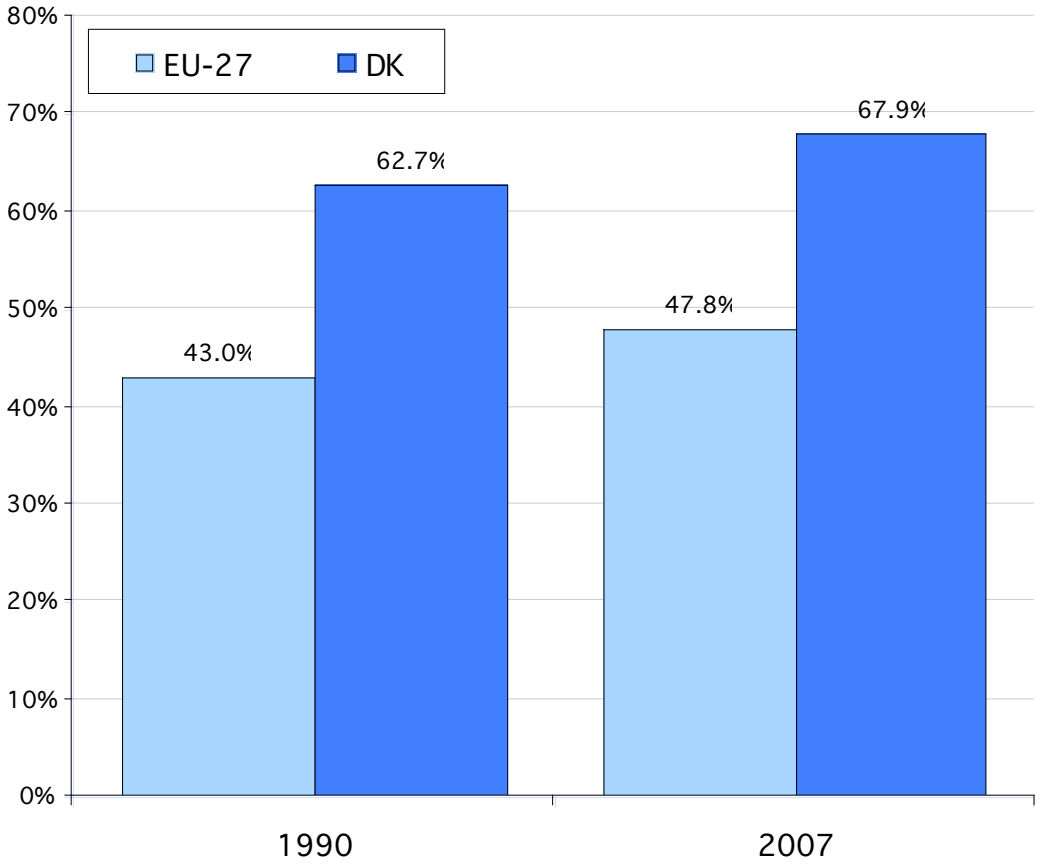
European Environment Agency

Cost of emissions reductions

McKinsey Global Institute, 2008

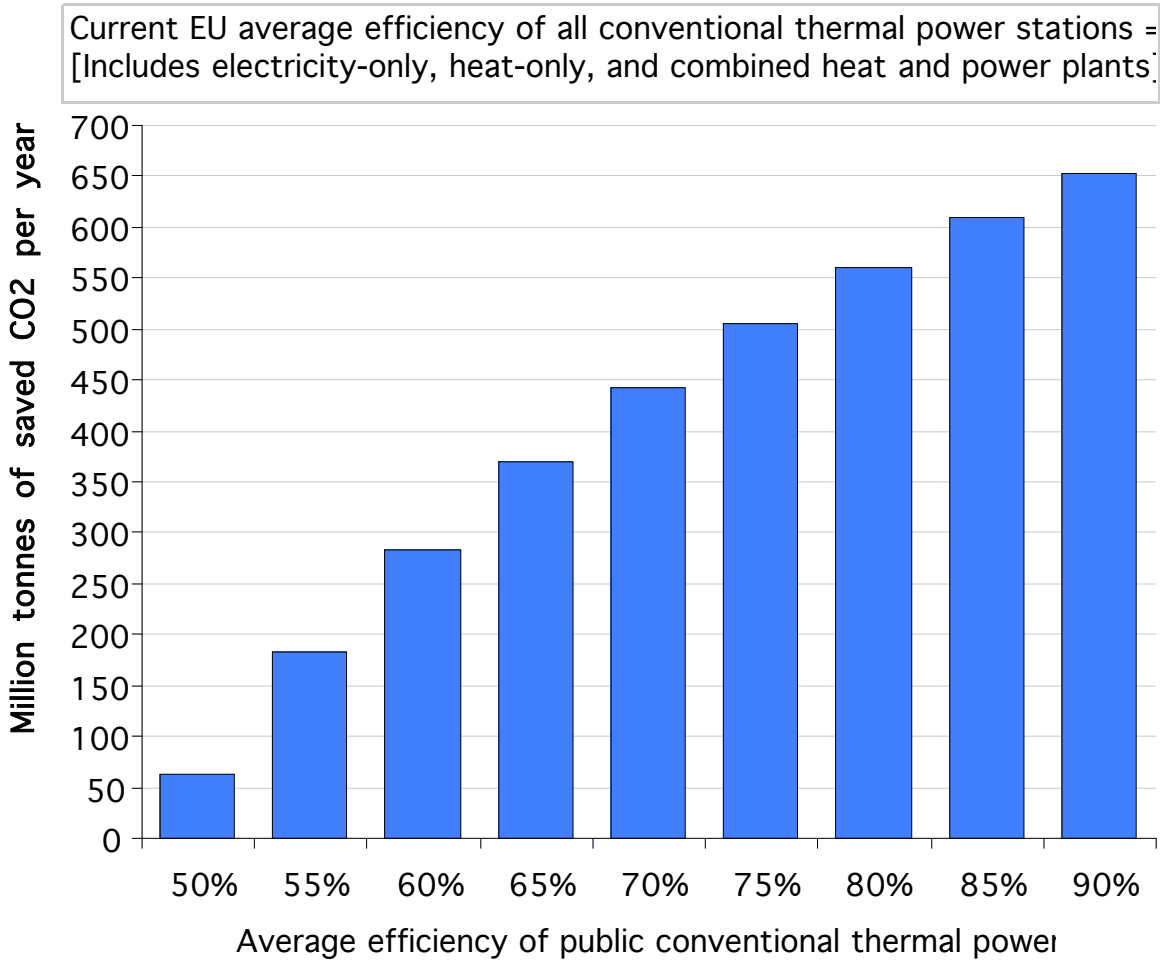


Average transformation efficiency from public conventional thermal power stations and district heating plants



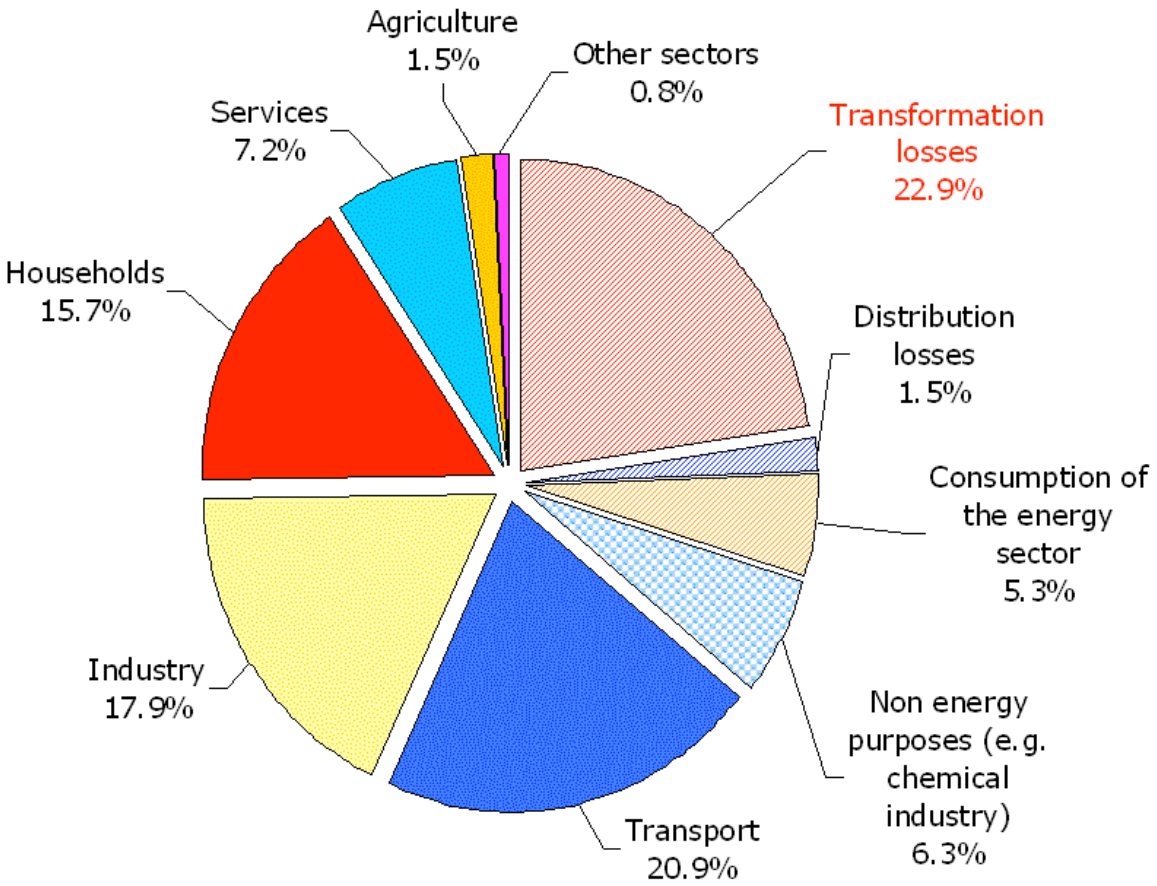
European Environment Agency

Projected EU-27 annual CO2 emission savings assuming improved transformation efficiencies



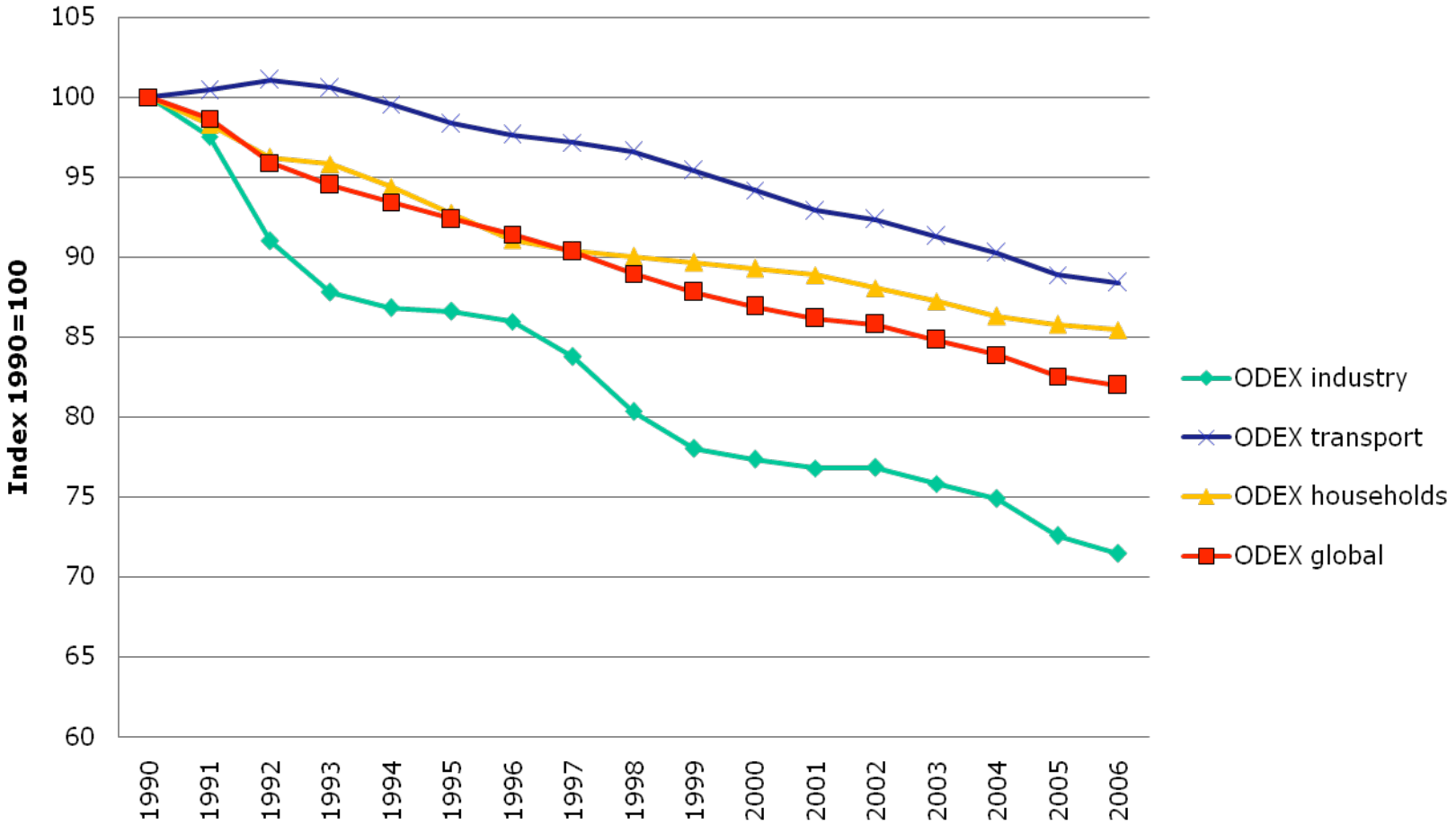
European Environment Agency

Final consumption by sector and energy losses (% of primary energy consumption)



European Environment Agency

ODEX energy efficiency index, EU-27

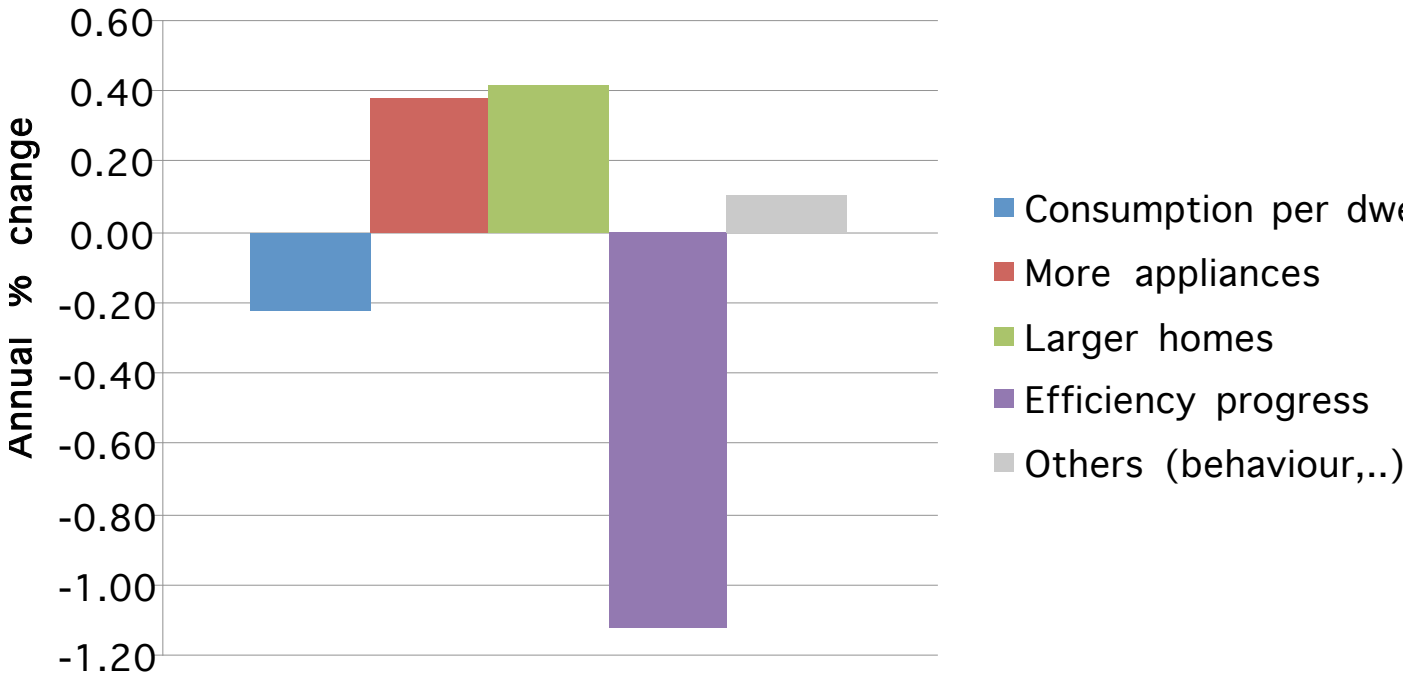


European Environment Agency

Small efficiencies for households translate into huge savings for society

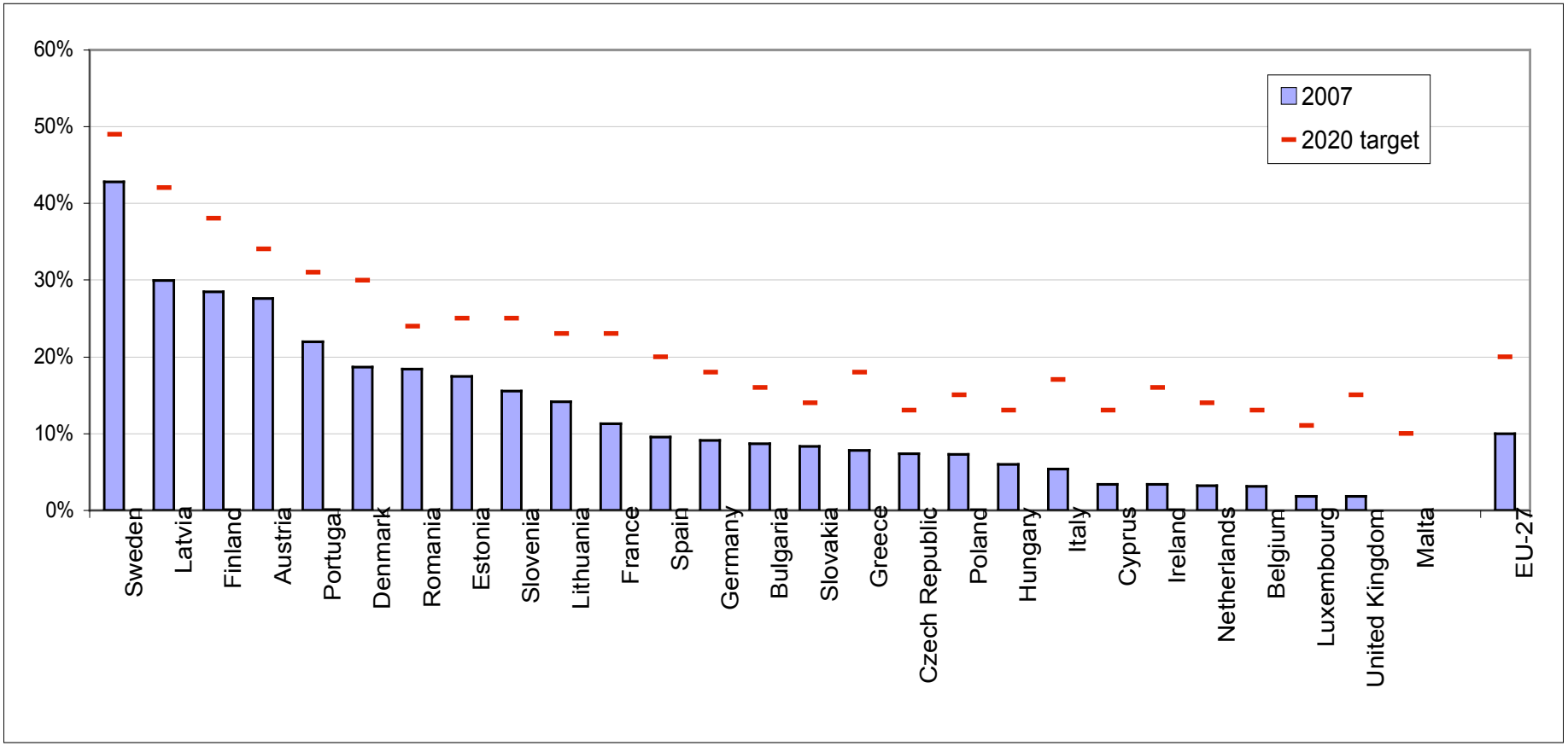
European Environment Agency

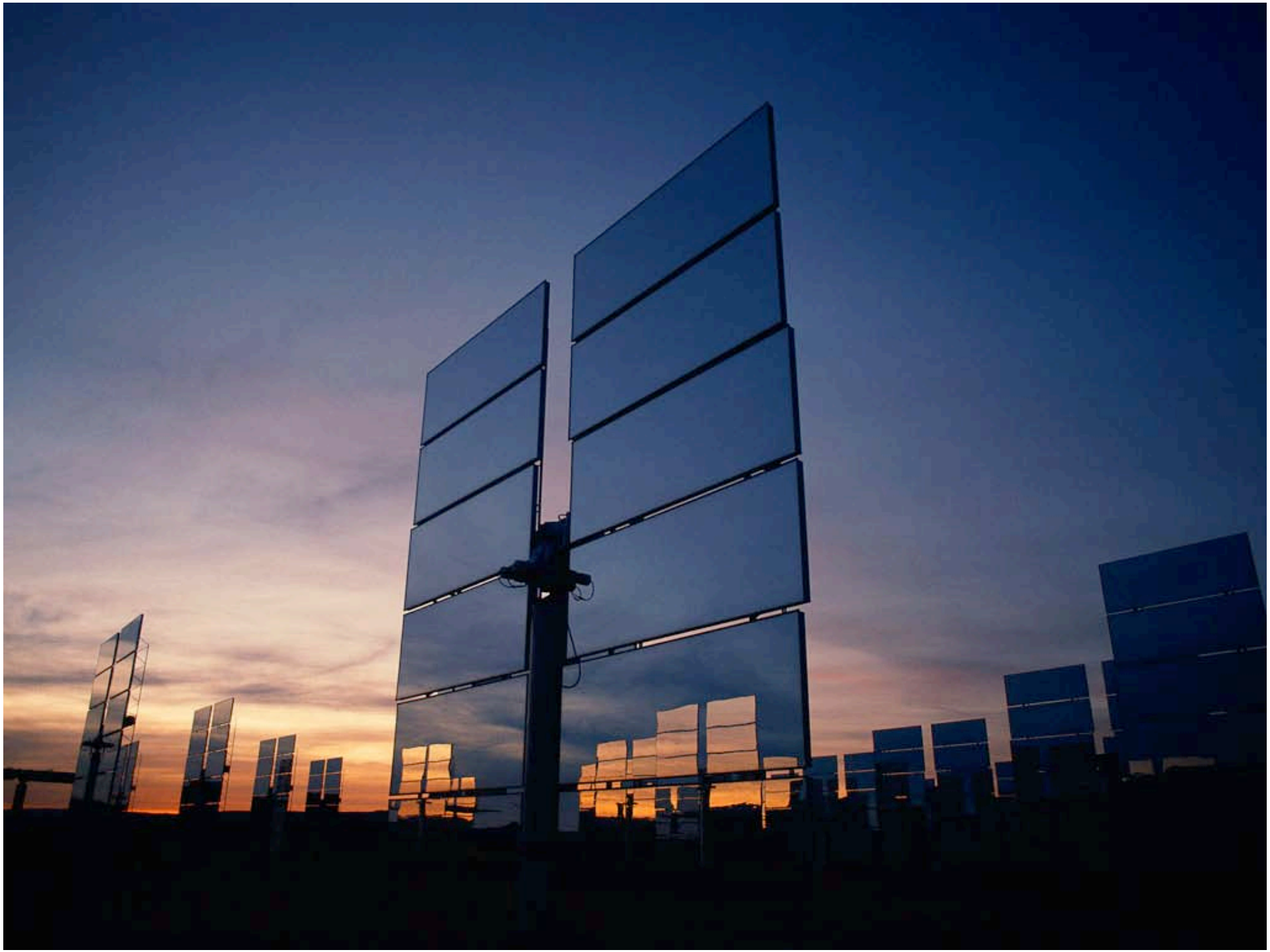
Improved efficiency is offset by changing behaviour



European Environment Agency

EU is already halfway to its 2020 renewables target

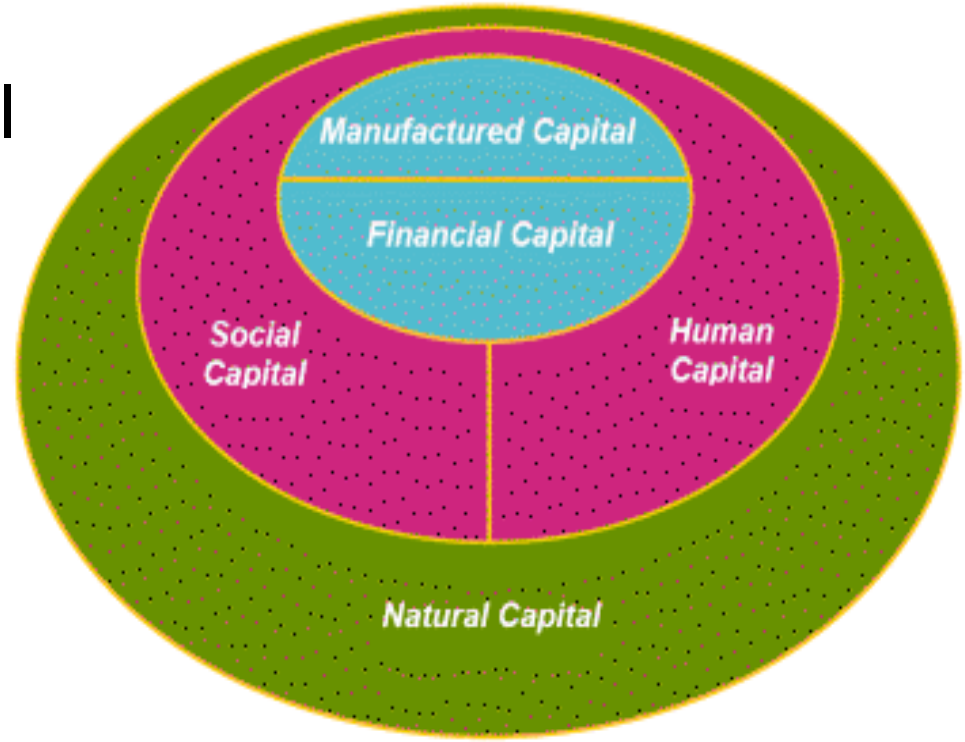




Decentralisation of power and new grid infrastructure

The capital stocks that determine the production of goods and services

- Manufactured capital
- Financial capital
- Social capital
- Human capital
- Natural capital

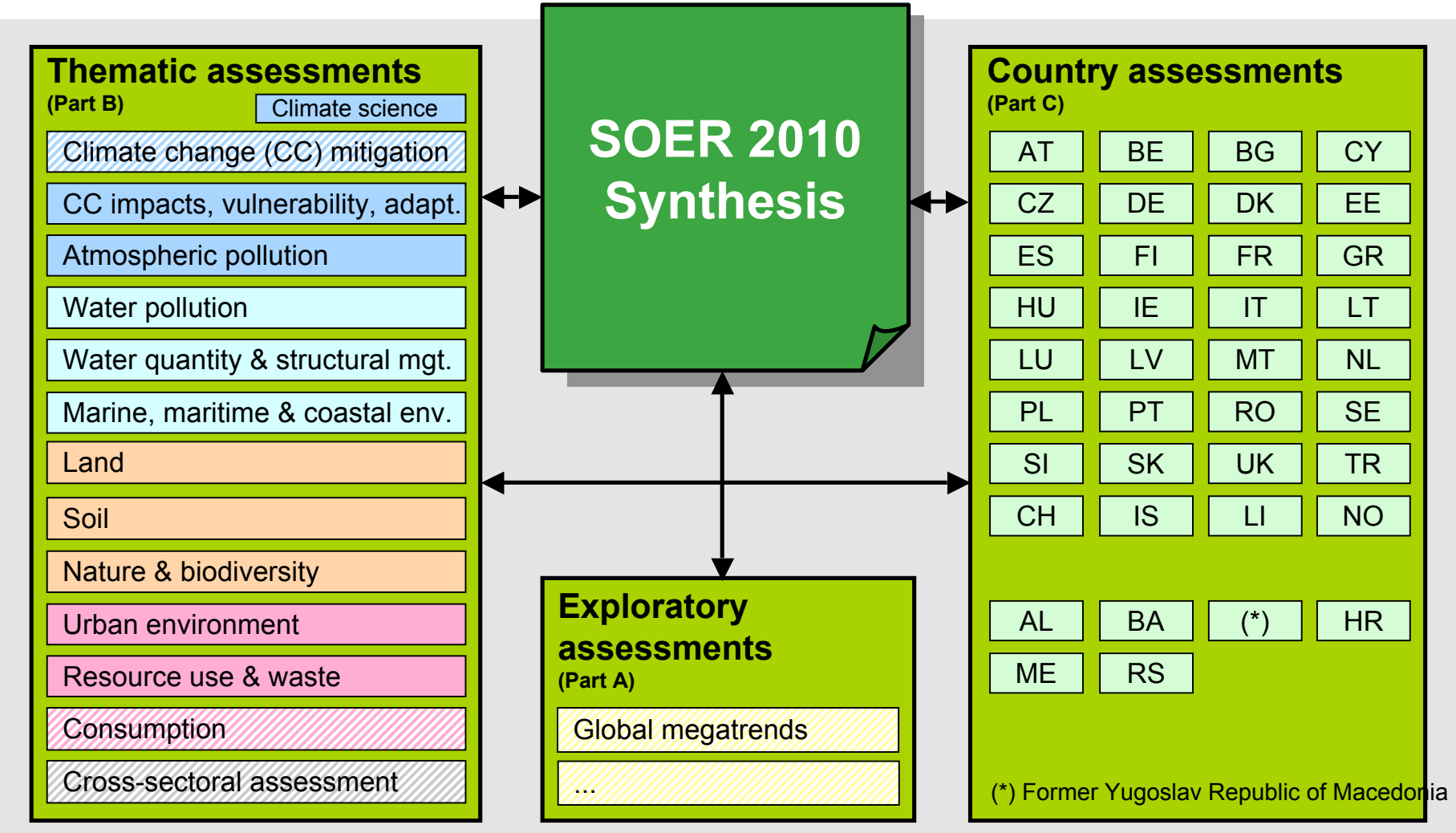


Source: Forum for the Future

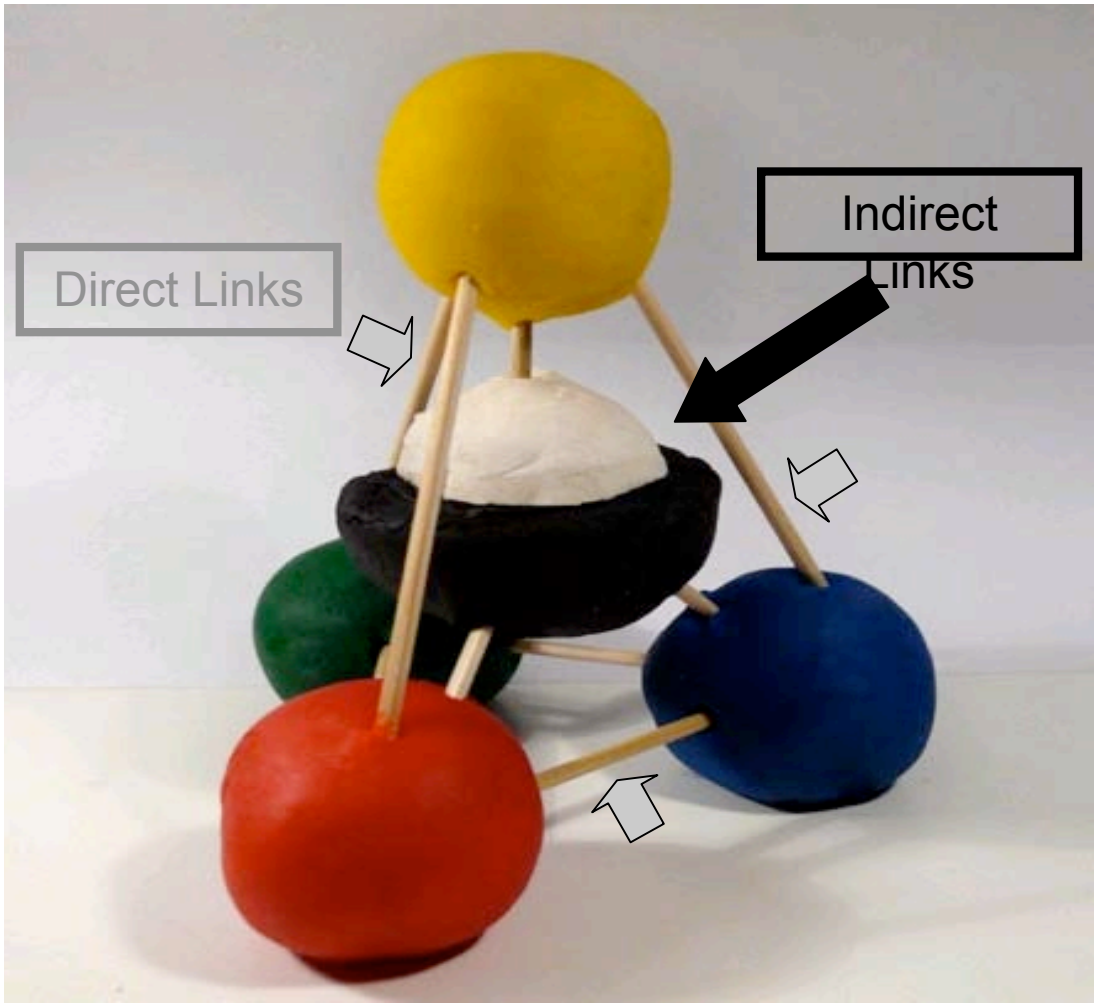
European Environment Agency

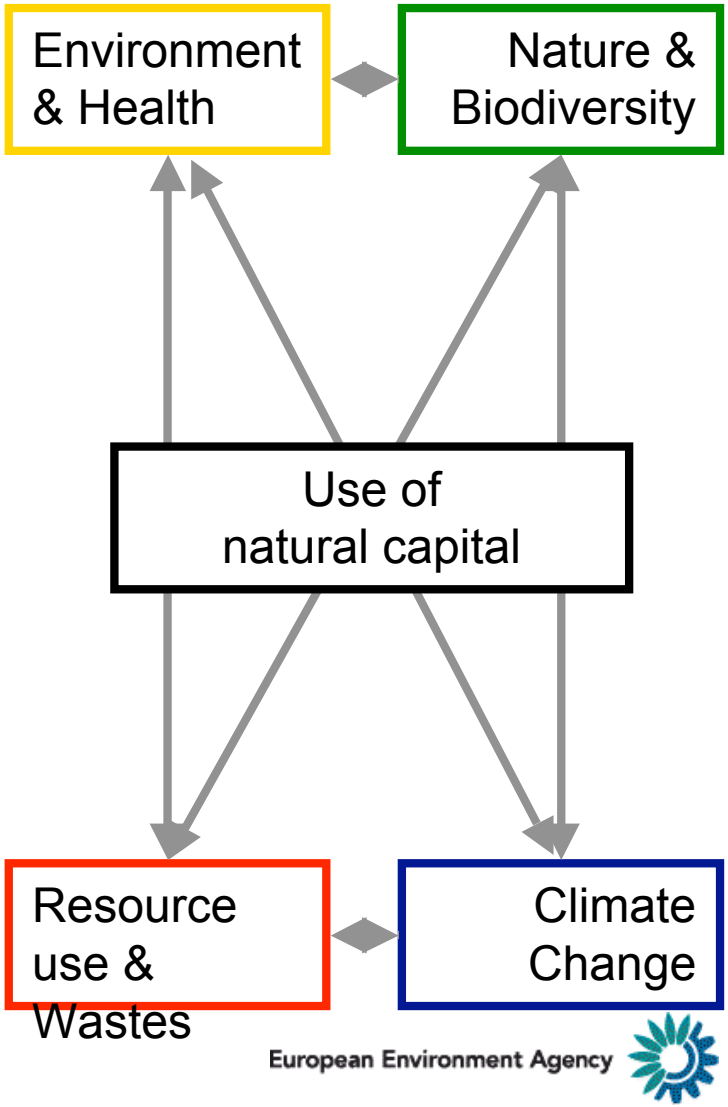
SOER 2010

Structure of SOER 2010

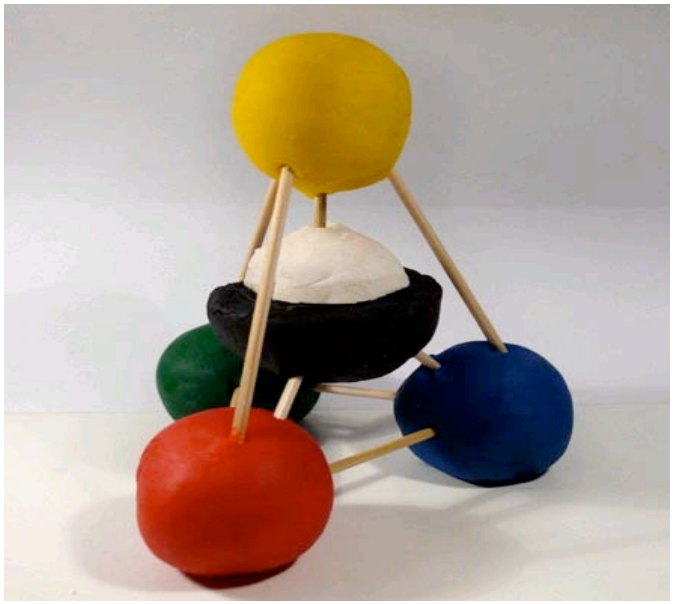


Synthesis


Direct Links
Indirect Links


Environment & Health
Nature & Biodiversity
Use of natural capital
Resource use & Wastes
Climate Change

Emerging key messages



- Thematic review reveals (in-)direct links between environmental issues.
- Many policies rely for success on how and where we use natural resources (natural capital).
- Global context reinforces interconnectness between issues (systemic risks).
- Mitigating systemic risks needs common stewardship of natural capital.
- Interconnectness risks – interconnected actions – interconnected governance.

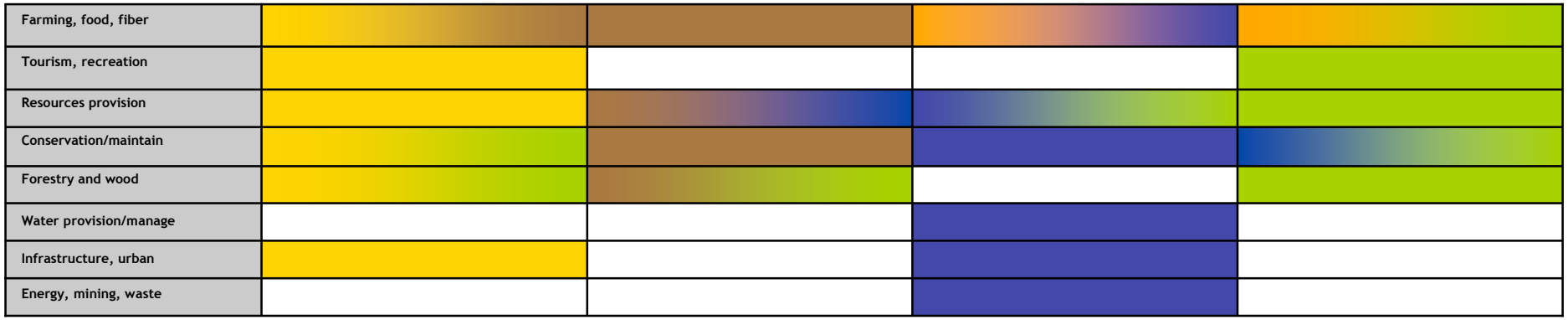
FRAMEWORK TO MEASURE WHAT MATTERS…

SYMPTOMS → Land accounts ↔ Carbon accounts ↔ Water accounts ↔ Biodiversity accounts

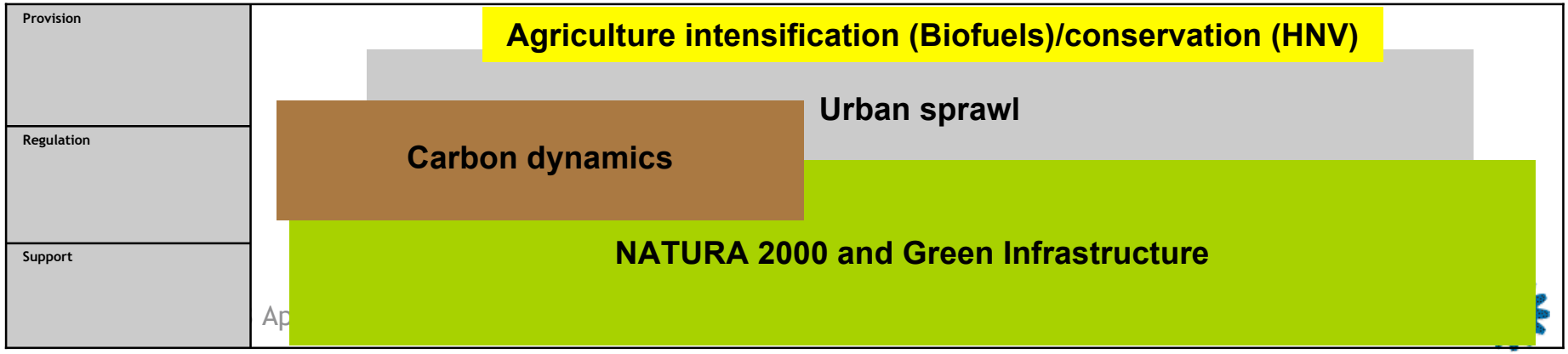
Land accounts		Carbon accounts		Water accounts		Biodiversity accounts	
Statistics	Spatial	Statistics	Spatial	Statistics	Spatial	Statistics	Spatial
Land Use	Land cover	Biomass supply & use	Biomass resource & extraction	Water supply & use	Water resource & extraction	UNDER DEVELOPMENT	UNDER DEVELOPMENT

DIAGNOSE:

Landscape patterns | Biomass dynamic | Water exploitation | Species diversity



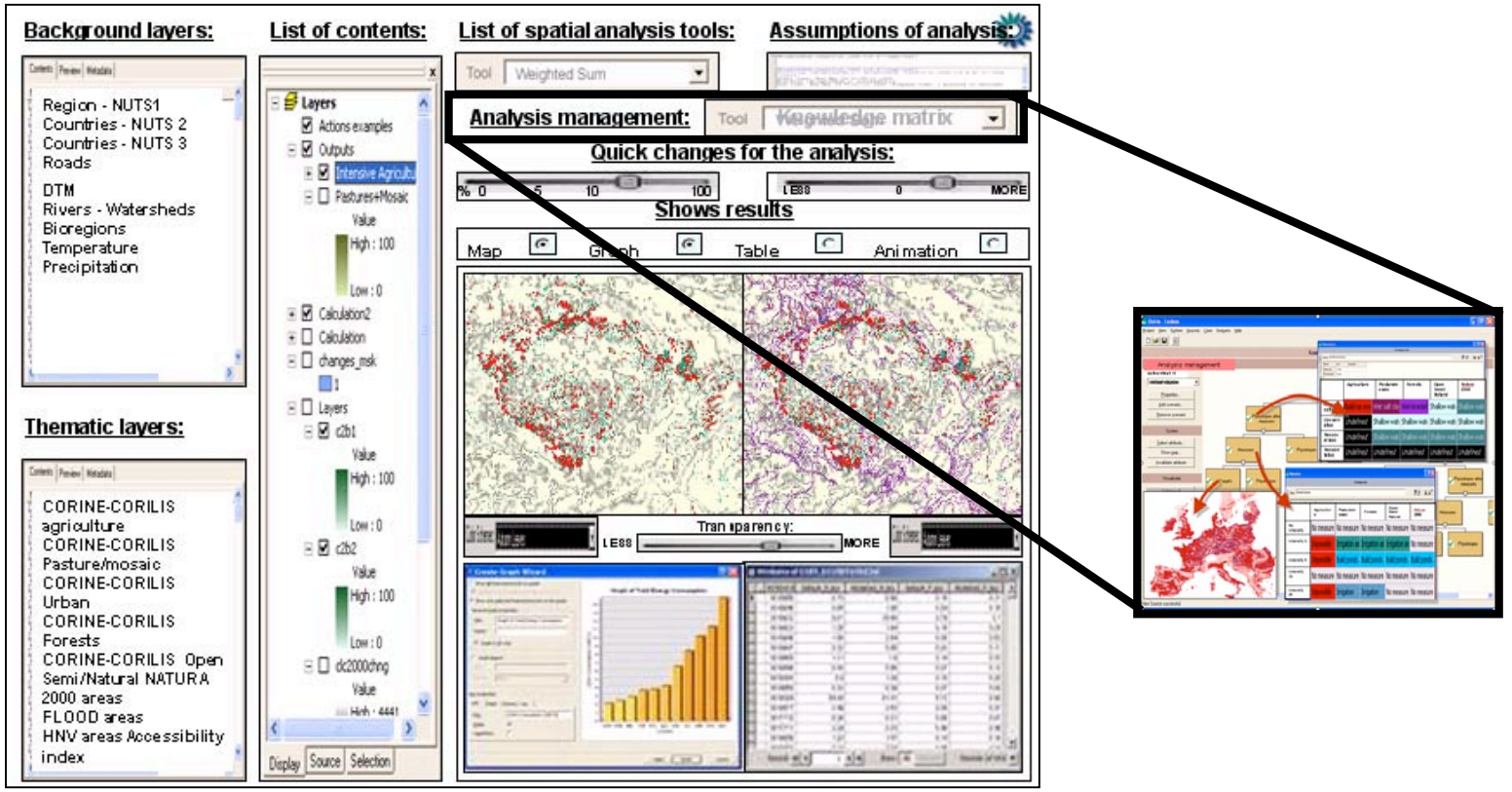
NOWCASTING:



INTERFACE DEVELOPMENT AND APPLICATION…

Prototype design and development:

Nowcasting definition and visualization; Knowledge management

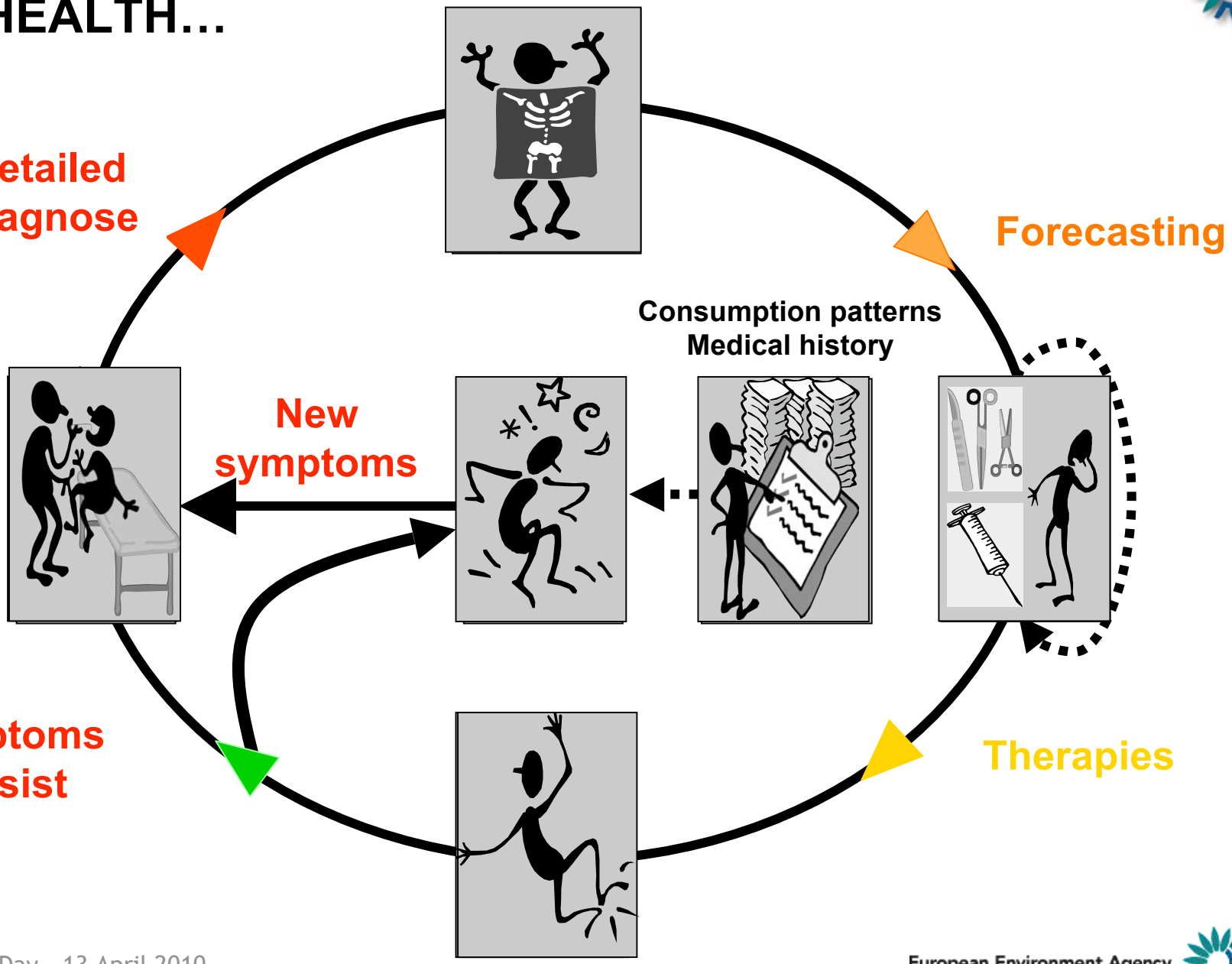


Interface application:

TERRESTRIAL baselines; EURECA; 'What-if' analysis…

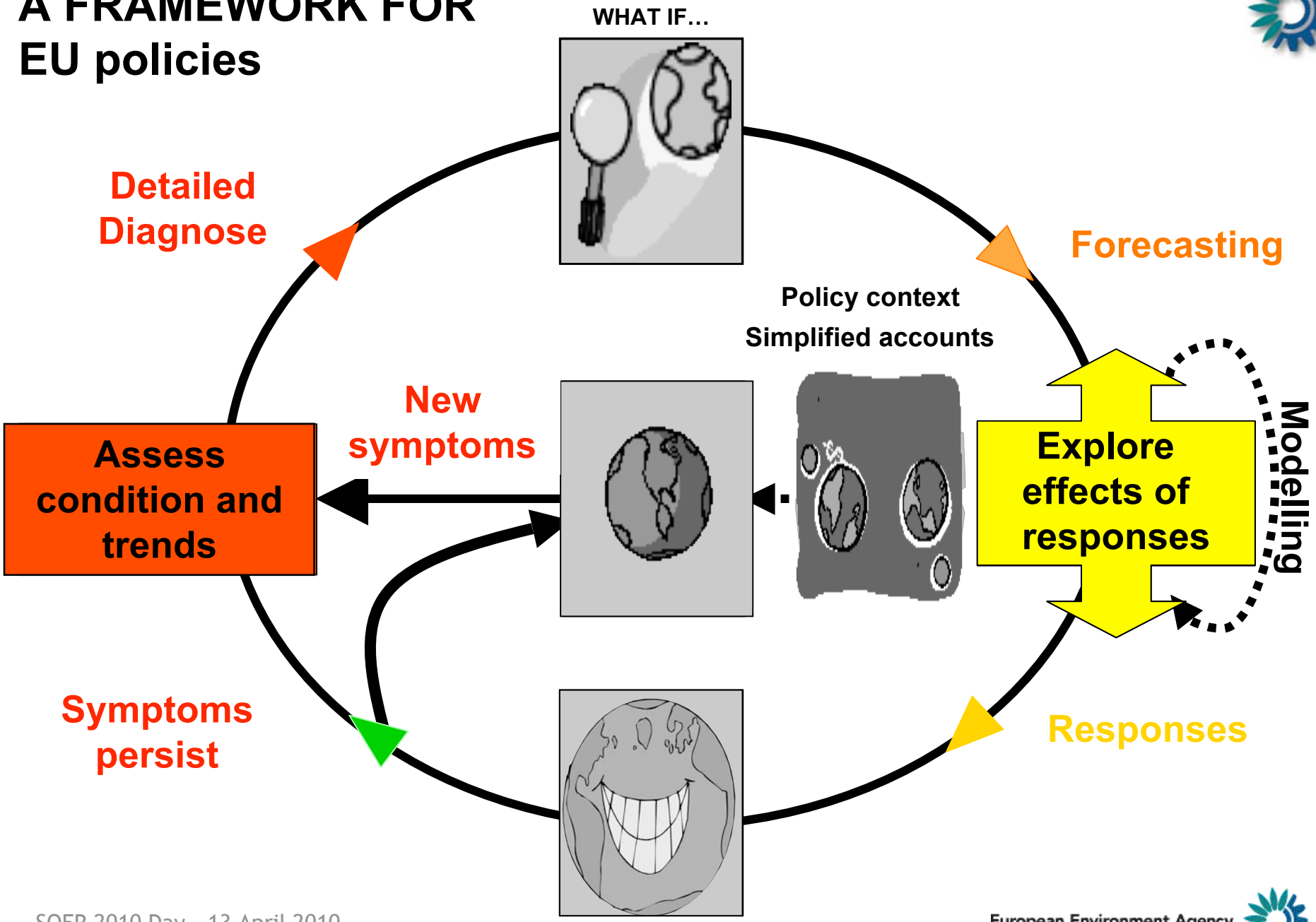
and for MARINE/MARITME ???

A FRAMEWORK FOR OUR HEALTH…



Source: Winograd, 2000; 2004

A FRAMEWORK FOR EU policies



Source: Winograd, 2009

SOER POLICY CALENDAR 2010-2014 plus!

Policy-makers

Policy Pack
(envelope)

Policy Page
(website)

-Letter
-Synthesis
-Calendar
-Request for seminar
-Fact Sheets/ Summaries
-Other?

WHEN? = 10-12 policy issues

(e.g.) Agriculture

Cycle, calendar, milestones

Review of CAP post-2013

Involved stakeholders = EEA audiences

WHO? = Targeted Dissemination
-EP Agro/Rural Dev Committee
-Agri Natl. Ministers
-DG AGRI
-NGOs...

Links to EEA info

WHAT? = Targeted SOER Products
-Synthesis
-Part B (Land, Soil...)
-Part A?
-Fact Sheets/ Summaries

-Other reports beyond SOER (continuous reporting)

-Implements "Synthesis message"

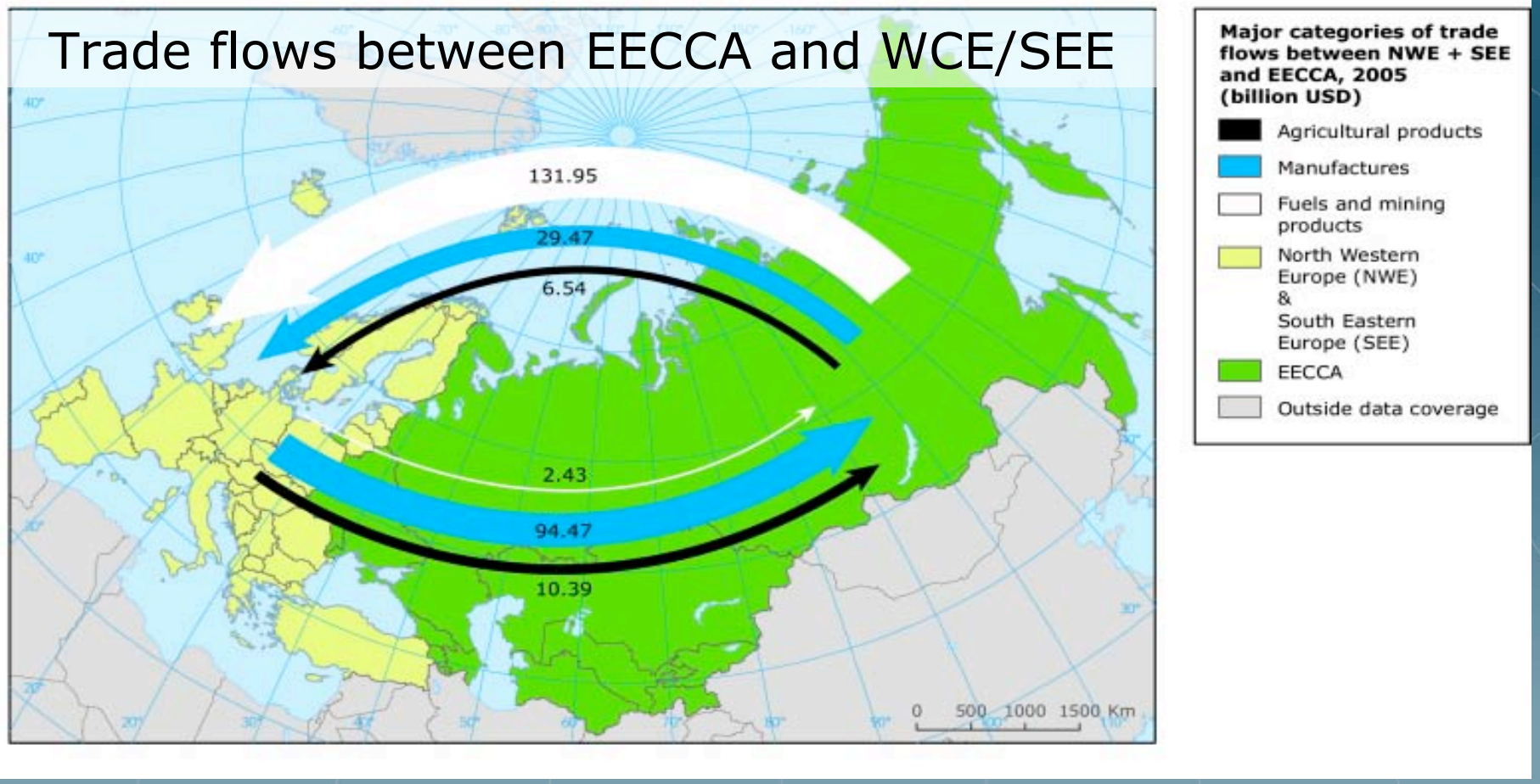
-EEA Briefings/ Fact Sheets

What is the perspective beyond 2010

- Continuous move towards the use of the SENSE approach for regular online updating of country environmental performance
- Extend the Commonality topics – Environment and Health, SCP?, Soil?
- A vision to build regular process for updating Part C to feed
  - Pan-European processes (e.g. Astana)
  - GEO-5 process
- Discussions with the DG ENV on synergies between Country updates and the Annual Environment Policy Review process

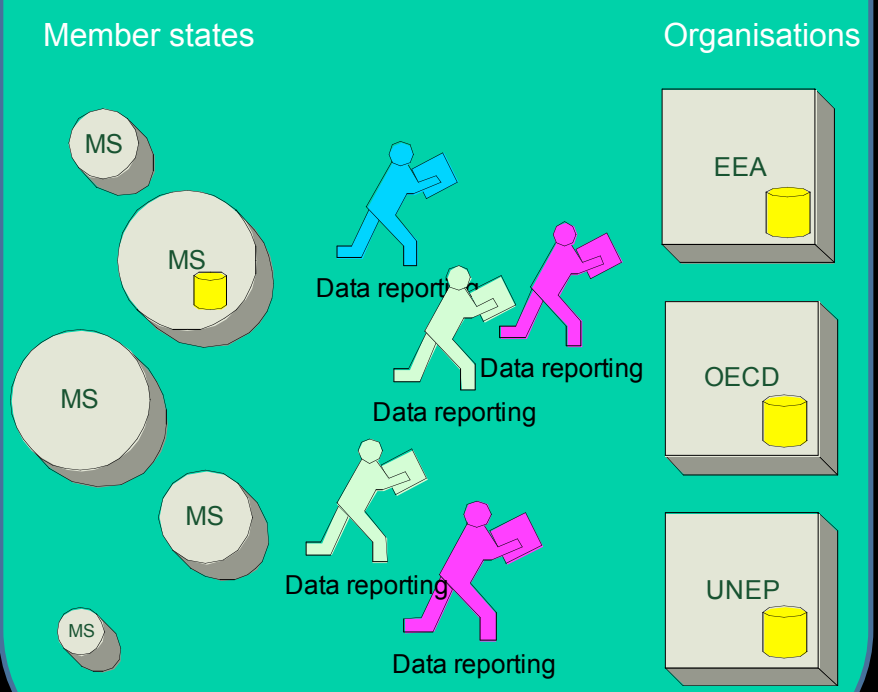
53 countries and over 870 million people

Sustainable consumption and production

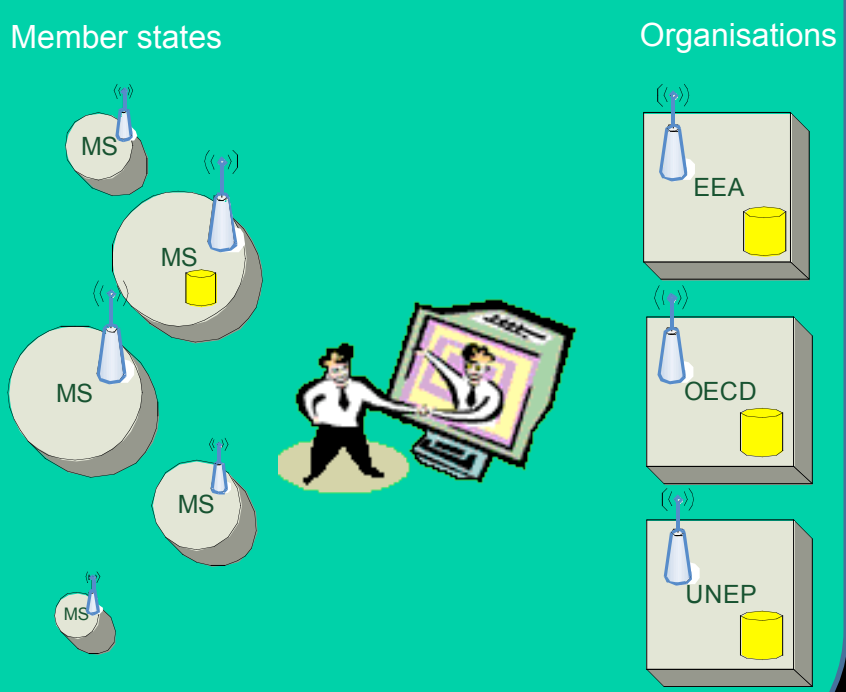


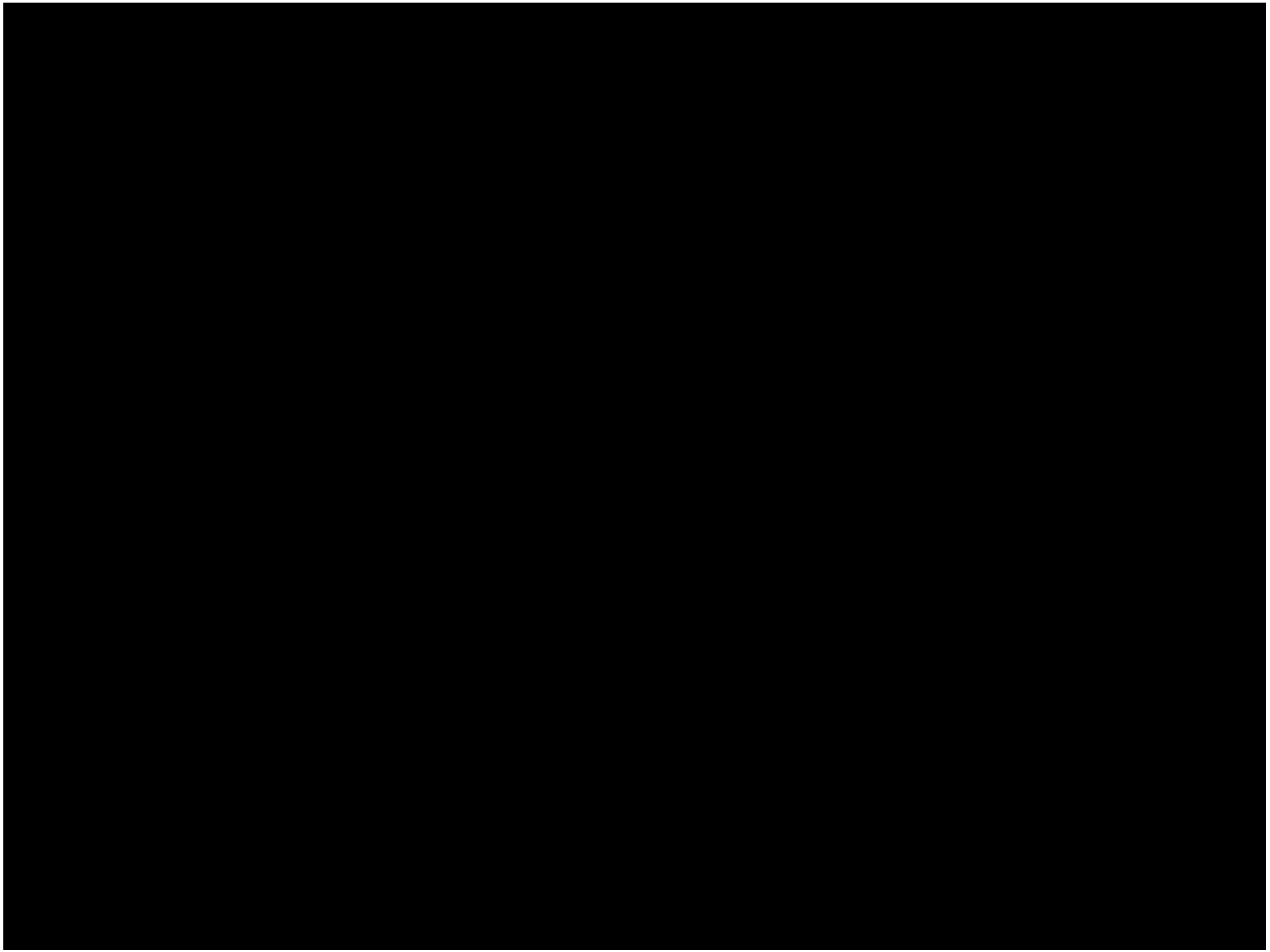
From Reporting to Online Services

The current data flows

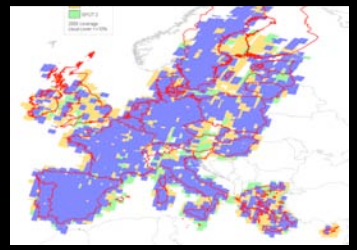


Live Information Systems



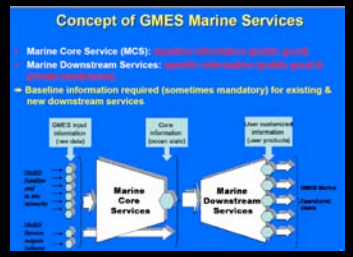


GMES services in-situ co-ordination



Land Monitoring

Climate



Marine services

Emergency response

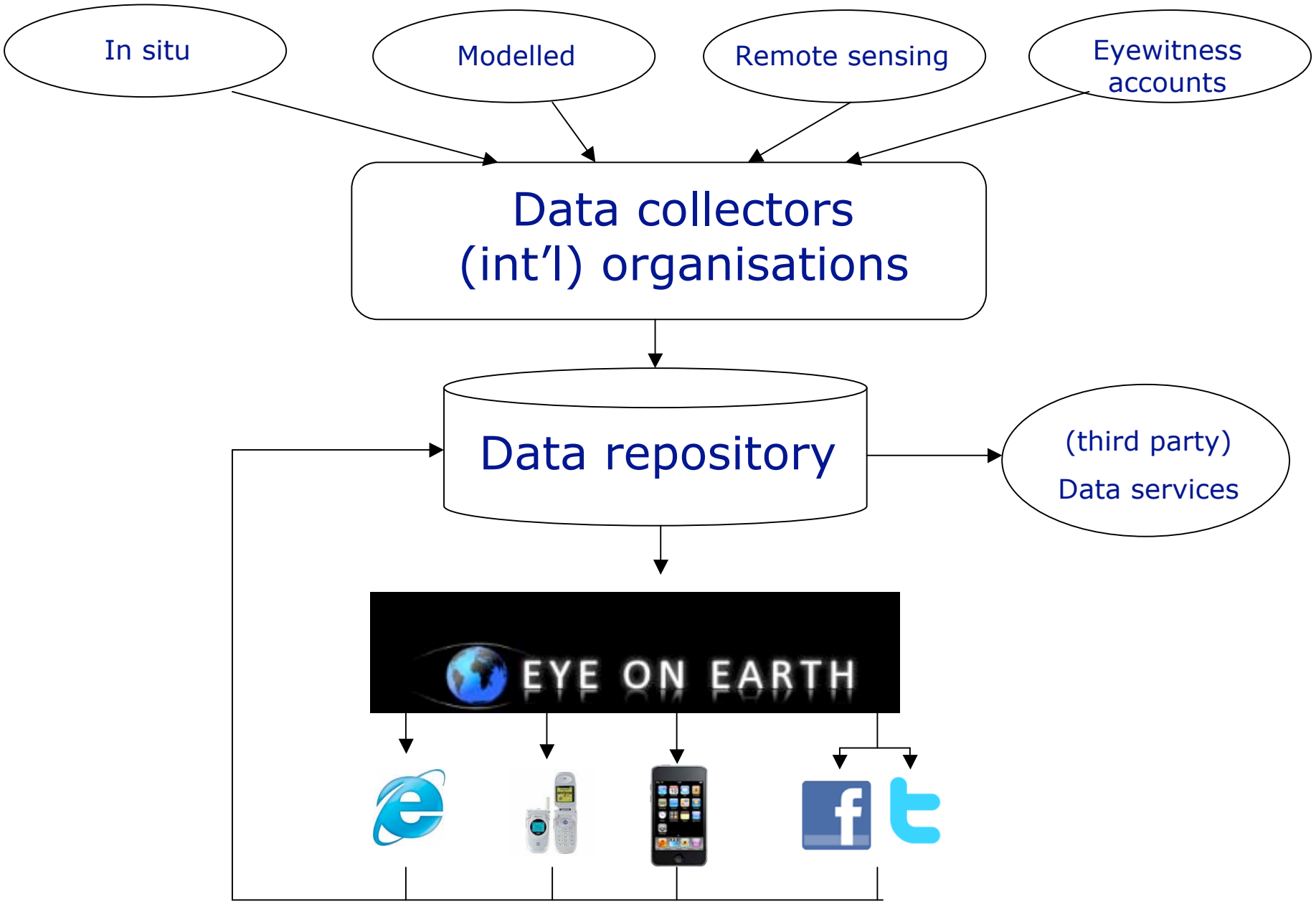
Air monitoring

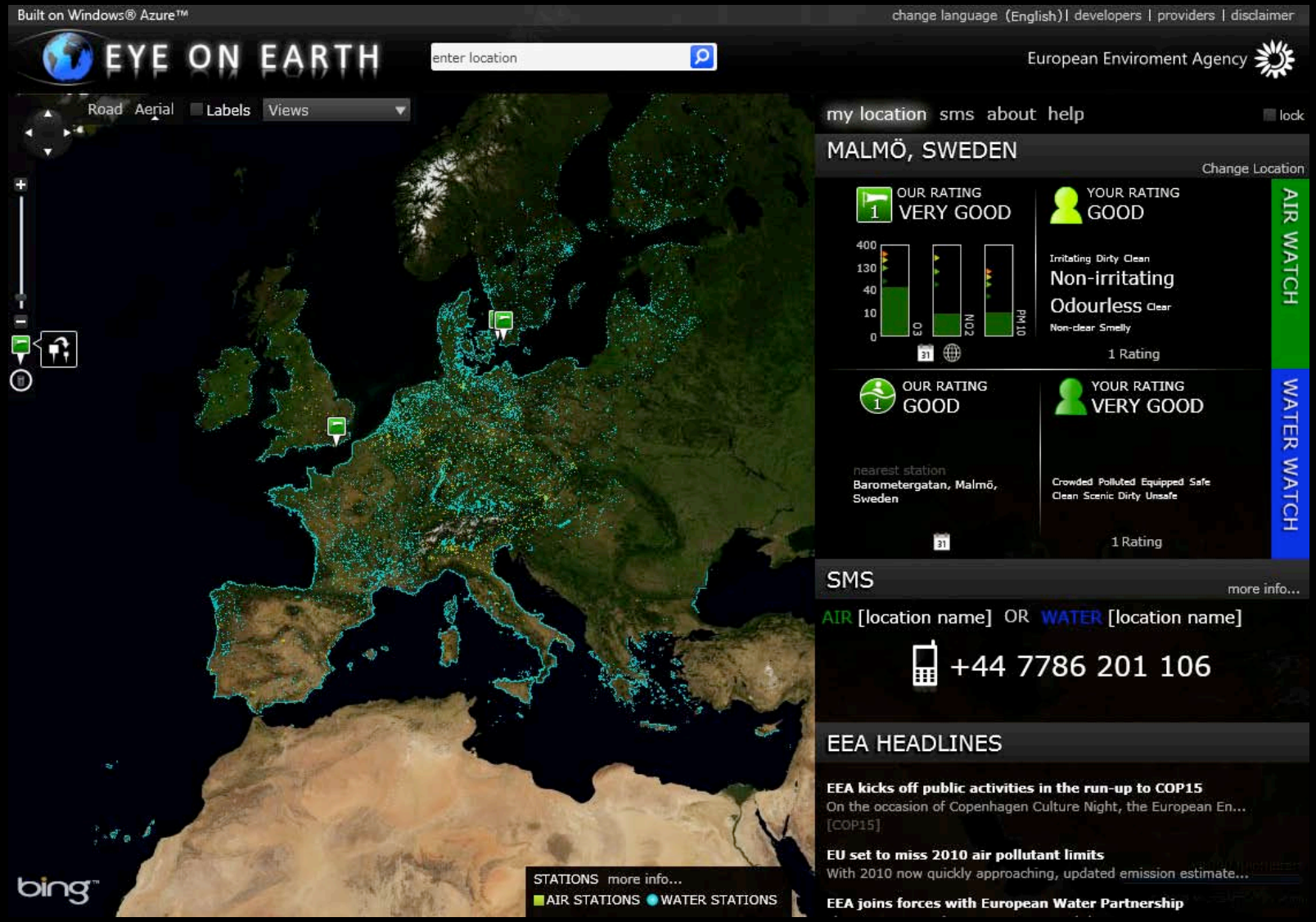
Eye On Earth platform – objective

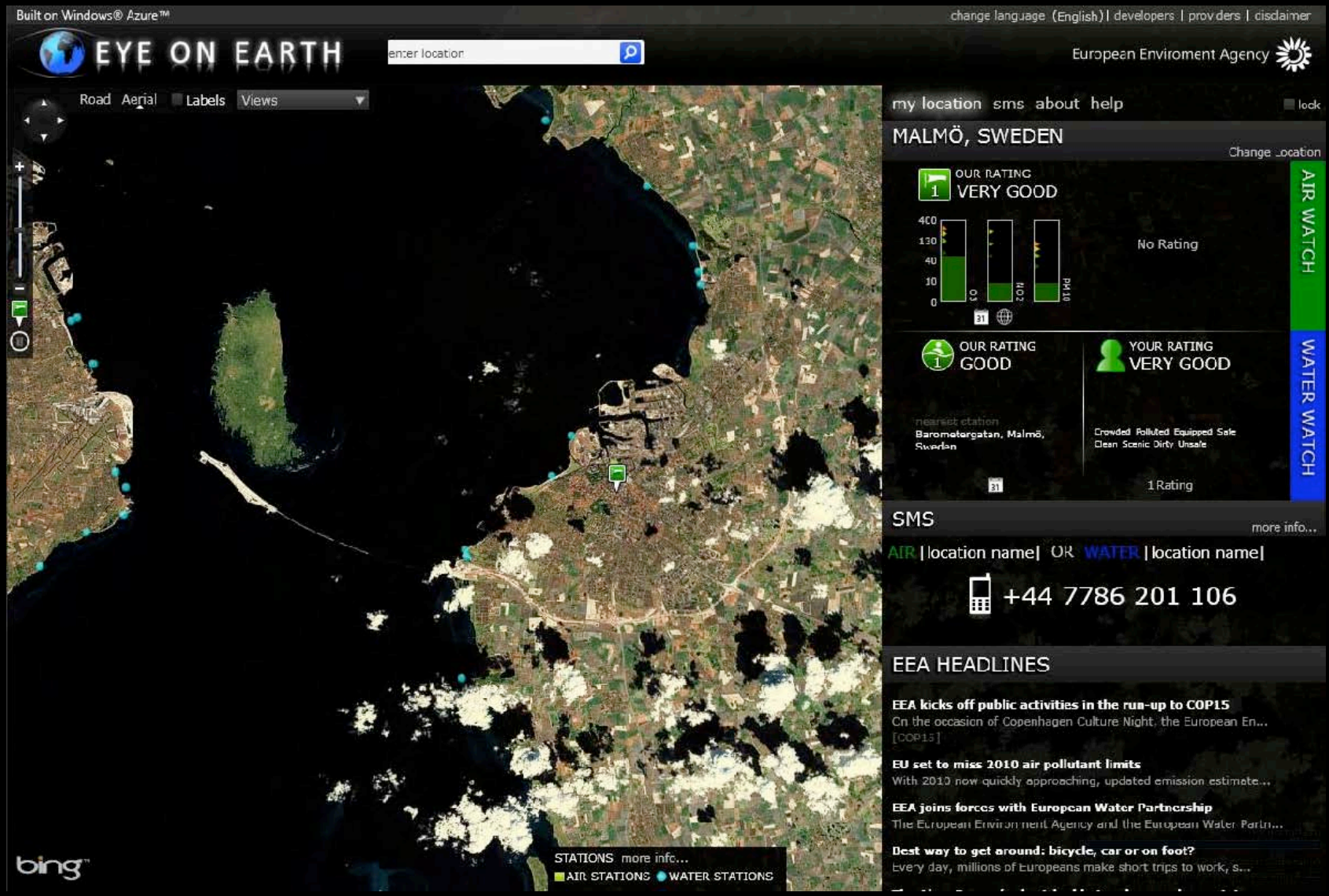
To provide a user-friendly global platform for dissimination of environmental data and information containing:

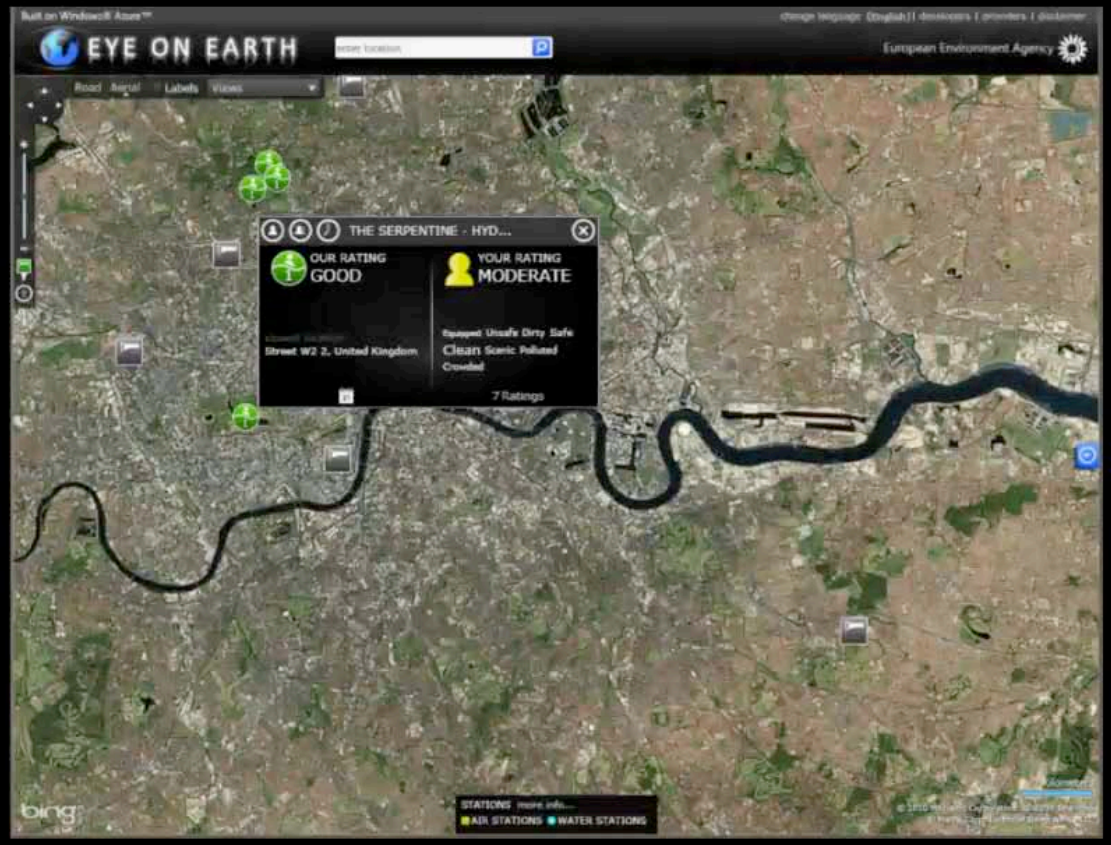
- Quality assured data, observed and modelled, voluntary and/or mandatory
- User observations and feedback
- Showcases (Multimedia)
- Visibility to citizen's and community actions

To serve a wide variety of communities and individuals at different levels of complexity


In situ
Modelled
Remote sensing
Eyewitness accounts
Data collectors (int'l) organisations
Data repository
(third party) Data services
EYE ON EARTH


Built on Windows® Azure™
change language (English) | developers | providers | disclaimer
EYE ON EARTH
enter location
European Enviroment Agency
Road Aerial Labels Views
my location sms about help
lock
MALMÖ, SWEDEN
Change Location
OUR RATING
VERY GOOD
YOUR RATING
GOOD
AIR WATCH
400
130
40
10
0
O3
NO2
PM10
Irritating Dirty Clean
Non-irritating
Odourless Clear
Non-clear Smelly
1 Rating
OUR RATING
GOOD
YOUR RATING
VERY GOOD
WATER WATCH
nearest station
Barometergatan, Malmö, Sweden
Crowded Polluted Equipped Safe
Clean Scenic Dirty Unsafe
1 Rating
SMS
more info...
AIR [location name] OR WATER [location name]
+44 7786 201 106
EEA HEADLINES
EEA kicks off public activities in the run-up to COP15
On the occasion of Copenhagen Culture Night, the European En...
[COP15]
EU set to miss 2010 air pollutant limits
With 2010 now quickly approaching, updated emission estimate...
EEA joins forces with European Water Partnership
bing
STATIONS more info...
AIR STATIONS WATER STATIONS


Built on Windows® Azure™
change language (English) | developers | providers | disclaimer
EYE ON EARTH
enter location
European Enviroment Agency
Road Aerial Labels Views
my location sms about help
lock
MALMÖ, SWEDEN
Change location
OUR RATING
VERY GOOD
No Rating
AIR WATCH
OUR RATING
GOOD
YOUR RATING
VERY GOOD
nearest station
Barometergatan, Malmö, Sweden
Crowded Polluted Equipped Safe
Clean Scenic Dirty Unsafe
1 Rating
WATER WATCH
SMS
more info...
AIR | location name | OR WATER | location name |
+44 7786 201 106
EEA HEADLINES
EEA kicks off public activities in the run-up to COP15
On the occasion of Copenhagen Culture Night, the European En...
[COP15]
EU set to miss 2010 air pollutant limits
With 2010 now quickly approaching, updated emission estimate...
EEA joins forces with European Water Partnership
The European Environment Agency and the European Water Partn...
Best way to get around: bicycle, car or on foot?
Every day, millions of Europeans make short trips to work, s...
STATIONS more info...
AIR STATIONS WATER STATIONS
bing



The interactive site allows the public to rate each location.

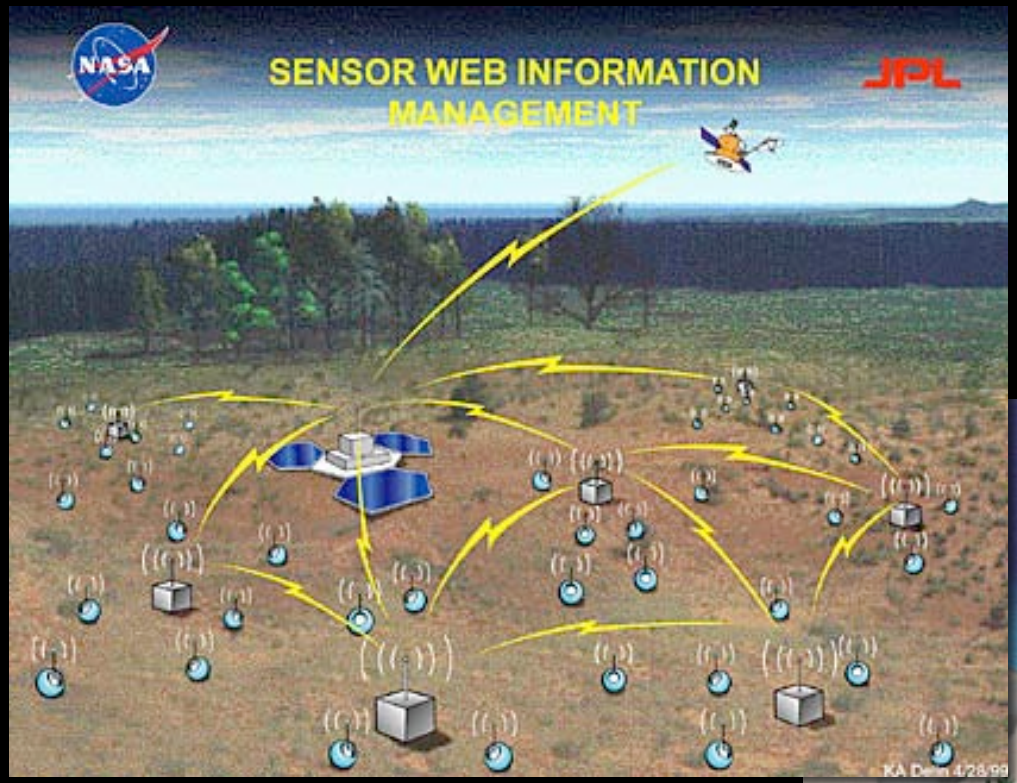
The official rating of the Serpentine in Hyde Park is 'Good', while the average of 7 user ratings is 'Moderate'.

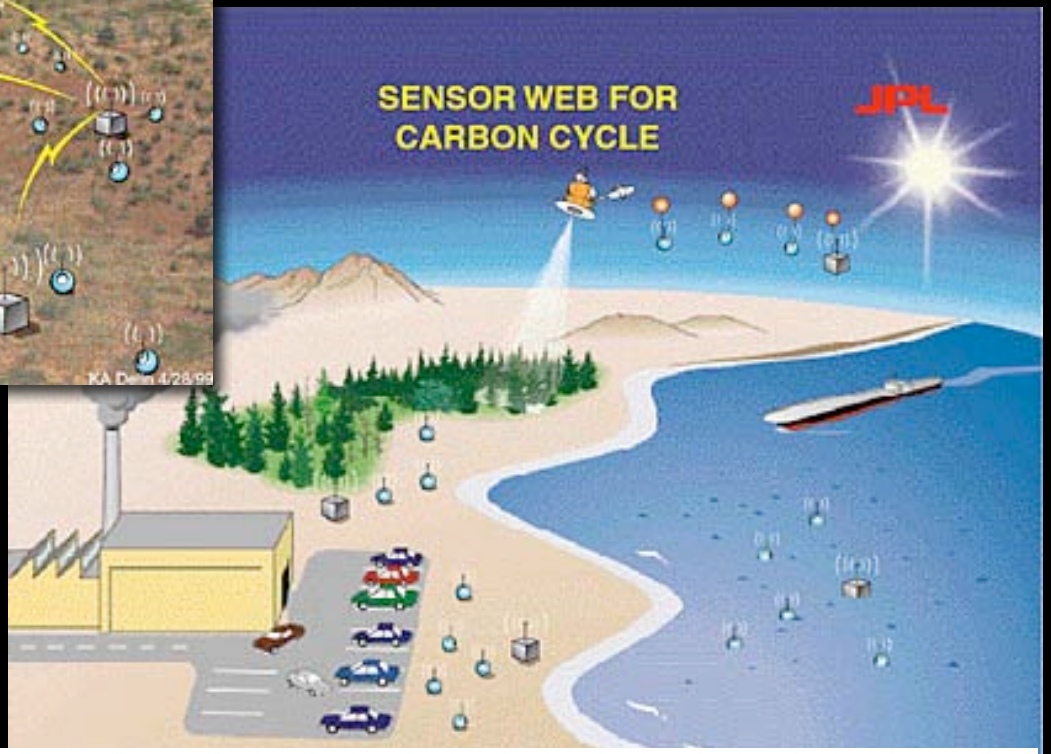
Built on Windows® Azure™
change language (English) | developers | providers | disclaimer
EYE ON EARTH
enter location
European Environment Agency
Road Aerial Labels Views
my location sms about help
lock
MALMÖ, SWEDEN
Change Location
OUR RATING
VERY GOOD
YOUR RATING
GOOD
Non-irritating
Odourless
1 Rating
AIR WATCH
OUR RATING
GOOD
YOUR RATING
VERY GOOD
1 Rating
WATER WATCH
Triangelr, 211 44 Ma...
Share Location
Cancel
SMS
more info...
AIR [location name] OR WATER [location name]
+44 7786 201 106
EEA HEADLINES
EEA kicks off public activities in the run-up to COP15
EU set to miss 2010 air pollutant limits
With 2010 now quickly approaching, updated emission estimate...
EEA joins forces with European Water Partnership
The European Environment Agency and the European Water Partn...
Best way to get around: bicycle, car or on foot?
Every day, millions of Europeans make short trips to work, s...
STATIONS more info...
AIR STATIONS
WATER STATIONS
bing

Integrated monitoring: New Nervous system for the North

Olav Rune Godø,
Institute of Marine Research - Norway

Integrating space and *in-situ* observations: Sensor Web





S@NY
Sensors Anywhere

OSIRIS

Open architecture for Smart and Interoperable networks in Risk management based on In-situ Sensors

Emergency and Disaster service

Thank you!