Vulnerability of water & environmental resources, Land-use planning

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Vulnerability, Resilience, Adaptation

Starting point: White paper on adapting to climate change:
- Need to assess the vulnerability of ecosystems, economy and society to climate change impacts

Adaptation strategy to be based on a mix of approaches
- Not only protect against potential impacts
- Increase resilience

Extension to other man-made pressures
Update on roles and responsibilities of DG ENV and DG CLIMA

DG CLIMA created on 18/2/2010.

- Adaptation unit (C3) in « Mainstreaming Adaptation and Low Carbon Technology » Directorate
- Horizontal co-ordination of the implementation of White Paper
  - Knowledge base (incl Clearinghouse)
  - Mainstreaming into EU Policies
  - Policy and Funding Instruments

DG ENV focuses on:

- Assessment of the environmental pathway of vulnerability to Climate Change (and other anthropogenic pressures)
- Assessment of ecosystem-based approaches and environmental impact of adaptation measures
- Mainstreaming adaptation into Environmental Policies (Water, Marine, Biodiversity and Ecosystem, Resources, Eco-Innovation, etc.)
Vulnerability of environmental resources

**Climate Change**
- Greenhouse gases concentration
- Temperature (means & extremes)
- Precipitation (means & extremes)
- Sea level rise
- Permafrost/ice melting

**Anthropogenic Pressures**
- Land-use changes
- Resource-intensive Production/consumption
- Demographic changes

**Ecosystem conditions and supporting services**
- Species phenology
- Species distribution
- Forest fires
- Water quality
- Floods
- Soil degradation
- Water scarcity droughts

**Impact on Ecosystem services**
- **Provisioning**
  - (Food, Freshwater, Wood/fiber, Fuel)
- **Regulating**
  - (Climate, Flood, Diseases, Water purification)

**Social Impacts**
- **Health**
  - (Mortality, Morbidity, Labour productivity)
- **Distributive impacts**
  - (Social groups, Regions)
- Resource conflicts
- Migrations
- Social fabric
- Governance

**Economic impacts**
- Infrastructures and physical capital
  - (Damages, Losses)
- Production and Consumption
  - (Processes, consumer behaviour, Growth potential, Variability/disruptions activity)
- Employment

**Adaptive Capacity**
- Cultural Capacity, Technological Capacity, Financial Capacity, Governance

**Tools**
- Grey
- Green
- Soft

**Portfolio Adaptation Measures**
- Knowledge Base
- Indicators
- Monitoring
EU Adaptation Clearinghouse

- EU Clearinghouse Concept Note:

- EU CCIVA Clearinghouse designed to answer specific questions
  - Support further development of EU adaptation policy
  - Support development of adaptation policy at National, regional/local and sectoral level
  - Contribution to global adaptation action (NWP, GFCS)

- Clear focus on building (on) interoperable assets
  - ISO / INSPIRE compliance, link with GEOSS, REPORTNET
  - No duplication with global/national/sectoral initiatives following the same approach

- Working Group – Knowledge Base
  - Science-policy interaction
  - Methodological guidance to adaptation practitioners

- Members
  - Member States and EEA countries
  - Key research projects, institutes, intergovernmental organisations
  - European Commission services & EEA

- Phased approach:
  - Since 21/4: evaluation call for tender (signature foreseen August)
  - June WG-KB meeting: table of contents
  - Phase 1 with limited number of sources and potential users
  - Further definition of user needs & scope
2012 Blueprint to safeguard EU Waters:

→ The Blueprint will include:
  • Assessment of river basin management plans
  • Review of the Strategy for Water Scarcity and Droughts
  • Review of the vulnerability of water and environmental resources to climate impacts and man-made pressures.

→ It will examine:
  • Balance between water demand and the supply of clean water, taking into account the needs of both human activities and of natural ecosystems.
  • Effectiveness of current policies
  • Need for further policies or measures necessary to strengthen the resilience of EU water policy
  • Support for data collection, and scientific and technological development.
Integrated assessment Framework

- Water use model
- Hydrological model
- Water-related Vulnerability

socio-economic & land-use scenarios
Climate scenarios
Identification & Assessment of adaptation measures

Reference Scenarios:
Identification of EU-wide vulnerability + hotspots

Measure impacts indicators → Vulnerability indicators

Inventory of available measures

- Effects can be quantified with models available to the consortium
- Effects can be quantified with other models
- Effects cannot be quantified with models

- Additional model analysis CESR, JRC
- Literature analysis
- Expert judgment

Synthesis of measures assessment

Source: Alterra
Expert and stakeholder involvement

- Steering group (Commission + 3 external experts)
  - Review integrated assessment framework.

- 2 stakeholder meetings (Sept 2010, March 2011)
  - to identify and possibly fill knowledge gaps in terms of qualitative information
  - to compile stakeholder knowledge and evaluations on relevant aspects of the individual adaptation measures,
  - to evaluate and consolidate the scientific credibility and policy relevance of the modelling results.
  - to evaluate both the attitudes (for/against) of different stakeholders regarding a particular measure, as well as the intensity of their support for/rejection of a particular measure.
  - Role of WFD-CIS EG Climate Change & Water
Key challenges

- Achieve a better understanding of water economics
  - Cost curves water supply (incl. social costs)
  - Demand curves (effectiveness pricing, affordability)
    - Understand differences between sectors, regions, social groups
  - How to shift water use from low social value to high social value activities?
    - Assess portfolio of instruments: Quotas, Pricing, Trading, Labelling, etc.

- Risk, vulnerability & resilience
  - Combine CC and land-use, socio-economic scenarios
  - Probabilistic approach ↔ communication issues
  - Robust decision making in a moving baseline
  - Give practical sense to the concept of resilience

- Knowledge base
  - Indicators, accounts, integration information from various sources

- Ecosystem services
  - Impact water quantity/quality on ecosystem conditions & services

- Land-use planning
Land-use planning

- Better understand impacts of land-use changes
  - Big trends (crops, land abandonment, de/re-forestation, urban sprawl, etc.)
  - LU changes as drivers of local climate change

- Concrete policy actions
  - « Room for the river », floodplains
  - Sustainable Drainage Systems
  - Water retention

- How to identify, analyse and implement priority actions?
  - Analysis of costs and benefits