

# Non Structural measures and Green Infrastructure Solutions



**Biodiversity Unit  
DG Environment  
European Commission**

**JASPERS Best Practices in Flood Risk Management  
Brussels, 17 September 2013**

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# Outline



- Towards better environmental options and flood management (2009)
- Water blueprint & natural water retention measures (2012)
- The EU Green Infrastructure Strategy (2013)

# Context



- Floods are the most common and most costly natural disasters in Europe.
- Frequency likely to increase with climate change.
- Strategic long term and integrated flood risk management: prevention to increase resilience of society.
- Natural flood management becoming more important with increased recognition of its benefits

# Towards better environmental options



- Avoid negative impacts on quality & quantity of waters, or on biodiversity-rich areas.
  - *Building or new dams or dikes that change the river flow, with negative impacts on ecosystems.*
- Environmental legislation requires evaluation of better, feasible environmental options: HD, WFD, EIA and SEA Directives
  - *EU Floods Directive requires that flood-related measures in those Directives are part of Flood Risk Management plans to be prepared by 2015.*
- Commission initiative in 2009 to highlight these options and their benefits

# What is natural flood management?

- Why NFM?
  - Develop effective solutions working with nature, rather than against it
  - Physical measures which seal the soil, or are designed to contain the water in the riverbed, could increase the flood risk downstream
  - Measures which improve the storage capacities of flood water temporarily during flood events can also provide other ecosystem services
- NFM starts with an assessment of hydrological processes across the whole river catchment/along stretch of coast to identify where measures can best be taken – focus on increasing water retention capacities, but often delivering multiple benefits.
- Examples:
  - restoring natural flows by realignment of coastal areas, or re-connection of rivers with their floodplain
  - restoration of wetlands that can store flood water and “slow the flow”
  - reservoirs in agricultural areas that can store flood water during flood events, and be high nature value areas
  - urban GI: green spaces, sustainable urban drainage, green roofs

# Costs of measures vs costs to society



- Costs of prevention, protection and preparedness can be substantial ...
- ... but so are the costs to society of the damage caused by floods!
- It make economic sense to select measures which have multiple benefits for society !
- Chose measures that are robust and flexible in context of climate change (“no-regret”).

# Developments in relation to Water Policy

*The "Blueprint to safeguard Europe's water resources" (2012):  
proposal for CIS guidance for NWRM*

**The New CIS work- programme: Guidance (or other tool) on NWRM (by end of 2014)**

- **Supported by a Pilot Project**
- **Involvement of Working Groups**
  - WG: Program of Measures**
  - WG: Agriculture**
  - WG: Floods**

# Natural Water Retention Measures



- Measures that aim to safeguard and enhance the water storage potential of landscape, soil, and aquifers.
- They focus on restoring ecosystems, natural features, and characteristics of water courses and using natural processes to regulate the flow and quality of water.
- They are adaptation measures that reduce vulnerability of water resources to climate change and other anthropogenic pressures.
- They support Green Infrastructure



# Pilot Project

*"Integration of Natural Water Retention Measures in river basin management "*

## **OBJECTIVES:**

- to build the knowledge base on NWRM
- to provide a detailed assessment of effectiveness, costs and benefits of NWRM
- to further develop and maintain a catalogue of measures and case studies and associated database integrated with WISE
- to promote knowledge and best practice exchange (with 4 regional networks)
- To contribute to the WFD CIS and to identify or create operational tools that can be used at national, river basin, and/or local level to facilitate inclusion of NWRM in the next RBMPs and FRMPs

# Recent developments on Green Infrastructure

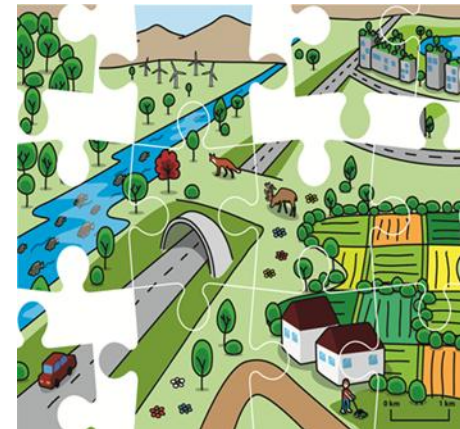
- Green Infrastructure Strategy adopted on 6/05/2013 (action foreseen in EU Biodiversity Strategy to 2020)
- Ongoing institutional follow-up with Council, EP, CoR, EESC
- What is the GI strategy about?
  - Short description of what Green Infrastructure is
  - Contribution of GI to a number of key policy areas, inc. water
  - Why EU action? Priorities at EU level:
    - Promote the deployment of GI in main policy areas and their funding mechanisms (integrate into implementation + guidance, awareness raising, best practices)
    - Improve knowledge base and promote innovation
    - Better access to finance (including innovative mechanisms)
    - Assess opportunities for TEN-G
  - Progress report on implementation in 2017

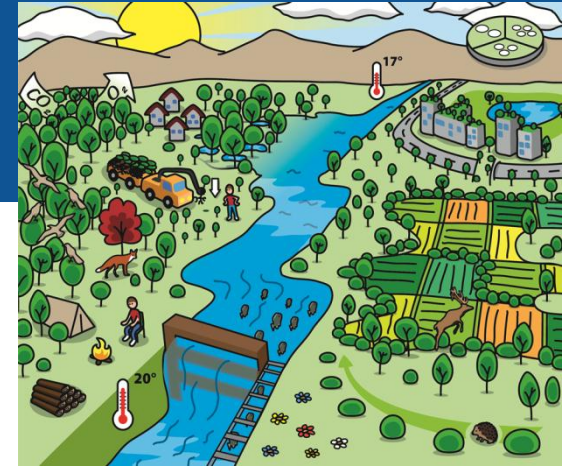
# Green Infrastructure: What is it?

*Green Infrastructure: a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings.*

- Contribution to Europe 2020 Strategy: promoting smart, sustainable and inclusive growth – supporting a shift towards a resource efficient, low-carbon, sustainable economy by investing in our natural capital.

**Spatial structure  
delivering nature  
benefits to people**





# Multiple benefits

- Usually, high return on green infrastructure investments:
- Floodplain restoration project along the river Elbe (DE) benefits of shifting dikes, investing in floodplain-adapted agricultural management and constructing fish ladders outweighed costs by a factor of up to four. Recreation, flood protection and carbon benefits, which were not monetised, would increase the value of these calculated benefits even further.
- Sustainable, no-regret investments.
- Delivering high-level skilled jobs for planning, innovation, management and monitoring; but also jobs for less skilled people in creation and management. Enhances feeling of responsibility of citizens for the area they live in.
- Innovation/SME potential of GI – with links to standards, certification, labelling in support of GI investments. Opportunities for first movers

# GI in urban development



- Importance of promoting GI solutions in Urban Environment  
Making space for ecosystems; strengthening the functionality of ecosystems for delivering goods and services, such as provision of clean water and air, natural water retention, attractive recreational areas
- Mitigating and adapting to climate change effects, such as lower temperatures in cities in summer, retaining rain water
- Health-related and social benefits
- Cost-effective solutions (e.g. air cooling, flood control)
- Connecting urban, peri-urban, and rural areas
- Link with integrated sustainable urban development in 2014-2020 Cohesion Policy
- Build on existing initiatives e.g. on sustainable cities, European Green Capital ...





# GI in rural environment

- Importance of promoting GI solutions into agricultural and forestry management (multiple benefits instead of single-purpose land management)
- Making space for ecosystems; strengthening the functionality of ecosystems for delivering goods and services, such as carbon sequestration, natural water retention, functional landscapes, habitats for wildlife
- Mitigating and adapting to climate change effects
- Health-related and social benefits
- Cost-effective solutions (e.g. disaster protection, flood control)
- Connecting protected and non-protected areas
- Links with new ERDF and CAP in 2014-2020 policies (such as integration of GI into new rural development funds)



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# Technical information

- Explanations on components of GI
- Range of GI benefits
- Cost-efficiency
- EU-level policies and instruments
- Scales and roles on different levels
- Examples of GI in all MS

# Further material

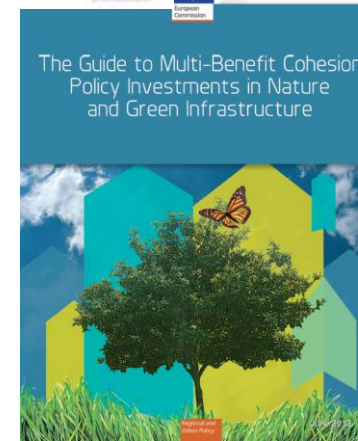
- Communication tools on GI
- GI-related guidance
- Background studies and EEA reports on GI
- Information depository





# Financing for GI & NFM:

- 2007-2013 budget
  - Structural Funds/Cohesion Fund – e.g.
    - GRABS: Green and blue space adaptation for urban areas and eco towns
    - SURF: GI - Sustainable Investments for the Benefit of Both People and Nature
  - CAP Funding
  - LIFE+: Brochure with 65 project examples from 17 MS
  - Other sources
- 2014-2020 budget:
  - New opportunities mainly in ERDF, CF, CAP (pillar 1 and 2)
- Other sources: national governments, EIB, private banks, developers and civil society
  - e.g. development of a Natural Capital Financing Facility with EIB



# Action needed

- Authorities, businesses and civil society need to take actions on all relevant levels – local, regional, national and cross-border – to deploy GI/NFM in urban, peri-urban and rural areas
- Need to integrate GI/NFM solutions into programming and financing work (including partnership agreements and operational programs)
- Need to consider GI/NFM when designing flood risk management plans and its financing
- NFM designed to deliver multiple benefits:
  - opportunities for synergies with other sectors and policy domains, for more efficient absorption of funds
  - more resilient/sustainable solution over time
  - more benefits thereby helping with mitigating land use conflicts and public support

# More information:



The screenshot shows the European Commission website's 'ENVIRONMENT' section. The page title is 'Green Infrastructure'. A left-hand navigation menu lists various topics under 'NATURE & BIODIVERSITY', with 'Green Infrastructure' highlighted. The main content area includes a sub-header 'What is Green Infrastructure?' followed by a paragraph explaining the concept. Below the text is a row of five small illustrations depicting different green infrastructure scenarios. A 'NEW' banner at the bottom of the page highlights the Commission's strategy on Green Infrastructure.

**ENVIRONMENT**

European Commission > Environment > Nature & Biodiversity

Home | Who's who | Policies | Integration | Funding | Law | Resources | News & Developments

**NATURE & BIODIVERSITY**

- EU Biodiversity Policy
- EU Nature Legislation
- Natura 2000 Network
- Species protection
- Green Infrastructure**
- Invasive Alien Species
- Climate Change
- Partnerships
- Knowledge Base
- Information

## Green Infrastructure

### What is Green Infrastructure?

Green Infrastructure is addressing the spatial structure of natural and semi-natural areas but also other environmental features which enable citizens to benefit from its multiple services. The underlying principle of Green Infrastructure is that the same area of land can frequently offer multiple benefits if its ecosystems are in a healthy state. Green Infrastructure investments are generally characterized by a high level of return over time, provide job opportunities, and can be a cost-effective alternative or be complementary to 'grey' infrastructure and intensive land use change. It serves the interests of both people and nature.

The Commission has produced a brochure explaining the main issues of Green Infrastructure. More detailed background on Green Infrastructure, including relevant studies with best practice examples, can be found [here](#).

*For illustrations of the Green Infrastructure concept click [here](#).*

**An EU-wide strategy on Green Infrastructure: Enhancing Europe's Natural Capital**

**NEW** The Commission has adopted a Green Infrastructure Strategy, 'to promote the deployment of green infrastructure in the EU in urban and rural areas'.

Communication from the Commission: Green Infrastructure (COM(2015) 242 final)

[http://ec.europa.eu/environment/nature/ecosystems/index\\_en.htm](http://ec.europa.eu/environment/nature/ecosystems/index_en.htm)

<http://ec.europa.eu/environment/water/adaptation/ecosystemstorage.htm>

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