



EIB FINANCING FOR FLOOD PROTECTION

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1. EIB Activity in Flood Management Projects



Prague Flooding



Tisza Basin (Hungary)

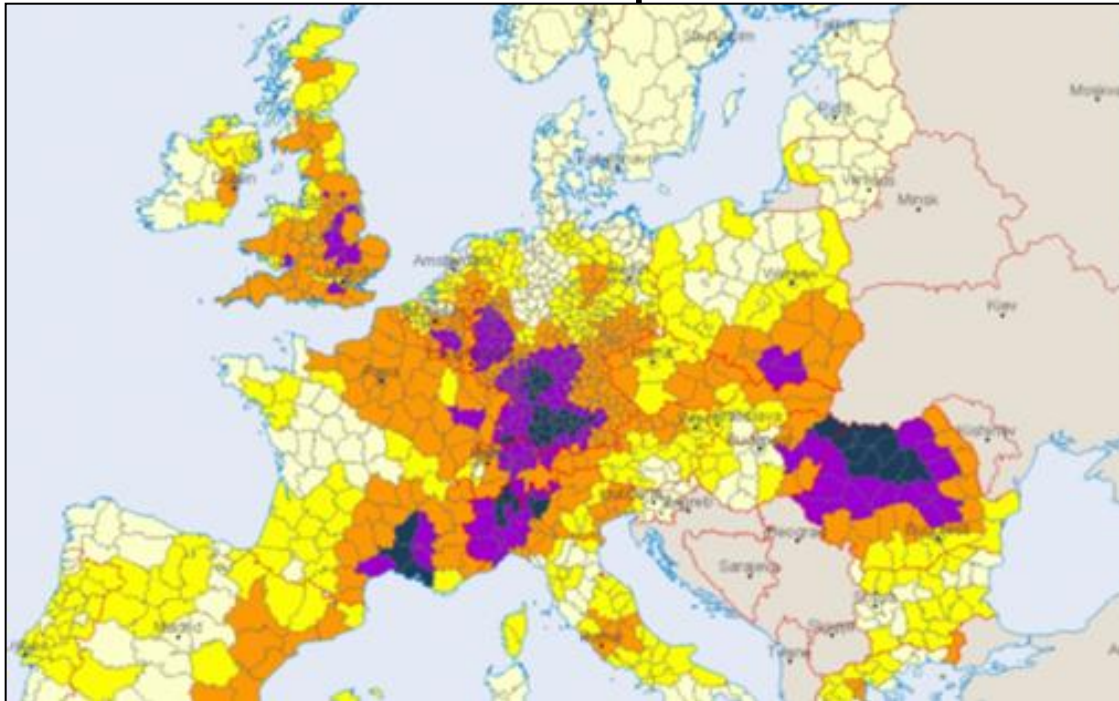


1. EIB Activity in Flood Management Projects



1.1 The European Context: Past and Present

- Flood losses in Europe:
 - 1970-2006: 140 billion USD (value 2006)¹
 - 1998-2009: EUR 54 billion²
- Flood Recurrence map³:



Sources:

1. EC, 2009
2. DG ENV, 2011
3. ESPON, 2004

1. EIB Activity in Flood Management Projects



1.1 The European Context: which Future?

Map of projected impacts of climate change and effects on sectors for the main bio-geographical regions of Europe¹



(1)Source EEA: The European environmental state and outlook 2010



1.2 Main types of projects co-financed by EIB

- Inland (rivers and waterways):
 - Remediation and reconstruction works after damages due to floods
 - Preventative works:
 - Improving existing facilities
 - Newly created facilities
- Coastal protection works



1.3 General Principles for development of Flood Management projects

- Looking at the river basin as a whole (Water Framework Directive)
- Following the step-by-step approach of the Flood Directive (risk maps, hazard maps, etc.)
- SEA: Strategic Environmental Assessment;
- Combination of structural/non-structural measures contributing to overall objectives
- Promotion of the EIB Guide for the preparation of Flood Management Schemes
- Mobilise technical assistance for preparation and/or implementation of the investments – including to assess climate change risk and vulnerability



1.4 Typical Tasks of a Flood Management TA

1. Preliminary Flood Risk Assessment
2. Hydraulic Modelling & preparation of Flood Hazard Maps
3. Flood Risk Assessment (FRA)
4. Define Objectives and Strategies
5. Identification of measures for flood risk management
6. Development of Phased Investment Program
7. Development of a Short Term Investment Plan (STIP)
8. Implementation of a GIS based River Management and Monitoring System
9. Capacity Building

1. EIB Activity in Flood Management Projects



1.5 EIB Key Figures for completed or ongoing flood management projects since 1997, in EU

Country	Number	Type	Project cost (EUR m)
Austria	1	Inland	4,000
Bulgaria	1	Inland	60
Czech Republic	4	Inland	1,520
Germany	5	Inland	1,160
Hungary	3	Inland	1,110
Italy	2	Inland, Coastal	4,800
Poland	3	Inland	1,420
Portugal	1	Inland	100
Romania	2	Inland	1,020
Spain	1	Inland	30
TOTAL	23		15,230

1. EIB Activity in Flood Management Projects



1.6 EIB Key Figures for completed or ongoing flood management projects since 1997, outside EU

Country	Number	Type	Project cost (EUR m)
Bosnia & Hercegovina	1	Inland	100
Montenegro	1	Inland	30
Russian Fed.	1	Coastal	2,200
Turkey	1	Inland	450
TOTAL	4		2,780



2. Case Studies

- St. Petersburg Flood Barrier
- Flood prevention projects in Czech Republic

2.1 St. Petersburg Flood Barrier, Russian Fed.



The Problem:

- Yearly floods since the city's creation 300 years ago.
- Baltic mean sea level rise
- Annual damages >USD 50m



The solution:

- Completion of the construction of a Flood Protection Barrier where previously financial problems impeded the project.
- 25 km embankment across Neva Bay, six discharge sluices and 2 navigation channels with closing gates.
- Designed to provide protection against the level of a flood whose severity that occurs every 1000 years (4.5m)



2.1 St. Petersburg Flood Barrier, Russian Fed.



- Project cost: EUR 2,200m (incl. 6 lanes motorway)
- Loan amount: EUR 40m
- Duration of the loan: 22 years
- Co-financed with EBRD (USD 245m).
- Borrower/Promoter: The Russian Federation
- Final Beneficiary: The Barrier Authority
- Implementation: 2003-2012



2.1 St. Petersburg Flood Barrier, Russian Fed.



EIB's Value Added:

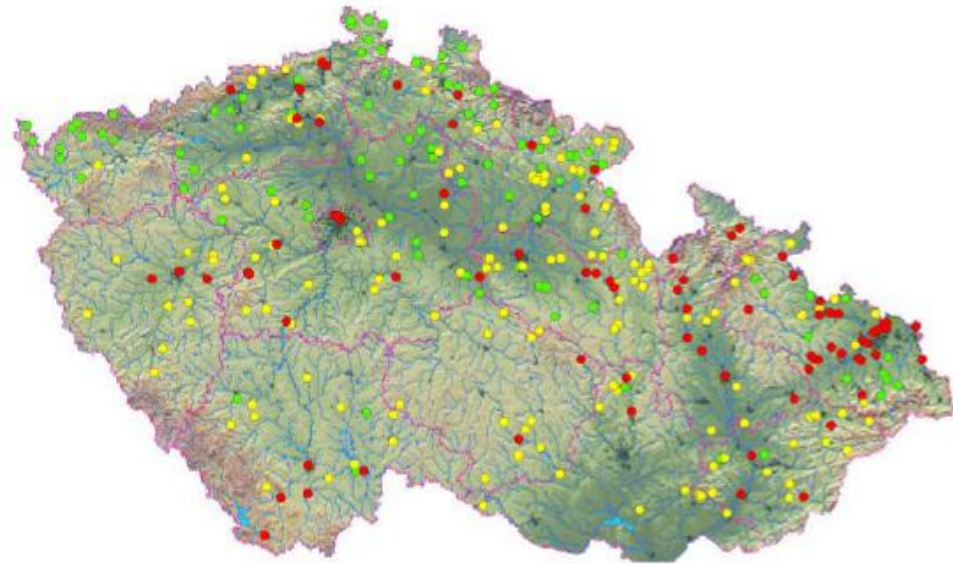
- Project is among the priority projects identified by the Northern Dimension Environmental Partnership (NDEP)
- An ERR (economic rate of return) was calculated against the “without barrier” scenario, which verified the project’s economic justification
- The main conclusions of the EIA were in favour of completing the Barrier but with the requirement of an Environmental Action Plan.
- Establishment of a Project Implementation Unit (PIU)
- In view of the EBRD’s role in the project (lead financier) and the size of its contribution, the Bank’s financing was closely coordinated with the EBRD.
- The EIB finance provided funds on terms not otherwise available in the market.

2.2 Flood Prevention Projects, Czech Republic



Main data:

- Borrower: Czech Republic and banks
- Promoter: Ministry of Agriculture (MoA)
- Final Beneficiary: River Boards, although they will exercise a coordination role to ensure consistency.



	Phase 1	Phase 2
Period	2002-2006	Since 2007
Project cost	EUR 198m	EUR 542m
Population	250,000	300,000
Dykes	45km	647km*
Retentions	38 (9m m ³)	264*
River regul.	40km	n.a.*
Polders	n.a.	24*

Legend:

Schemes implemented by the River Boards

Schemes implemented by Agricultural Water Management Authority, and State Forests

Studies

*as of March 2013

2.2 Flood Prevention Projects, Czech Republic



Objectives:

- Prevent repetition of the catastrophic floods that hit the country between 1997 and 2002, causing 91 deaths, EUR 5.7 billion of damages to public and private property.
- Mitigate flood risks in 5 river basins (Labe, Ohre, Morava, Odra, Vltava), providing protection for major agglomerations and key infrastructure.
- Wide-range of preventative measures that are integrated at river basin level.
- Strengthen River Boards which contributes to the implementation of the EU Water Framework Directive.
- Implement international co-operation in the field of flood protection: cross-border schemes included in project.

2.2 Flood Prevention Projects, Czech Republic



EIB's value added

- Definition of a strategic approach for flood prevention to support the preparation of environmentally sound individual schemes
- Central co-ordination unit located within the MoA to monitor the overall project implementation
- Flood risk modelling applied to rank schemes & design mitigation measures:
 - Scheme selection based on multi-criteria approach combining benefit/cost (B/C) ratios, technical merit & environmental considerations (priority to non-structural)
 - B/C ratios based on risk analysis methodology to compute expected avoided damages (benefits) with/without each scheme: (i) use Monte Carlo simulation to generate sequences of annual peak flows based on probability distribution of different flood events from hydrological data in the models operated by River Boards (ii) combine them with expected damages associated with different flood events, based on estimated frequency-damage functions
- Appointment of an independent environmental expert within the central co-ordination unit, who is part of the Committee for scheme selection
- Ensured EIAs carried out in line with requirements of the EU Directives.
- EIB's financing conditions (local currency, long maturities, fixed and floating rate)



3. Conclusions



3. Conclusions



3.1 Lessons learned

- Importance of overall flood management strategy / vision
- Take river basin planning approach
- Combine hydrologic and economic modelling
- Combine economic, technical and environmental criteria to rank interventions
- Include non-structural measures and tailor selection methodology to this end (multi-criteria, qualitative..)
- TA is crucial both in preparation and selection of schemes and in the management of investment

|| 3. Conclusion



3.2 Outlook

- ❖ EIB as JASPERS stakeholder seeks cooperation with countries and EU.
- ❖ EIB is experienced in financing complex operations such as flood management projects.
- ❖ All completed projects are good examples of successful international cooperation, through blending of loans with grants (from EU and other donors).



THANK YOU FOR YOUR ATTENTION!



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