



LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

Os pilares do Plano de Implementação Estratégico (SIP):

Gestão do risco de cheias e secas

**Rafaela Matos
Anabela Oliveira
Elsa Alves**

LNEC – Departamento de Hidráulica e Ambiente

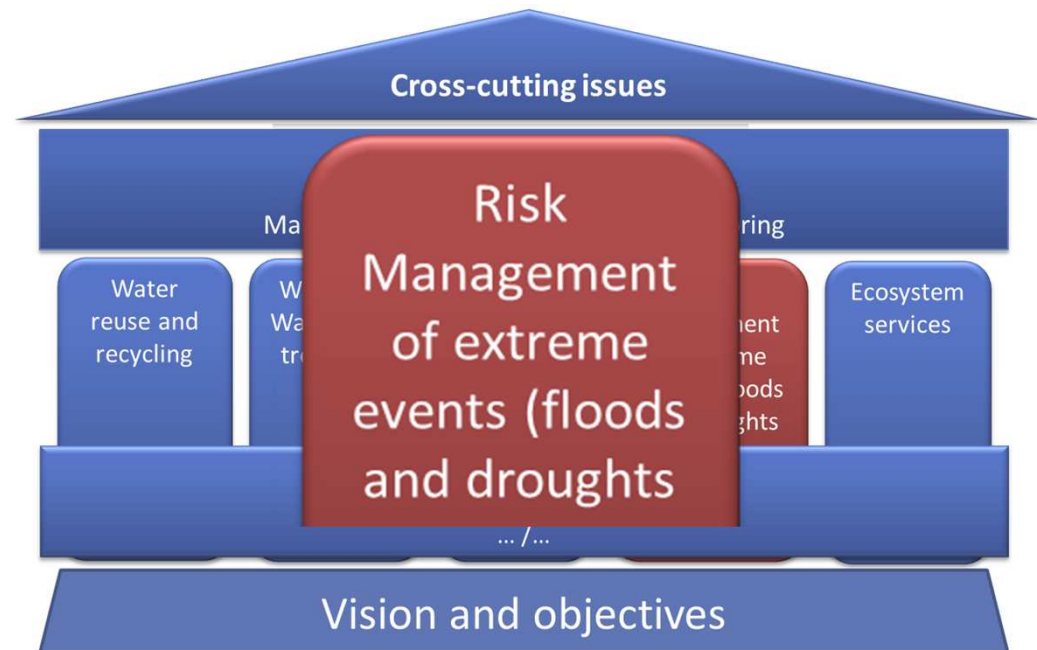
**Contributo de Portugal e da PPA para o Plano Estratégico de
Implementação
da Parceria Europeia para a Inovação no Domínio da Água:
Sessão de divulgação e debate**

LNEC, 16 de Novembro de 2012

© LNEC 2006

Tópicos

- Visão da EIP Água
- Requisitos da Task Force
- Visão geral: temas e desafios
- Roadmap: dos desafios às ações
- Oportunidades
- Para debate: Os desafios/interesses nacionais estão bem representados?
- Para debate: Os desafios/interesses nacionais estão bem representados?
- Para debate: Os desafios/interesses nacionais estão bem representados?



Visão da EIP Água

- **O que é?**

Facilitadora do desenvolvimento de soluções inovadoras para os desafios “da água” e da remoção de barreiras e constrangimentos à inovação

- **O que não é?**

Não visa mudar a legislação, mas poderá fazer recomendações nesse sentido

Não visa desenvolver tecnologia, mas poderá identificar tecnologias que necessitam ser desenvolvidas e trazer as existentes a uma visão de inovação mais alargada, dirigida para o mercado

- **Objetivos:**

Conjunto limitado e bem definido de ações que podem ser executadas no enquadramento EIP Water

Estas ações devem dar resposta a desafios concretos e providenciar recomendações alargadas e lições para superação das barreiras à inovação

!nolvaço

recomendações alargadas e lições para superação das barreiras à

para ações de EIP Water

Requisitos da Task Force of the European Innovation Partnership on Water



- **Relatores:**

 - Rafaela Matos (LNEC, PPA)

 - Sergiy Moroz (World Wildlife Fund Freshwater Policy)

- **Requisitos para o SIP:**

 - **Área: Management of Water-Related Extreme Events (Floods & Droughts)**

 - The Task Force reached a consensus that a combination of different measures (prevention, mitigation, prediction, etc) and behavioral changes offer the potential for innovative interventions that help to mitigate the risks of extreme events.
 - The following key areas are to be considered:
 - Integration into other policy and planning processes (e.g. urban planning,)
 - Forecasting for the local, regional level
 - Conflicting land-uses
 - Conflicting land-uses
 - Forecasting for the local, regional level

Visão geral: temas e desafios



LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

Instrumentos e medidas



Implementation of reliable real-time monitoring, forecasting and early warning of floods from multi-source events (from the river to the sea, including groundwaters and deltas) in urban and rural environments



Improved resilience of urban, riverine, estuarine and coastal zones and critical structures (in urban, fluvial and maritime areas, including hydraulic structures and water, energy and transport networks), to cope with impacts of extreme events, in particular in a climate change context;



Planning, mitigation and adaptation to droughts impacts on freshwater availability, including improved preparedness and anticipation measures across sectors, aiming at a sustainable strategy for guaranteeing water quantity, quality and security.

Planeamento e Gestão do território, conhecimento



Enhanced policy and land planning for better flood and drought risk prevention and protection, optimizing multiple land uses and bringing together the different land planning entities and civil protection authorities, taking advantage of decision support tools for land management options



Enhanced flood and drought event management, including improved evaluation and assessment of stakes at risk of flooding or of drought, prioritization of resources in emergency response and promotion of cost-effective measures to better deal with extreme events at local and regional levels



Improved knowledge/research on potential impacts of climate change on the frequency and magnitude of the events (including rare events) in urban and rural areas; on predictive economic loss model, insurance models and costs functions to arrive at risks, on recovery/management of habitats that act as natural barriers/preventers to floods or that reduce the impact of droughts

Disseminação/Partilha



Enhanced institutional awareness and preparedness to ensure adequate governance priorities, strategies and instruments to better deal with extreme climate events, especially in more vulnerable areas, such as coast and estuaries



Improved dynamic risk awareness and communication tools for better resilience of populations at risk, targeting better emergency prevention and preparation



Improved transfer, exploitation and dissemination of knowledge, data, past experience and research results on extreme events prediction and management among policy makers, public authorities, water infrastructure entities, private companies, research organizations, NGOs and other relevant players, at local, regional, national and international levels

Roadmap: dos desafios às ações



LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL

inadequate/insufficient/low robustness/unreliable/outdated monitoring

Lack of broadly accessible, adequate, reliable, high resolution data

Fatores Limitantes

real-time monitoring forecasting and early warning of floods

Ações



1 •Develop innovative flood and drought early-warning systems

2 •Develop real-time, operational forecast systems, DSS and emergency models

3 •Integrate existing earth-based monitoring networks and tools



Alvos

Innovative risk and crisis management information systems



Real time flood forecast platforms, integrating innovative sensors, and advanced prediction models

Ações propostas (risco)

Risco

- Develop **risk analyses** for inundation and surface and groundwater availability forecasting, taking into account uncertainty through different climate change scenarios;
- Develop new **integrative approaches for risk assessment** of extreme events, bringing together the physical, economical, insurance, emergency management, human factors, ecoservices and ecosystem damage evaluation and recovery dimensions;
- Develop **innovative flood defences and flood protection systems** increasing system resilience and adaptation to climate changes;
- Develop **risk mitigation strategies** to reduce flood-induced damage;
- Propose **mitigation measures** for conflicting land-uses; and
- Propose **adaptation measures** for storing water on surface and in aquifers during times of excess helping to **address water scarcity** challenges and minimize floods;
- Develop innovative measures at local and regional scales for **drought management and flood prevention**;
- Propose **new technologies for mitigation of water-scarcity-** and drought-generated ecological quality deterioration;
- Create **prevention and rehabilitation measures** with real-time action measures to mitigate flood effects in urban areas;
- Propose and validate mitigation measures, applicable for different drought status, including trans-boundary river basins and ecosystem monitoring and protection;
- Develop **integrated indicator systems** representative of the spatial and temporal dimensions of drought events and an integrated methodology for drought management plans.
- **Flood risk analysis** together with “Ground Water availability in context with uncertainty through different Climate Change Scenarios sounds a bit strange. Proposal: better open up a new bullet and separate both

.....

Dar prioridade/selecionar 2-5 ações por desafio

Oportunidades para Portugal



- **For river basin agencies and other administrations:** improve efficiency in system's management in case of extreme events
- **For private water operators:** better management of real-time information, by providing services to citizens and decision makers to facilitate the prediction and management of extreme events (e.g. real-time alerts based on integrated forecasting systems, real-time policies for mitigating the impact of flood and droughts). The improved management of extreme events will reduce operational costs and expensive last-minute strategies
- **For software providers:** commercialization of new tools that can forecast, reduce the impact of extreme events and lead to early alerts. Using the software as a service, such tools can be distributed through consulting groups.
- **For the construction materials providers and construction companies:** design and implementation of flood resilient building techniques.
- **For eco-engineering companies:** Innovative flood defense mechanisms
- **For industries with intensive use of water:** capacity to adapt the short-term operations, as well as better planning of future investments
- **For all regions with competing water demands:** benefits of having agreements on how to handle water shortage in a coordinated way and to have decision support tools
- **For water managers:** Economic value generated by better and more flexible solutions, particularly in drought prone areas of Mediterranean EU.
- **For European companies:** Flood and drought planning, forecast and early warning in Africa, Latin America and Australasia
- **For insurance companies:** Innovative insurance policies to mitigate the effects of droughts and floods

Para o debate:

Que desafios e ações são necessários para os interesses nacionais?

Agradecimentos

Aos muitos colegas e instituições nacionais e internacionais que contribuíram para o conteúdo e revisão do SIP



Obrigada pela vossa atenção