



the River Restoration Centre

Working to restore and enhance our rivers

Delivering River Restoration: Recipes for Success

13TH ANNUAL NETWORK CONFERENCE



Restoring Europe's Rivers

The RIVERFOR project is made possible with the contribution of the LIFE+ financial instrument of the European Commission and works in partnership with



ARUP





APPROACHES TO RIVER RESTORATION ACROSS EUROPE.....

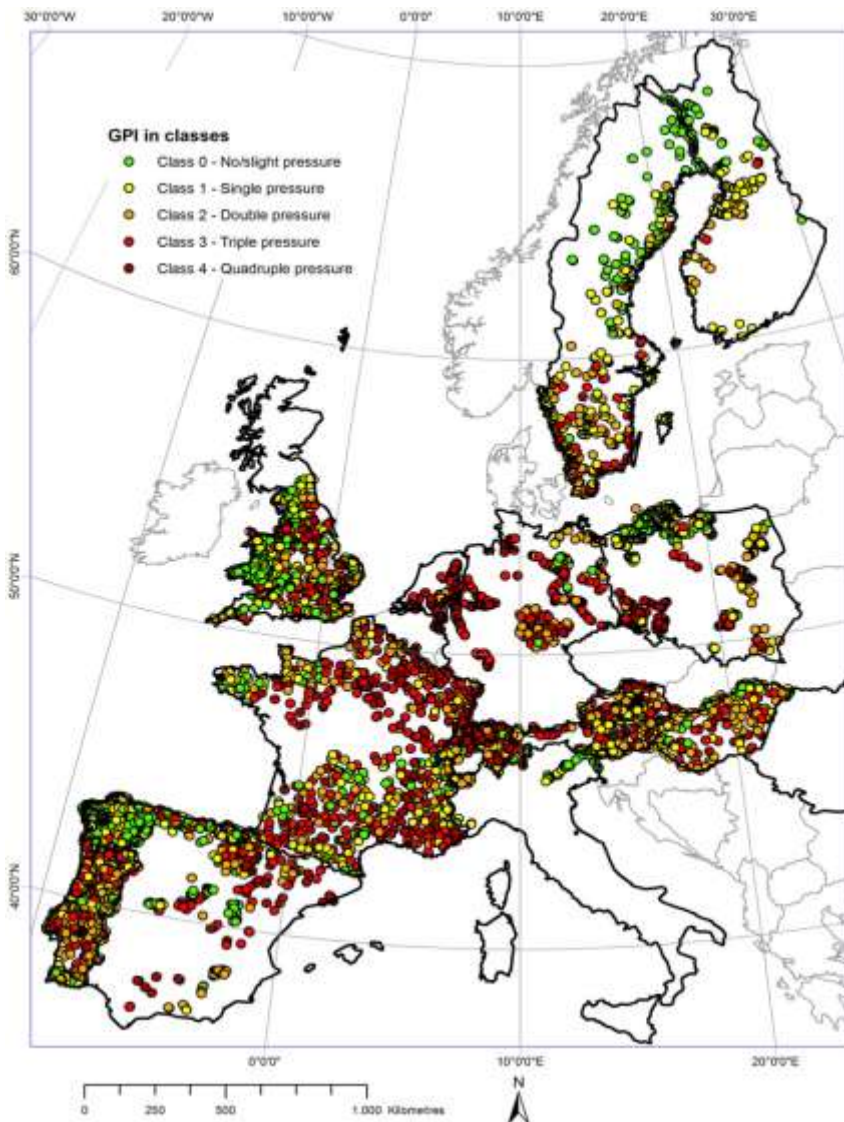
Bart Fokkens

Chairman European Centre for River Restoration



ECO REGIONS





HUMAN PRESSURES

80 % rivers with alterations

- Water quality 59 %
- Hydrology 41 %
- Morphology 38 %
- Connectivity 85 %
- Multi impacted 47 %
- Low land rivers 90 %

15 criteria

9330 sample sites

WFD TIME TABLE

- 2000 Directive into force
- 2008 Draft IRBM Plan
- **2009 IRBM Plan + Plan of Measures**
- 2010 Introduce pricing policies
- **2012 Operational Plan of Measures**
- 2015 Meet environmental objectives; first cycle
- 2021 Second cycle
- 2027 Third cycle



ECRR CONFERENCE 2008

RR READY FOR THE FUTURE ?

- Design rivers for the future with respect for the past
- Multidisciplinary, adaptive approach, acceptance of non-stationary
- Public involvement, social processes and interactions important with increased scale
- Multi-criteria analysis, cost benefit analysis and economic evaluation
- Adequate (long-term) multi-level monitoring



LOST ROOM FOR RHINE AND MEUSE



FLOOD RISK MANAGEMENT RHINE RIVER



DIKE STRENGTHENING ?





RESTORING FLOODPLAINS?





TOOLBOX OF MEASURES

(green = best potential for ecological restoration)

- **Inside existing floodplain**
 - Riverbed deepening
 - Groin improvement
 - **Creating side-channels**
 - Removing obstacles
 - Strengthening of dikes (final option if no room available at reasonable costs)
- **Outside existing floodplain**
 - **Detention areas**
 - **Bypasses/ 'green rivers'**
 - **Widening of floodplain by replacement of dikes or depoldering**

Selection of measures based on:

cost-effectiveness, contribution to spatial quality and administrative/political feasibility

FOR THE RIVER PROGRAM



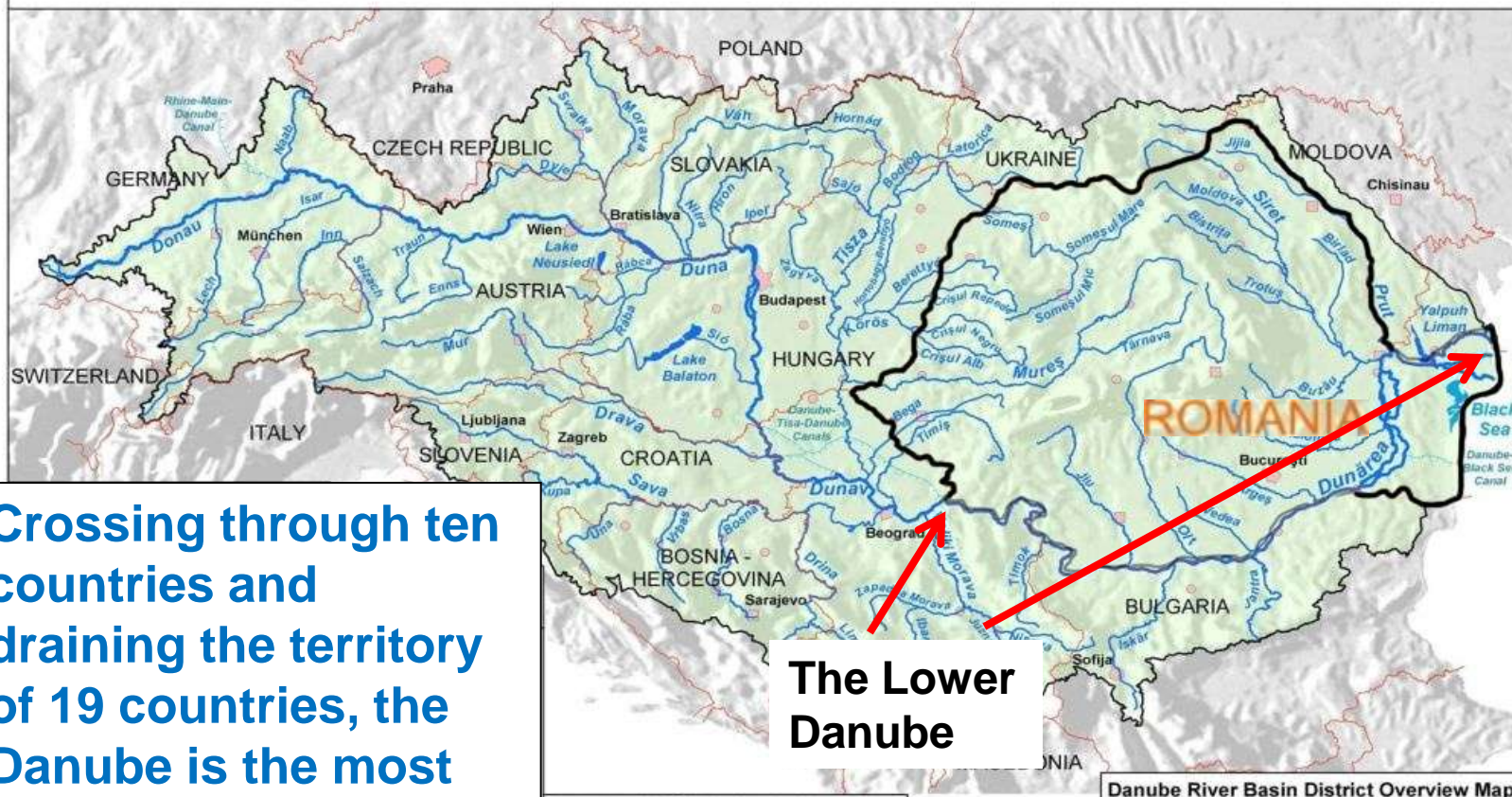


PROGRAMMATIC APPROACH

Alternative measures could be developed by partners until summer 2008 within strict limits of:

- Political and Public support
- Effectiveness (safety + spatial quality)
- Within available budget or provide extra
- Completed in 2015

Danube River Basin District. Overview map



Crossing through ten countries and draining the territory of 19 countries, the Danube is the most international river in the world.

The Lower Danube

- 97.4 % of Romania's surface is located in the Danube River Basin
- Romania represents 29 % from Danube River Basin surface
- The Danube River has 37.7 % of its length on Romanian territory

The outer border of Germany, Austria, Slovakia, Croatia, Bosnia-Herzegovina, Romania, Moldova and Ukraine. The EGM v1.0 is only complementary data. European Commission and VMAP Level 0 data.

Map EGM

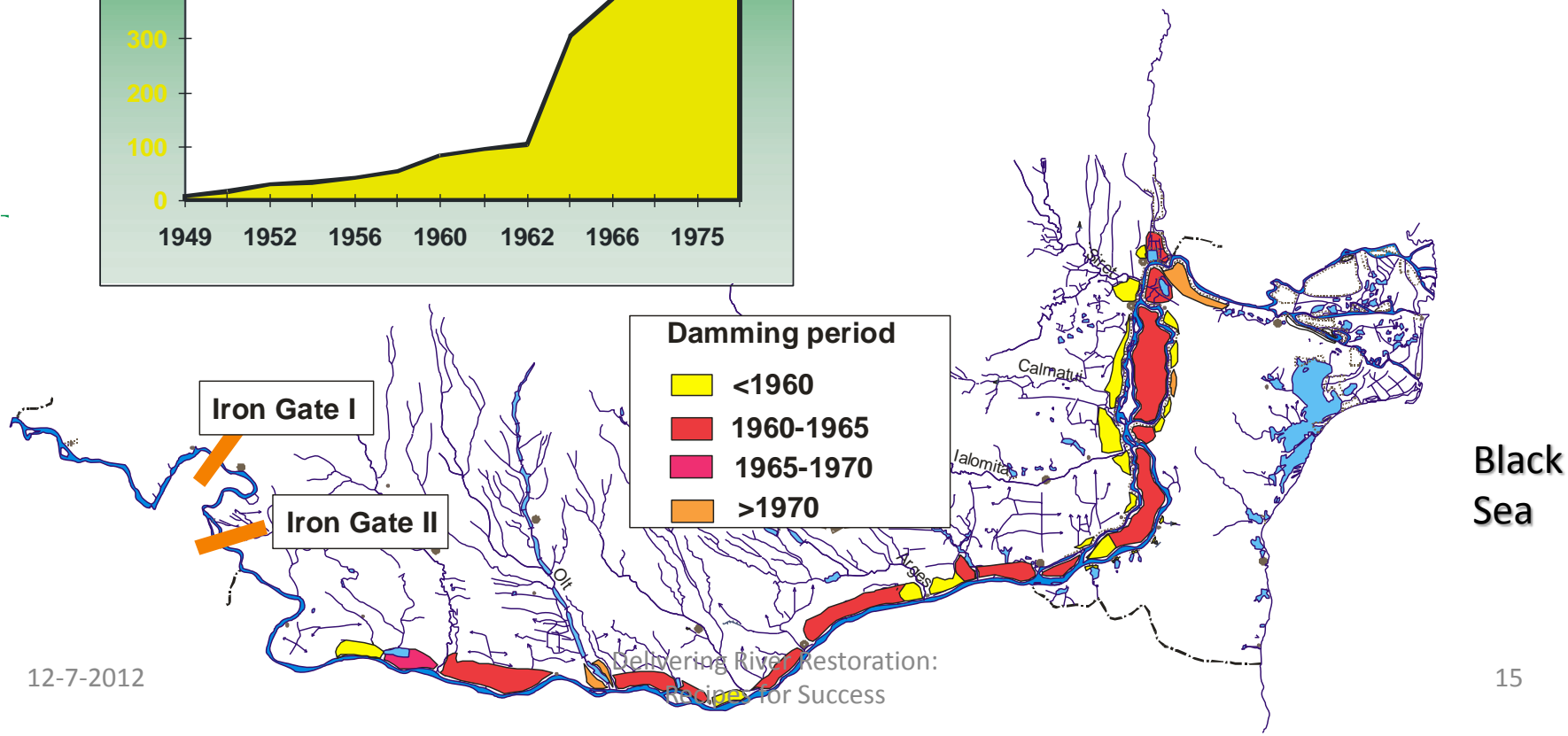
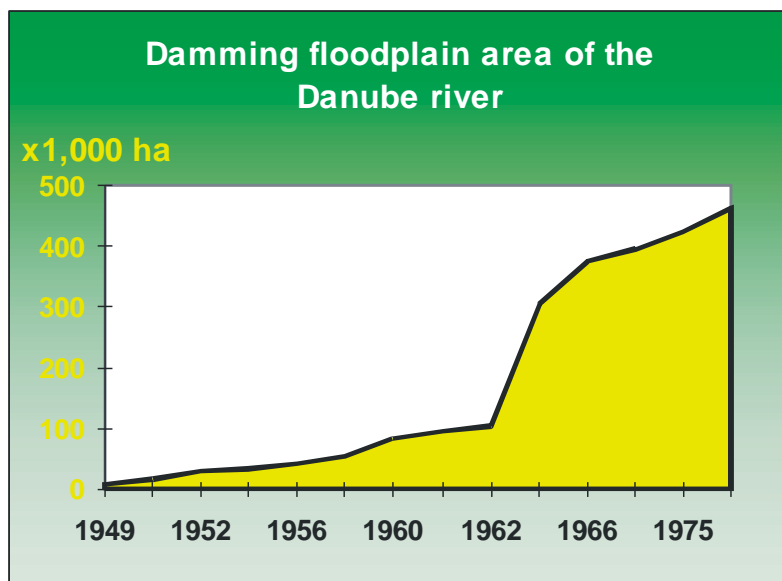
Commission for the Danube River, Vienna
US, Vienna, September 2003



icpdr **iksd**
International Commission for the Protection of the Danube River
International Commission for the Protection of the Danube River



LOWER DANUBE FLOODPLAIN LOSS





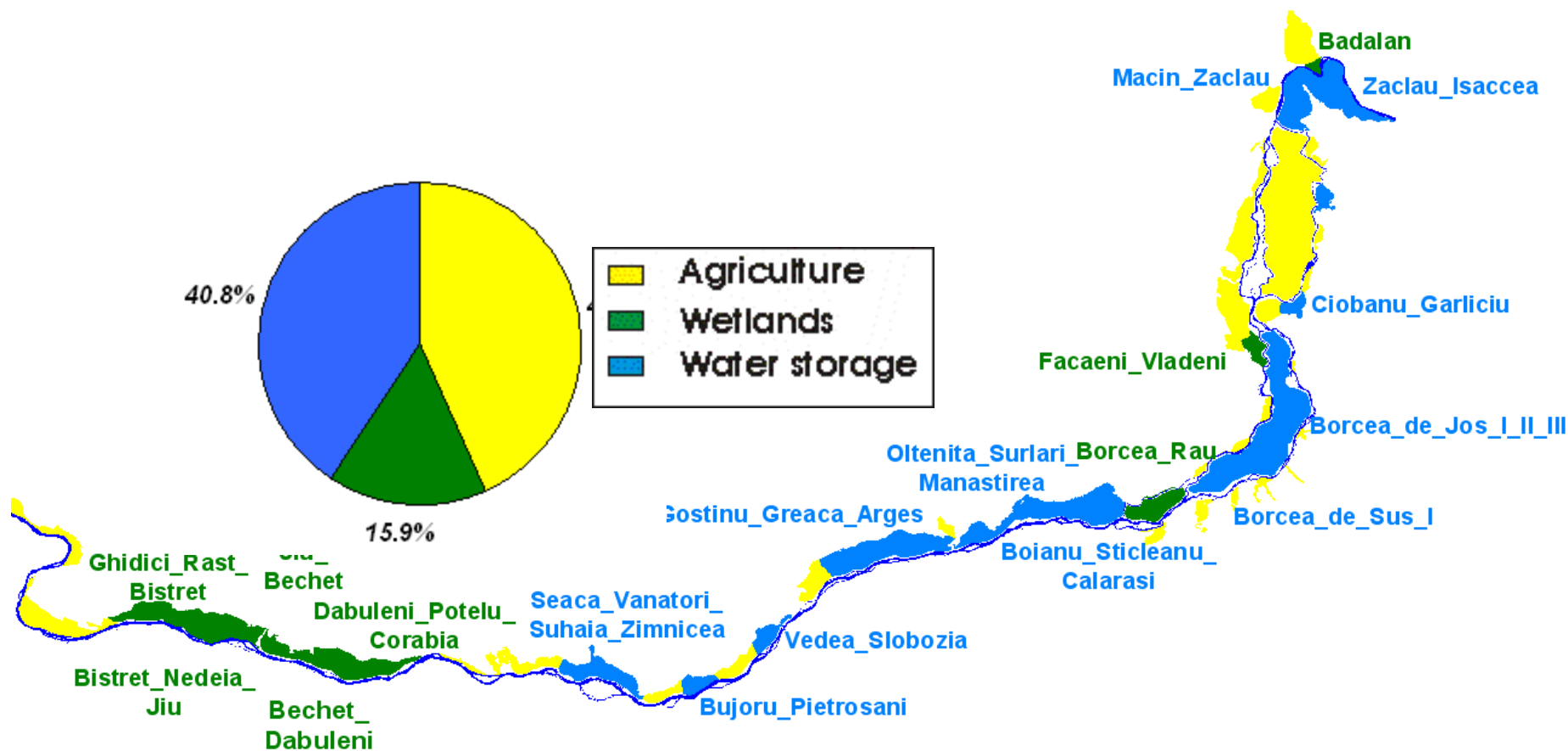


ECONOMICAL AND ECOLOGICAL RIVER RESTORATION

Scenarios:

- I. A number of 8 polders reverted to wetlands (15,9%)
- II. 8 polders reverted to wetlands and additional 12 polders used for temporary water storage at high flood events (40,8%)-(mixed use)
- III. All polders reverted to permanent wetlands (100%)

MIXED USE OPTION





BASIN APPROACH HY-MO OBJECTIVES



FLAG SHIP SPECIE

STURGEON



Lucrarile propuse a fi executate in acest proiect, pot genera un impact negativ.

STURIONII SUNT IN PERICOL

Lucrarile de dragare si inchidere a bratelor laterale:

1. In special cele executate in scopul de crestere a vitezei de curgere a apei in zona de curgere a apei, pot genera un impact negativ asupra speciilor de sturioni care sunt o sursă importantă de hrană pentru alte specii de pești, în special sturionii.
2. Pe durata procesului de construire a lucrării, în zona care va fi închisă, sturionii vor fi forțați să se deplaseze în zonele de curgere a apei, ceea ce poate duce la o creștere a mortalității acestor specii de pești din cauza stresului, bolilor și a altor factori.
3. Pe durata lucrărilor de dragare și închidere a bratelor laterale, sturionii vor fi forțați să se deplaseze în zonele de curgere a apei, ceea ce poate duce la o creștere a mortalității acestor specii de pești din cauza stresului, bolilor și a altor factori.
4. Pe durata lucrărilor de dragare și închidere a bratelor laterale, sturionii vor fi forțați să se deplaseze în zonele de curgere a apei, ceea ce poate duce la o creștere a mortalității acestor specii de pești din cauza stresului, bolilor și a altor factori.

Cresterea înălțimii nivelului de apă:

Pe durata lucrărilor de dragare și închidere a bratelor laterale, nivelul de apă va crește în zona de curgere a apei, ceea ce poate duce la o creștere a mortalității acestor specii de pești din cauza stresului, bolilor și a altor factori.

Consolidarea malurilor:

Pe durata lucrărilor de dragare și închidere a bratelor laterale, malurile vor fi consolidate, ceea ce poate duce la o creștere a mortalității acestor specii de pești din cauza stresului, bolilor și a altor factori.

UTILITATEA ECONOMICĂ
NU E DEMONSTRATĂ
ÎN TRAI CE RĂDĂCINĂ
ȘI PE CALE SA PIER
(REVERSIBIL AFECTAT)

Beneficiile economice ale acestui proiect sunt îndoielnice. Datorită sedimentării rapide, costurile dragajelor periodice de mentinere a senalului navigabil sunt prea mari! Aceste costuri ar putea depăși costurile transportului terestru sau costurile de mentinere a actualului trafic!



FISH MIGRATION



WETLAND RESTORATION PROJECT BULGARIA

Kalimok-Brushlen Protected site – 6 000 ha
Kalimok marsh (after restoration) ~ 1 850 ha
Kalimok and Brushlen
former marshes ~ 35 000 ha



THEMATIC APPROACH NORDIC COUNTRIES

Restoration constructed rivers

- Removing dams
- Construction fish passes
- Construction of habitat compensation



FISH PASSES

National Strategy for fish passes In Finland



URBAN STREAM RESTORATION





NATURE LIKE BY PASSES

Ecological corridors





ÓBIGO RIVER RESTORATION SPAIN





CATCH BEND PROJECT ROMANIA





VAR RIVER RESTORATION FRANCE

2011: abaissement d'un 1^{er} seuil

Avant abaissement
Mars 2010



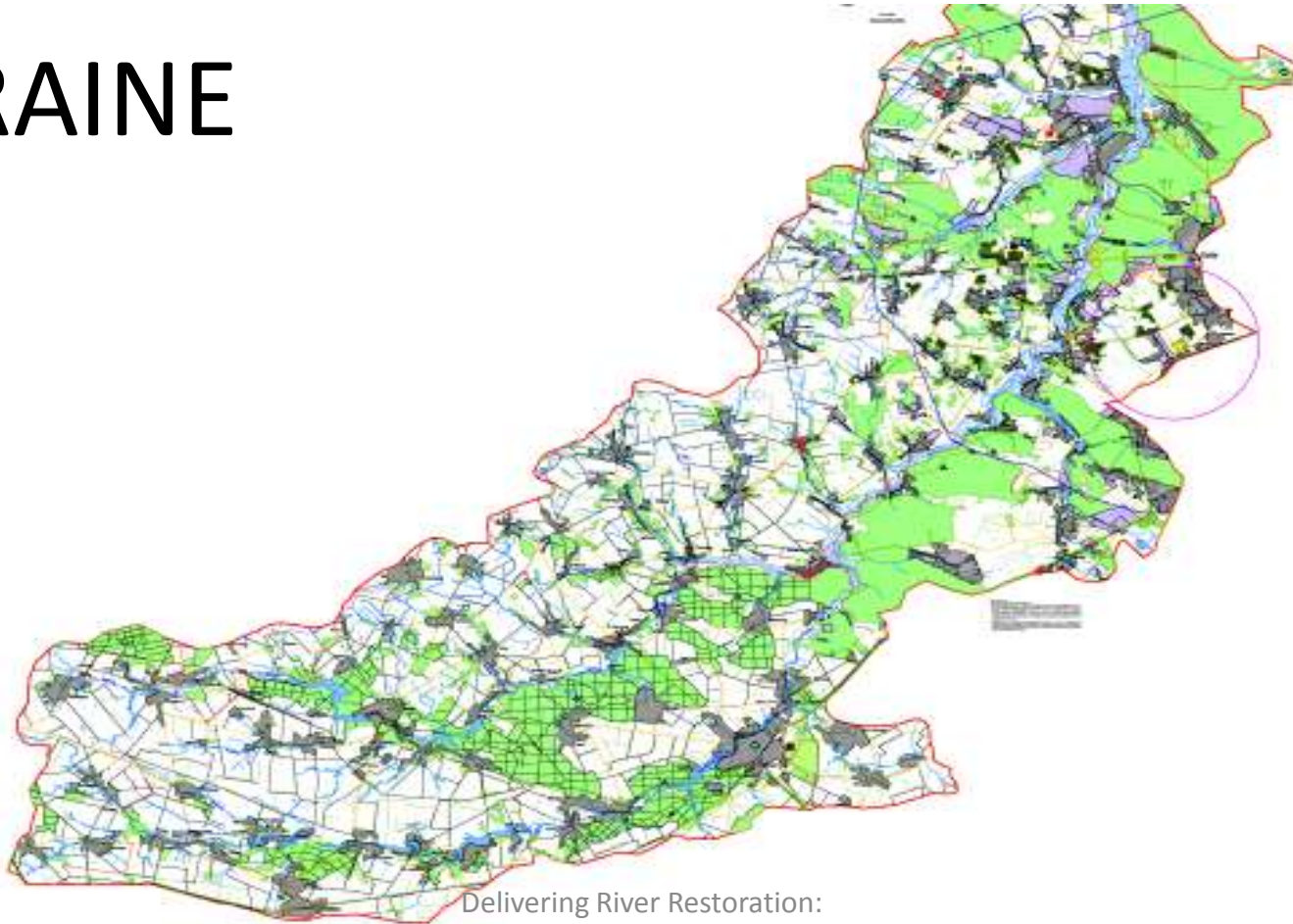
Après abaissement
Novembre 2011



Observatoire du Var : Suivi de l'avancement des matériaux pour anticiper l'abaissement des seuils à l'aval



SUSTAINABLE WATER AND LAND MANAGEMENT IN IRPIN BASIN UKRAINE



FLOODPLAIN RESTORATION CEE



2009 EU COMMON IMPLEMENTATION STRATEGY HYDROMORPHOLOGY

- Urgent need to collate information on RR
- Develop good practices ecological effectiveness
- Develop good practice on costs/benefits
- How to include in IRBM plans
- Develop further information sharing
- Develop knowledge transfer capacities on RR

ECRR STRATEGY

- Dissemination of Ecological River Restoration
Information
- Establishment of River Restoration
National Centers / Networks
- 2012
 - 500 members; organisations and individuals
 - ca. 15 National Centers / Networks
 - 2 Partners INBO and WETLANDS INTERNATIONAL

ECRR VISION

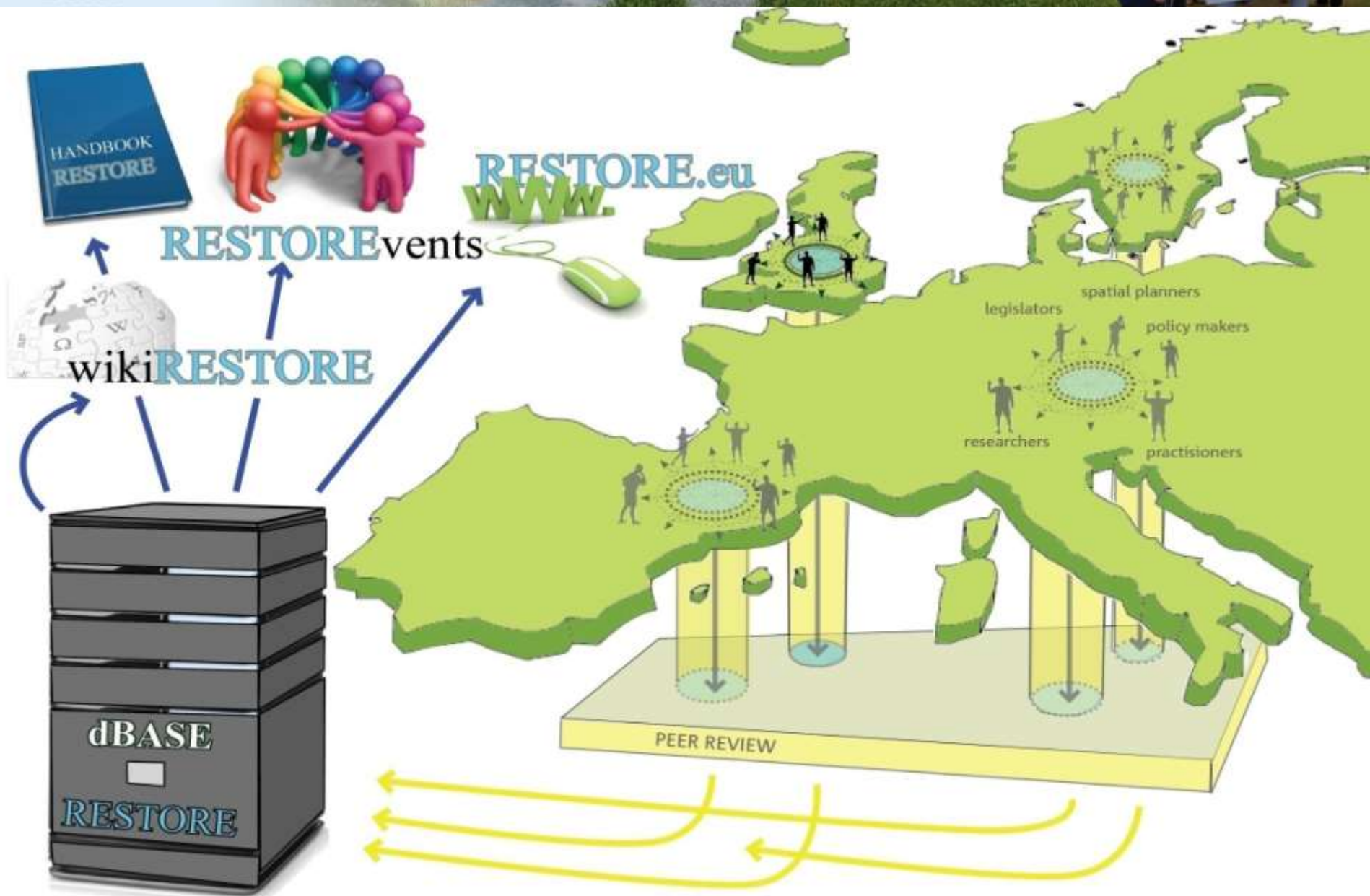
- River Restoration is **eco-system based**
- **Ecological** River Restoration is an **integral** part of sustainable water management
- ECRR is **connecting people and organizations** working on river restoration (network / platform)
- ECRR supports development of **good/best practices** of river restoration



EU LIFE RESTORE PROJECT

***R**ivers: **E**ngaging, **S**upporting and **T**ransferring kn**O**wledge for **R**estoration in **E**urope*

1. Support RR practices across Europe
2. Build up existing RR network capacity
3. Promote effective RR knowledge transfer
4. Establish LT RR knowledge sharing
5. Communicate and demonstrate project results





RIVER RESTORATION DRIVERS

- Traditional drivers
 - Legislation
 - Policy
- New drivers
 - Flood risk management
 - Climate change
 - Urban development
 - Tourism and recreation development
 - New technologies



MAJOR ISSUES

- Best practice (approaches) of RR
- Strategic land, land use planning and land banking
- Integrated river basin management planning
- Communication and information
- Stakeholder involvement
- Public education



RIVER RESTORATION CONTEXT

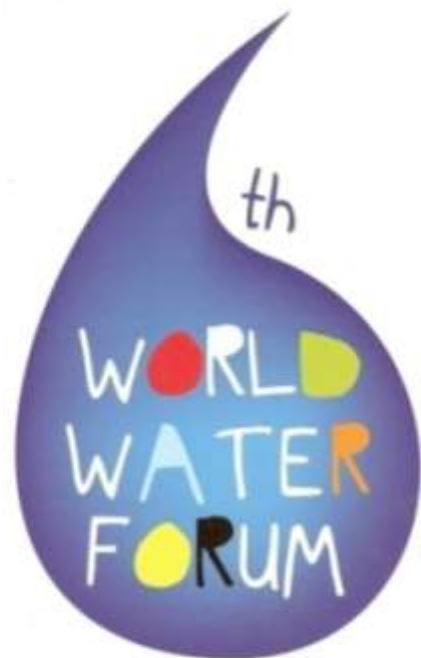
- Ecology
- Hydro-morphology
- Cultural heritage
- Socio-economy
 - Cost effectiveness
 - Ecosystem goods and services; values and payments
 - Cost / Benefit ratio

REFORM PROJECT

- FP7 Project with 27 collaborative partners
- Framework development
- Improving success of hydro-morphological measures
- Cost effective manner to reach ecological status
- Better monitoring of biological response
- Support WFD restoration programs
- Better integrate of river restoration in socio-economic programs



JANUARY 12/18 2011 • 1st ANNOUNCEMENT
WORLD WATER FORUM • MARCH 12/17 2012



MARSEILLE, FRANCE '12

TIME FOR *SOLUTIONS*

FORGING TARGETS AND SOLUTIONS FOR RIVERS AND WATER ECOSYSTEM RESTORATION

ECRR

TARGET GROUP COORDINATOR

Specific Europe Region Priority Target (SERPT) 9

Develop new knowledge and know how on river hydro-morphology, river restoration and protection of water eco-systems.

Group:

- ECRR ecological restoration
- EWA water quality
- ONEMA river basin management
- WI wetland restoration



PREPARATORY SEMINAR LJUBLJANA NOVEMBER 2011



***125 participants
25 countries***

EUROPEAN TARGET 9

2012 – 2015 At least 3 river basin plans include best practice (ecological, hydro-morphological, socio-economical) river restoration measures and strategic land use and land banking plans.

2012 - 2015 Delivered X field visits, study tours, seminars and conferences for communication and information on new knowledge, know how and capacity development.



INŠTITUT
ZA VODE
REPUBLIKE
SLOVENIJE

Institute
for Water of
the Republic
of Slovenia



Restoring Europe's Rivers

Restoring Europe's Rivers

Dr Chris Baker Wetlands International

RESTORE LIFE+ Communication and information on (best practices) river restoration

RESTORE supports river restoration practices across Europe by:

- Sharing river restoration knowledge to policymakers, river basin organisation and practitioners
- Strengthening river restoration networks
- Developing knowledge transfer tools and organising knowledge exchange events

CASE STUDIES ?!



*The RESTORE database of river restoration projects
is currently being developed*



Protection and restoration of river ecosystems – the Arpa River basin, Armenia

Prepared by:
**Volodya Narimanyan &
Vahagn Tonoyan**

Prepared for:
**Interactive River
Restoration Session
Specific European Region
Priority Target 9**

World Water Forum 6

**March 15, 2012
Marseille, France**



River restoration commitment

- On-going expansion of hydropower development (12 operational HPPs, 30 in the process of construction);
- Impact of climate change;
- Need to improve habitat quality, protect water quality;
- Incorporate river restoration practices in the Arpa IRBP;
- Awareness raising and capacity development for the planning and implementation of river restoration;
- Development of practical pilot projects



Rhône river basin



Dr Benoît TERRIER, Project manager in hydromorphology, Agence de l'Eau Rhône Méditerranée et Corse



A commitment to improve and take on board best practice experience

- Identified key areas of improvements
 - *Strategic land and land use planning with private owners*
 - *Development of sustainable tourism*
 - *Public education: which tools to assess its efficiency?*



COMMITMENTS

- **Land use initiative:** DLG in NL; Institute of Water Ukraine; Wetlands International Ukraine.
- **River restoration best practice approaches:** Wetlands International HQ; ECRR partners / RESTORE LIFE+ Project.
- **Public education GWP.**
- **Integrated River Basin Management Planning:** INBO and Wetlands International
- **Pilot river basins:** Arpa river basin Armenia; Rhone River basin France; ??????????????????????????????????????

DISSEMINATION OF INFORMATION on PROTECTION AND RESTORATION of RIVER ECO-SYSTEMS



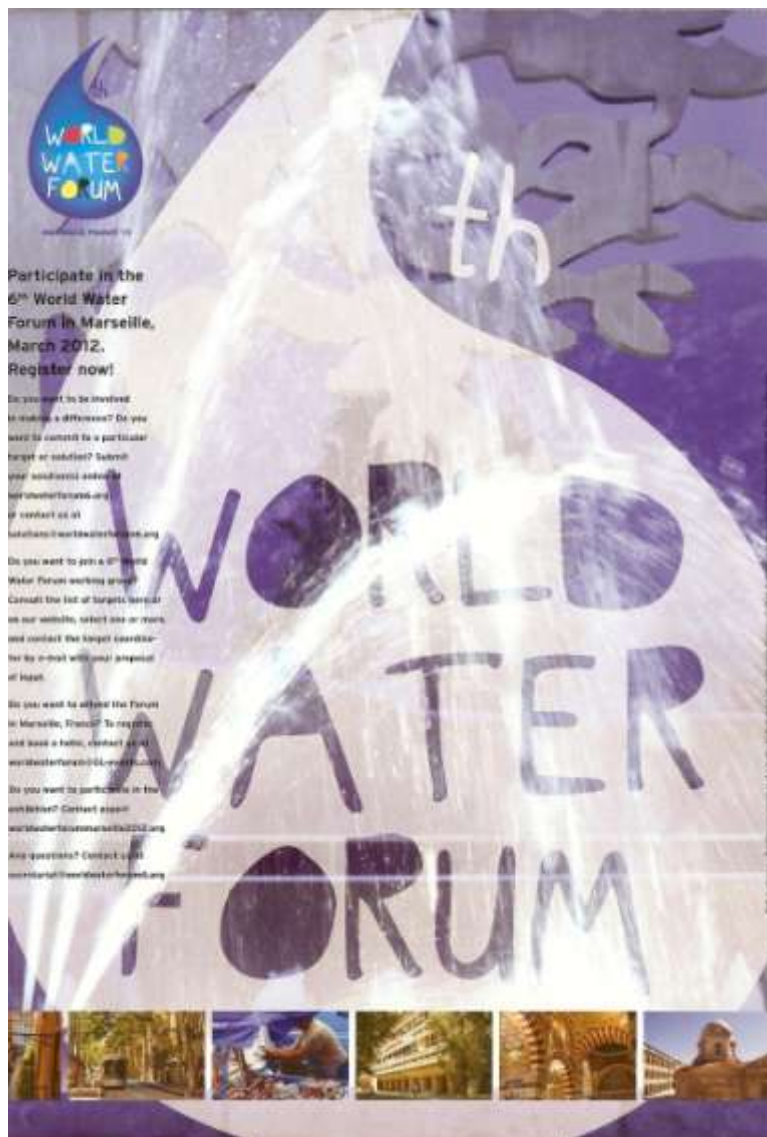
2012 - 2015



LAND AND LAND USE PLANNING



Thank you River Restoration Centre !



THANK YOU!