



**EAAFP 10th Anniversary
2019 World Migratory Bird Day**

Wetland Conservation – a mean for climate change mitigation and adaption

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Coordinator, Support Programmes
(Readiness, NAPs, PPF, Sustainability)

Green Climate Fund

Climate change landscape

- Climate science
- Climate change mitigation
- Climate change adaptation
- Climate financing

Wetlands landscape

- Wetlands science
- Wetlands conservation
- Wetlands wise use
- Wetlands management

Climate change as a **direct** and **indirect** driver of wetlands changes

**Precipitation patterns
(much, less, time, place)**

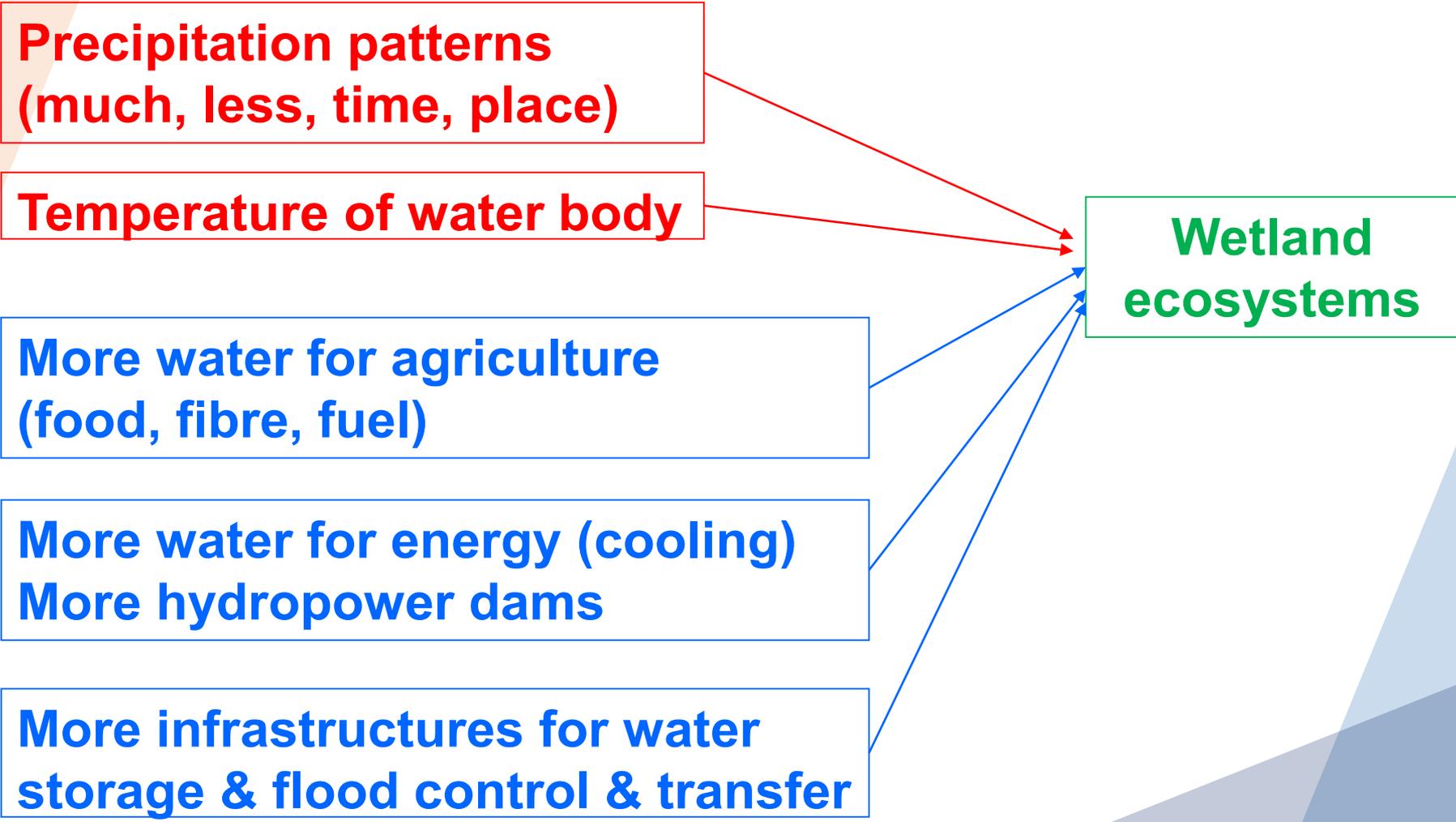
Temperature of water body

**More water for agriculture
(food, fibre, fuel)**

**More water for energy (cooling)
More hydropower dams**

**More infrastructures for water
storage & flood control & transfer**

**Wetland
ecosystems**



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graph LR; A[Precipitation patterns (much, less, time, place)] --> D[Wetland ecosystems]; B[Temperature of water body] --> D; C1[More water for agriculture (food, fibre, fuel)] --> D; C2[More water for energy (cooling) More hydropower dams] --> D; C3[More infrastructures for water storage & flood control & transfer] --> D;
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Mismanaging wetlands exacerbated the impacts of climate change

- 35% of wetlands lost since 1970
- Canalizing rivers can make floods more powerful downstream
- Clearing mangroves and mining coral reefs exposes coastlines to storm surges
- Burning or draining peatlands releases large quantities of CO₂
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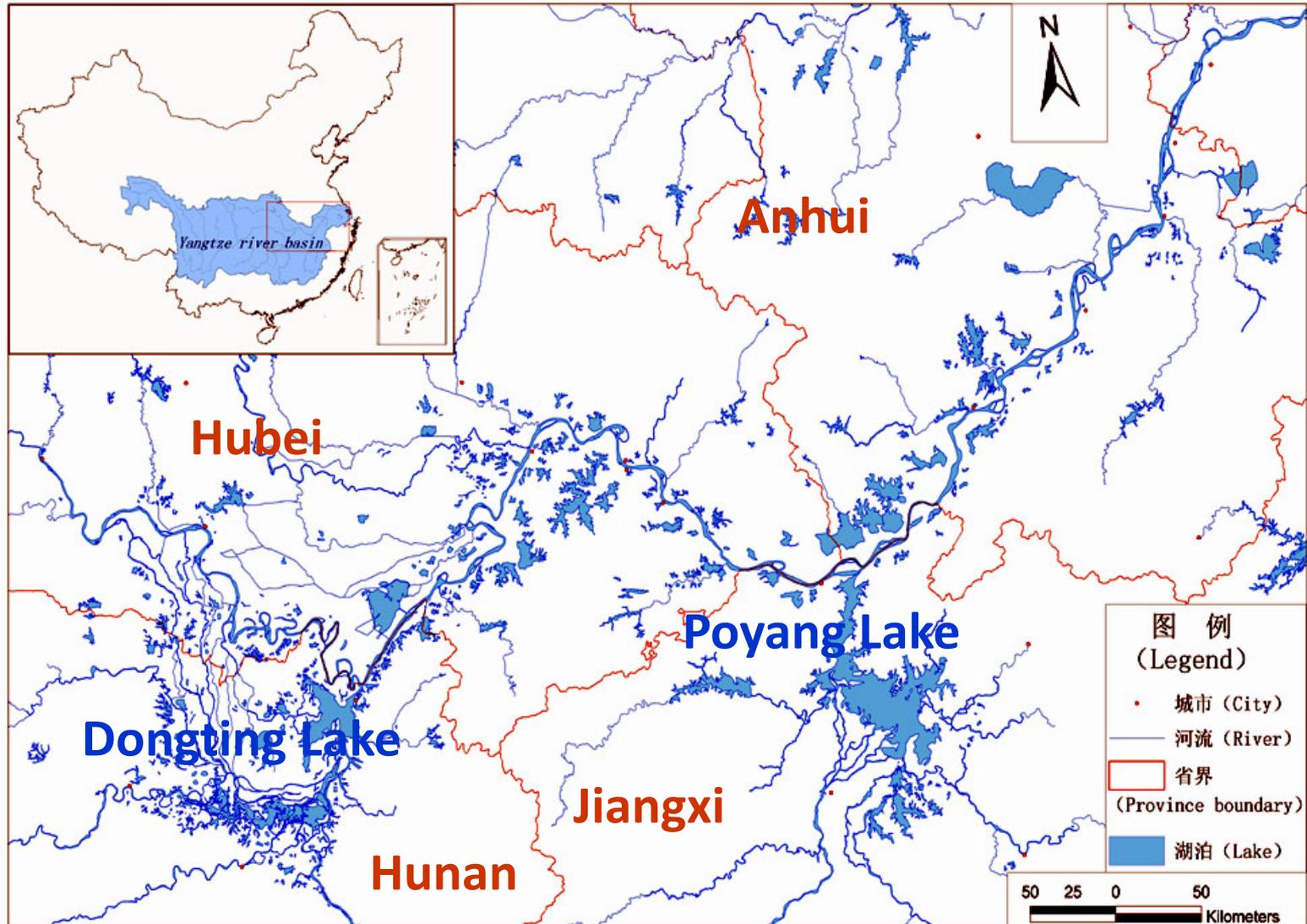


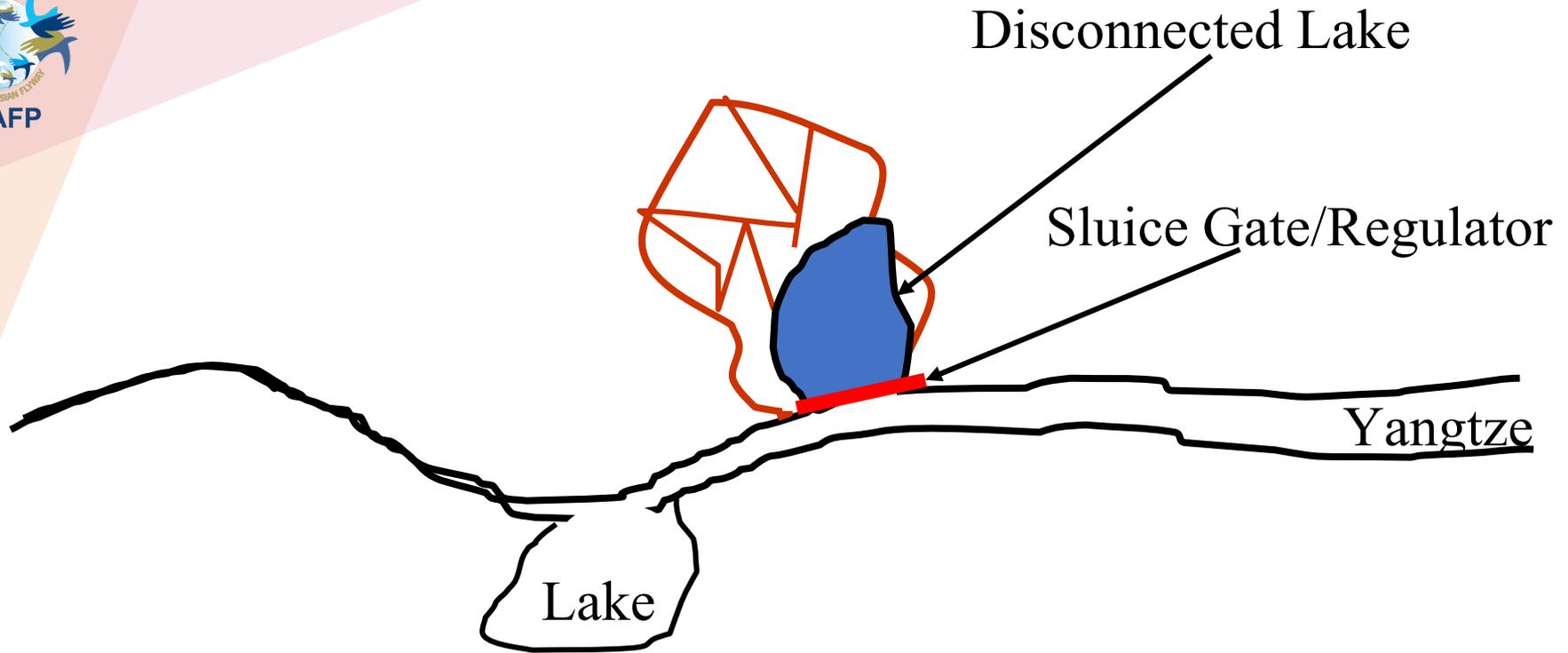
Los Angeles River, California, USA
Picture: Wikipedia

Case 1: Central Yangtze River and Lakes



A unique ecoregion of global importance





- 13,000 km² of wetland and lake reclaimed
- 7000 sluice gates fragmented in the Central Yangtze
- More than 100 lakes (area over 10 km²) disconnected

Great human and climate pressures - **weakening the resilience of ecosystem**



- More than 100 lakes were disconnected from the mainstream during 1950-1998;
- 1/3 of lakes disappeared and more than 12,000 sq km of wetlands have been converted into farmland; loss of flood retention capacity of 8 billion cubic meters;
- Pollution from domestic, industrial and agricultural sources;
- Major dams built on the upper stream;
- Over-fishing and aquaculture development.

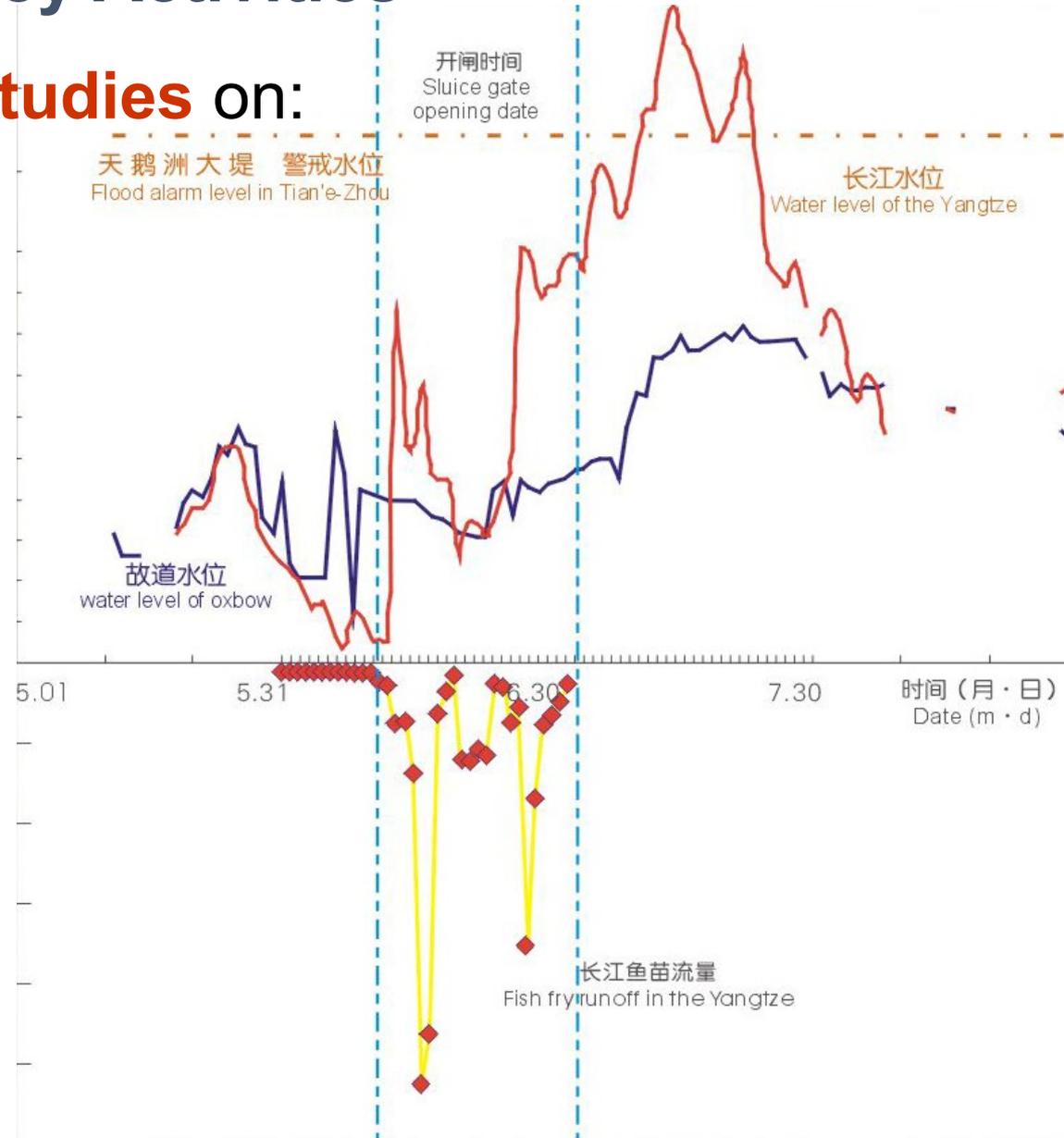
WWF's interventions

- Facilitate research to find the solutions, and engage the stakeholders to reach agreements
- Restore destroyed wetlands ecosystem – reduce non-climate pressures
- Reconnect river and lakes – improve connectivity between habitats
- Promote eco-agriculture, e.g. eco-fishery and eco-farming of livestock – focus on the human-use interactions with ecosystems
- Manage ecosystem effectively – develop the Central & Lower Yangtze Wetlands Conservation Network

Key Activities

- Multi-disciplinary studies on:

- flood and waterlog
- sedimentation
- fever snail
- fish flood
- land use
- etc.





Tian-e-zhou Sluice Gate opened on 22 June 2004



Zhangdu Lake Sluice Gate opened on 15 June 2005



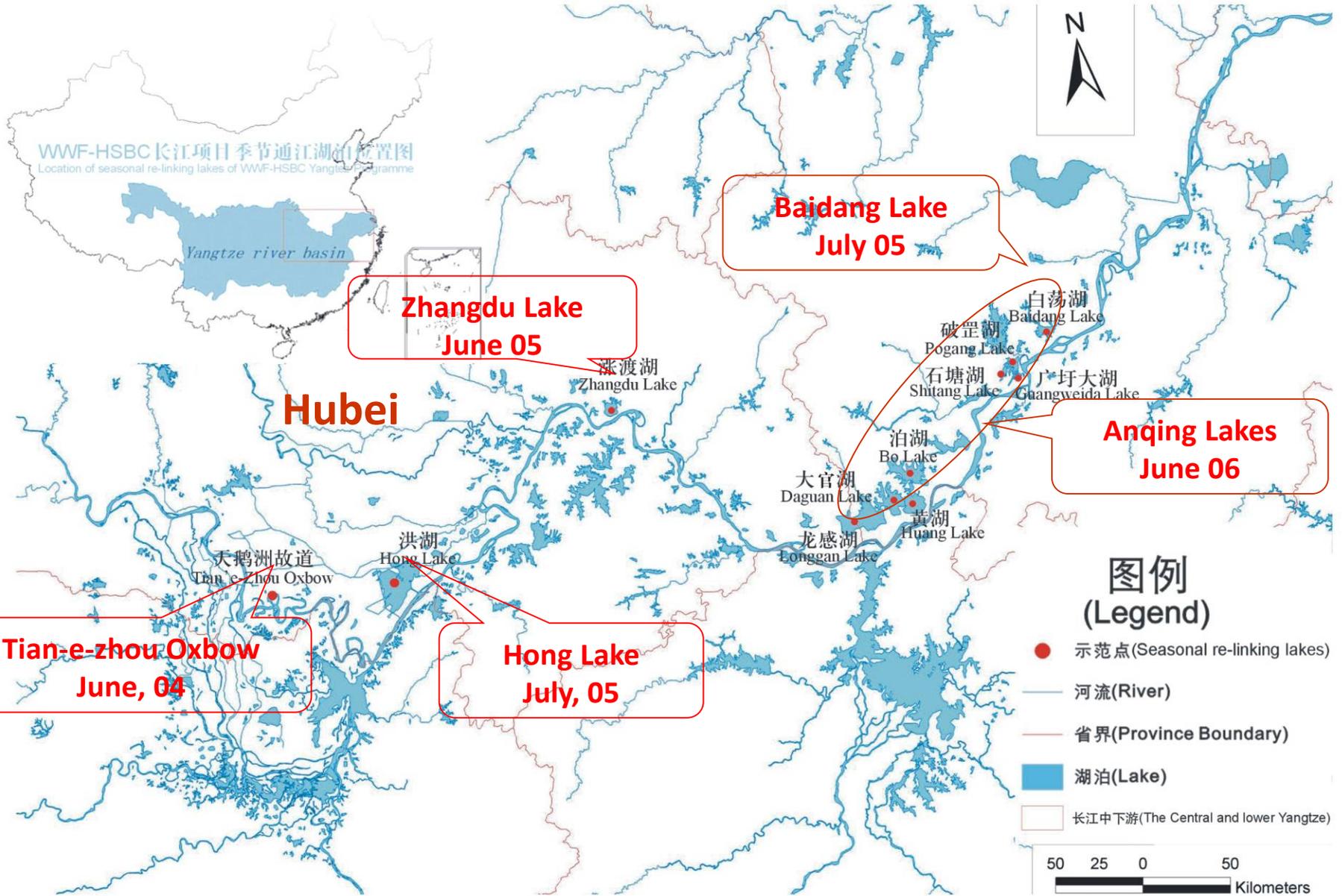
Honghu Lake Sluice Gate opened on 26 July 2005



Baidanghu Lake Sluice Gate opened on 5 July 2005

Sluice gates opened for 17 lakes, with total area of more than 1200 sq km

Impacts & magnification



Impacts & magnification

- Recognized as an example of environmental flows by MWR.
- Provincial governments developed regulations on river-lake reconnection and sluice gate management.
- The river-lake reconnecting was adopted and included into the *Action Guideline of China Hydrobiological Resources Cultivation and Protection Initiative* issued by the China State Council on February 14, 2006.
- A national project to restore the City of Hundred Lakes in Wuhan under implementation.
- **Since 1998, over 2900 km² of wetlands has been restored, with a total flood retention capacity of 13 billion m³ (60% of that of the Three Gorges Dam).**

Restoring Peatlands in Russia for fire prevention and climate change mitigation

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KFW

Russian Academy of Sciences
Institute of Forest Science



**Succow
Stiftung**

ERNST MORITZ ARNDT
UNIVERSITÄT GREIFSWALD



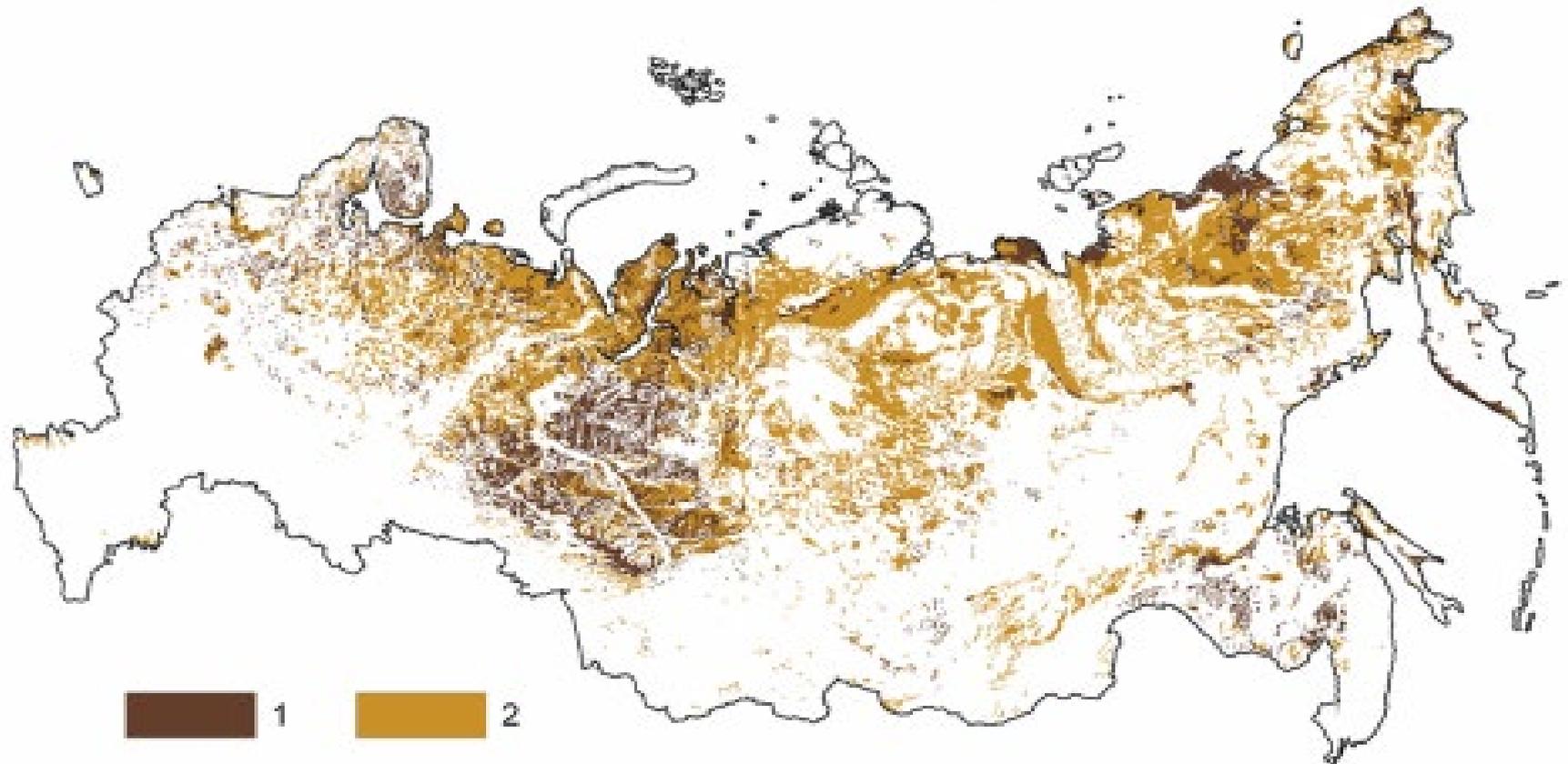
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Wetlands
INTERNATIONAL

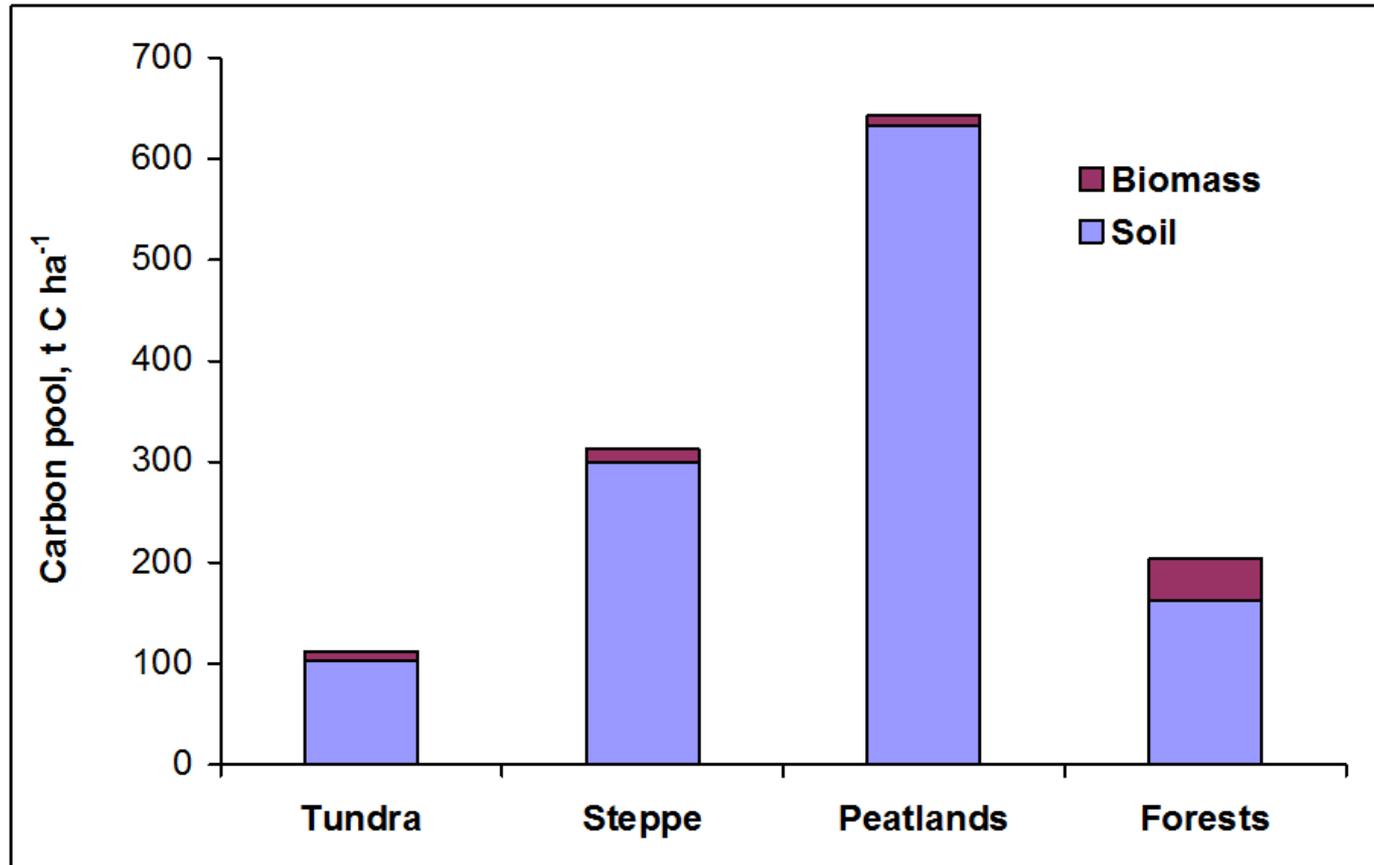
Peatlands in Russia

Peatlands (peat >30 cm) make up over 8% ($1.39 \cdot 10^6$ km²)
and with shallow peat lands (< 30 cm) up to 22% ($2.30 \cdot 10^6$ km²) of Russia



Vompersky, Sirin, Salnikov et al. // Contemporary Problems of Ecology 2011, V.4, N 7.

Carbon store in soil and biomass in different ecosystems in Russia



Vompersky et al., 1994, Karelin et al., 1994, Chestnykh et al., 2004, Zamolodchikov et al., 2011

When drained, peatlands become strong sources of greenhouse gases (GHG) and very susceptible to fire.

Peat fires cause worldwide almost half of the emissions from drained peatlands



Oxygen penetrates deep into the peat layer, oxidizes carbon stored in peat, and escapes to the atmosphere as carbon dioxide



Fire related carbon losses add to the already significant CO₂ emissions from peat oxidation in drained peatlands

The Project - Restoring peatlands in Russia for fire prevention and climate change mitigation

- Initiated by high-level Russian and German authorities
 - being implemented within the framework of co-operation between Russian and Germany
- 
- financed under the International Climate Initiative (IKI) by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), facilitated through the KfW German Development Bank
 - implemented by Wetlands International, in partnership with the Institute of Forest Science, Russian Academy of Sciences, the Michael Succow Foundation and the Institute of Botany and Landscape Biology, Greifswald University in cooperation with the Ministry of Natural Resources and Environment of the Russian Federation

Project components



1. Inventory
2. Rewetting
3. GHG Monitoring
4. Capacity building, education and awareness
5. Management and legislation
6. Economic incentives



GHG reduction by:

1. Ecosystem restoration
2. Implementation of innovative technologies
3. Inventory of sinks and sources



Nature-based solution in peatlands rewetting



Component II: Rewetting

Results (by March 2018):

- **20,000** ha sufficiently rewetted in the Moscow Province.
- Ecological restoration of an area around **15,000** ha in the Moscow, Vladimir and Tver provinces.
- **15,000** ha are ready with final design or concept design to be rewetted in the Nizhny Novgorod, Tver, Ryazan and Vladimir provinces.

Measuring and quantifying of GHG emissions

The total amount of emission reductions achieved by the Project is currently estimated at **175,000 to 220,000 ton CO₂ eq. per annum.**



- Received United Nations ‘Momentum for Change’ Climate Solutions Award at the UNFCCC CoP23 November 2017 in Bonn, Germany.
- Peatlands could have a bigger role in fighting climate change than that being previously thought.
- showcased the great potential for cost-effective nature-based climate solutions benefitting both people and the planet.

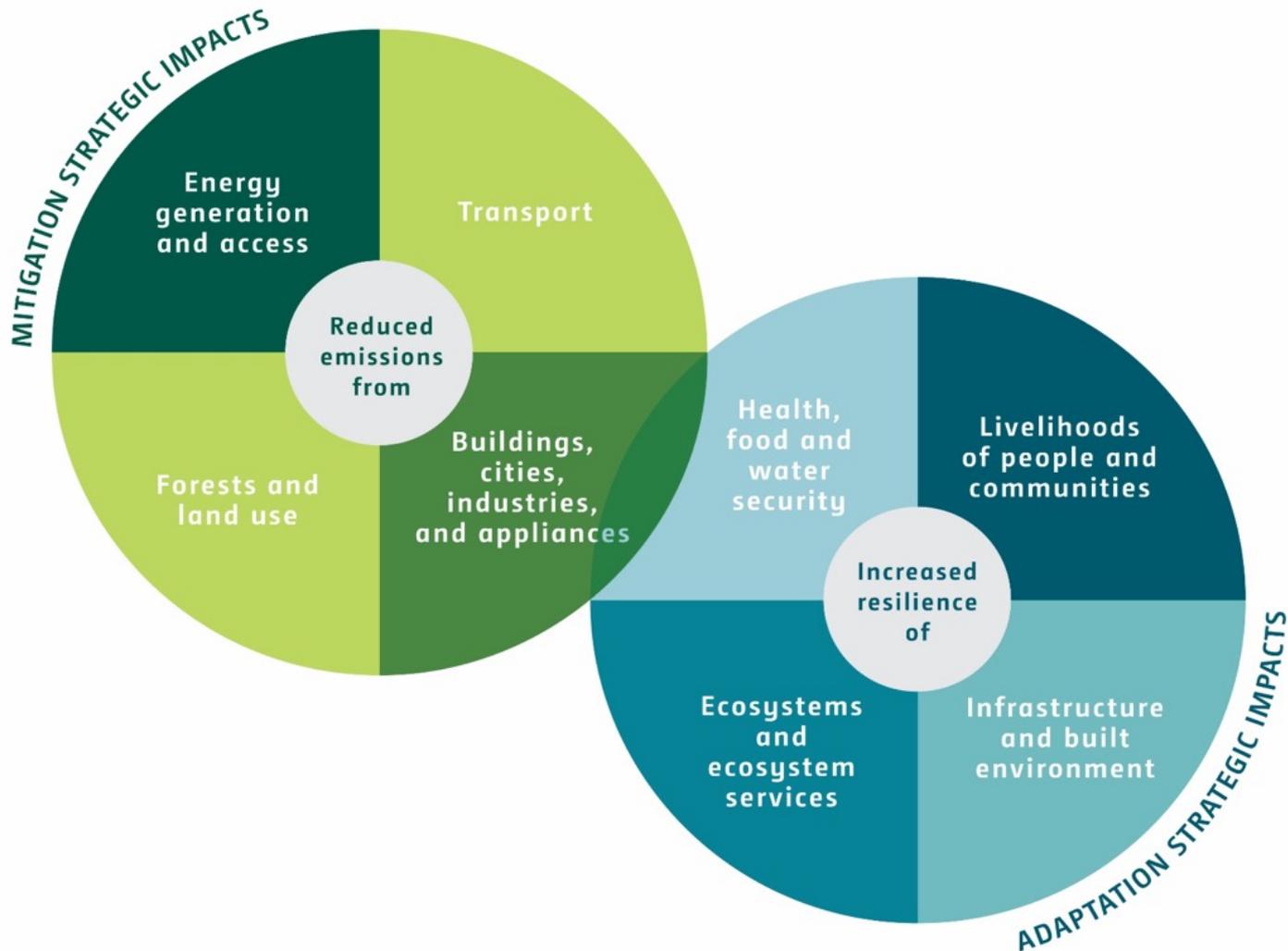




Wetlands in GCF Project Portfolio



GCF 8 Strategic Results Areas





FP001

MITIGATION
ADAPTATION

PERU

Building the Resilience of Wetlands in the Province of Datem del Marañón, Peru

USD: 6M/9M



FP011

ADAPTATION

GAMBIA

Large-scale Ecosystem-based Adaptation in the Gambia River Basin: developing a climate...

USD: 20M/25.5M



FP013

MITIGATION
ADAPTATION

VIET NAM

Improving the resilience of vulnerable coastal communities to climate change related impa...

USD: 29M/40M



FP015

ADAPTATION

TUVALU

Tuvalu Coastal Adaptation Project

USD: 36M/38.8M



FP018

ADAPTATION

PAKISTAN

Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan

USD: 37M/37.5M



FP021

ADAPTATION

SENEGAL

Senegal Integrated Urban Flood Management Project

USD: 17M/80M

FP034

ADAPTATION

UGANDA

Building Resilient Communities, Wetlands
Ecosystems and Associated Catchments in U...

USD: 24M/44M

FP053

ADAPTATION

EGYPT

Enhancing Climate Change Adaptation in the
North Coast and Nile Delta Regions in Egypt

USD: 31M/105M

FP056

ADAPTATION

COLOMBIA

Scaling Up Climate Resilient Water
Management Practices for Vulnerable Comm...

USD: 38M/117M

FP054

ADAPTATION

ARGENTINA

Implementation Project of the Integral
Management Plan of the Lujan River Basin

USD: 24M/32M

FP069

ADAPTATION

BANGLADESH

Enhancing adaptive capacities of coastal
communities, especially women, to cope wit...

USD: 24M/32M

FP084

MITIGATION
ADAPTATION

INDIA

Enhancing climate resilience of India's coastal
communities

USD: 43M/130M

Key questions

- 1. What motivated these societies to change?**
- 2. Are these sustainable?**
- 3. Who paid and how will the projects be maintained?**
- 4. How could these be scaled up?**
- 5. What lessons can be applied elsewhere?**

Lessons learnt

- 1. Multiple benefits**
- 2. Communicating wetlands**
- 3. Ownership**
- 4. Immediate benefits**
- 5. Adaptive management**
- 6. Linking local to national to global**
- 7. Post disaster reform**
- 8. Funding adaptation**



Thank you for listening