KNOWLEDGE SYMPOSIUM

Integrated River Basin Management Approaches: Lessons from the People's Republic of China and the Asia Pacific region.

MINISTRY OF ECOLOGY AND ENVIRONMENT THE PEOPLE'S REPUBLIC OF CHINA

ClientEarth

PBL Netherlands Environmental Assessment Agency

Swiss Re

MINISTRY OF WATER RESOURCES THE PEOPLE'S REPUBLIC OF CHINA

The Nature Conservancy

长江科学院 CHANGJIANG RIVER SCIENTIFIC RESEARCH INSTITUTE

Global Water Partnership China Yangtze River

CAEP

Sponsored by the People's Republic of China Poverty Reduction and Regional Cooperation Fund.

MODERATION

Thomas Panella
Director
Environment, Natural Resources and Agriculture Division, ADB

Au Shion Yee
Senior Water Resources Specialist
Environment, Natural Resources and Agriculture Division, ADB

Silvia Cardascia
Water Resources Specialist
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AGENDA

14:00 - OPENING REMARKS

14:15 - SESSION I - ONE ECOLOGICAL UNIT – MANAGING THE YELLOW RIVER FROM SOURCE TO SEA

14:30 - SESSION II - POLICIES AND ENABLING ENVIRONMENT

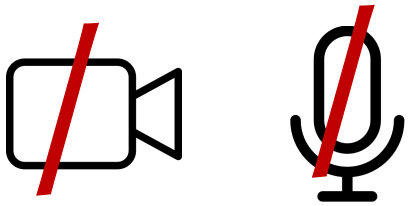
14:45 - SESSION III - FINANCING GREEN DEVELOPMENT WITH A RIVER BASIN APPROACH

15:00 – ADB CASES & PANEL DISCUSSION

15:45 - CLOSING REMARKS

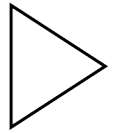
HOUSEKEEPING

- Please keep your camera off and your microphone muted unless you are speaking or actively participating in a discussion.



- Please use the chat function for any Q&A or follow up via email.

- This knowledge symposium is recorded and will be shared with registered participants over the coming days.



OPENING REMARKS

M. Teresa Kho
Director General
East Asia Department, ADB

Sun Xuefeng
Associate Counsel
Department of International Cooperation, Ministry of Ecology and Environment

SESSION I

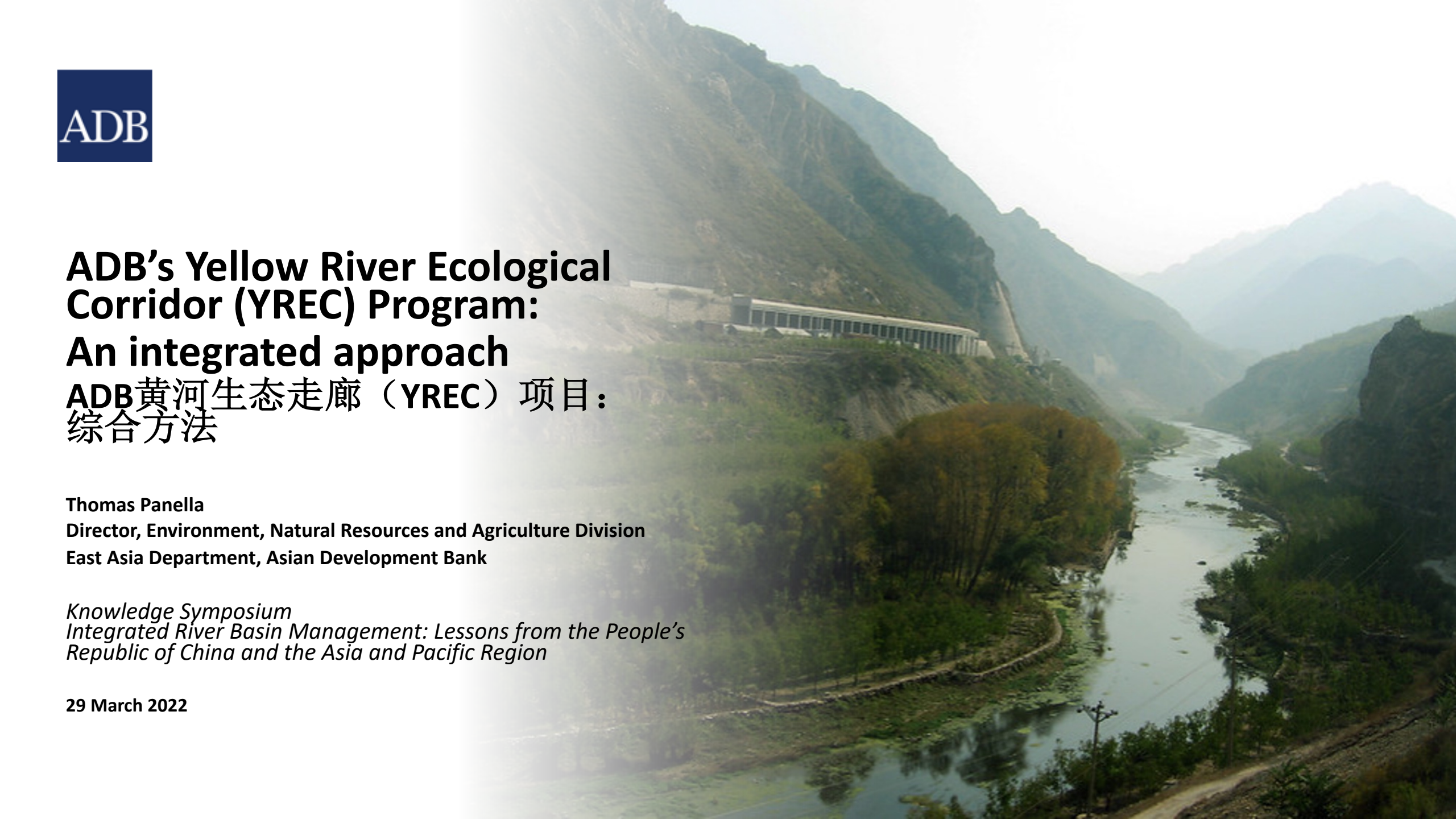
ONE ECOLOGICAL UNIT – MANAGING THE YELLOW RIVER FROM SOURCE TO SEA

Thomas Panella
Director
Environment, Natural Resources and Agriculture Division, ADB

'ADB's Yellow River Ecological Corridor (YREC) Program: An integrated approach'

Sun Feng
Director
Yellow River Conservation Commission (YRCC), Ministry of Water Resources

'Yellow River Basin Ecological Protection and High-Quality Development Water Security Action Plan'



ADB's Yellow River Ecological Corridor (YREC) Program: An integrated approach

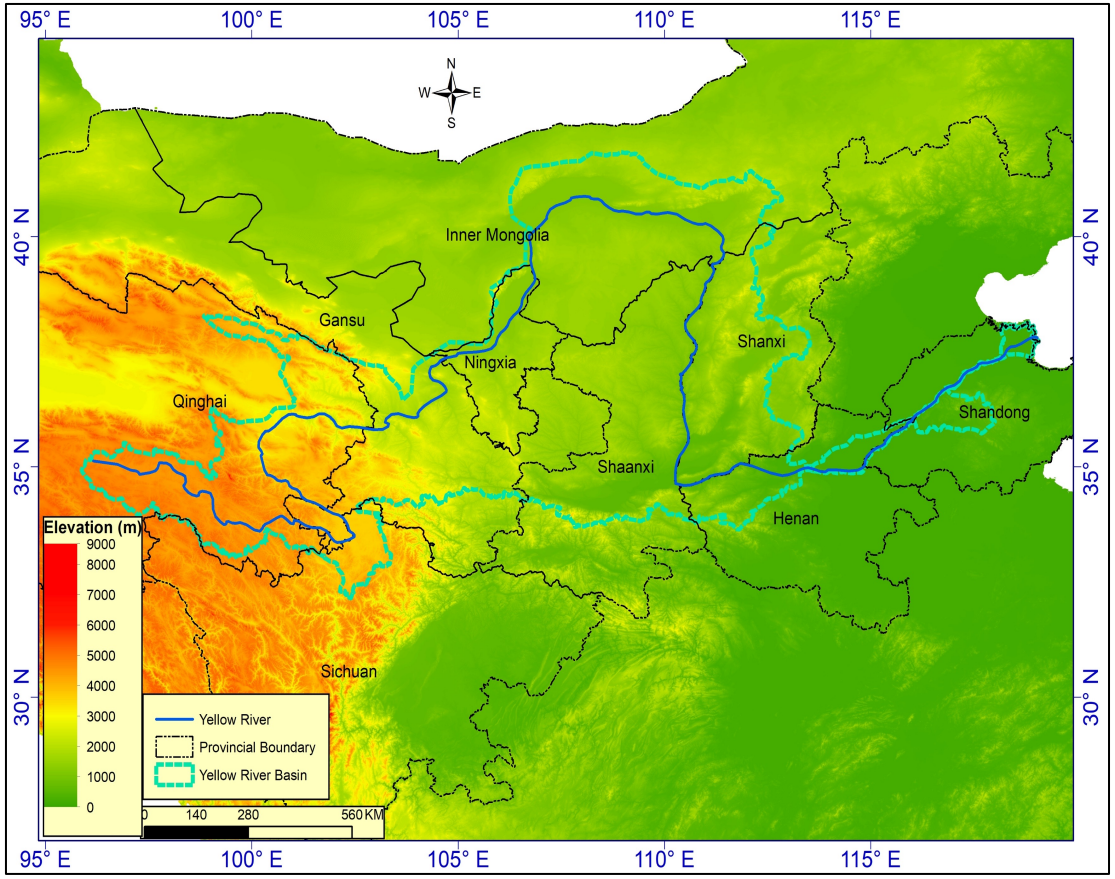
ADB黄河生态走廊（YREC）项目：综合方法

Thomas Panella
Director, Environment, Natural Resources and Agriculture Division
East Asia Department, Asian Development Bank

Knowledge Symposium
Integrated River Basin Management: Lessons from the People's Republic of China and the Asia and Pacific Region

29 March 2022

The Yellow River Basin – An Overview
黄河流域——概述



- **2nd longest river in the PRC 中国第二长河流**: total length is 5,464km across 7 provinces and 2 autonomous regions
- **Key basin 关键流域:** agriculture and food production, and mining
- **Water scarce basin 缺水流域**: 473 cm^3 per capita (23% of national average)
- **2% of PRC's water resources 2% 的中国水资源**: supplies 12% of the population, 15% of the arable land, and 14% of other economic activities
- **Flooding 洪水:** July 2021 flood event killed scores of people and caused RMB 1.22 billion damage in Zhengzhou City, Henan Province (annual recurrence). Twelve mega floods since 1950s
- **Severe erosion 水土流失:** the Loess plateau – highest sediment concentration in the world
- **Unequal water distribution水分配不均:** upstream vs downstream
- **Regional inequalities 区域不平衡:** the less developed provinces upstream to the more developed downstream

Ecological Corridor as Basis of the YREC
以生态走廊为基础的黄河生态走廊

- An Ecological Corridor is a defined geographical space that is governed and managed over the long-term to maintain or restore effective ecological connectivity and ecosystem integrity.

  生态走廊是一个明确的地理范围，通过长期治理和管理以维持或恢复有效的生态连通性和生态系统完整性。
- River basins (such as the Yellow River), if managed well, are vital natural ecological corridors.

  得到妥善管理的流域（如黄河），是重要的自然生态廊道。
- Healthy ecological corridors generate positive impacts for the environment, economic growth, social well being, and climate change goals in the PRC.

  健康的生态走廊对中国的环境、经济增长、社会福祉和气候变化目标会产生积极影响。
  - maintain biodiversity
  - ensure watershed, river and wetland health to mitigate water related disasters (floods and droughts) and nutrient loading
  - provide ecosystem and economic services to benefit humans and biodiversity
  - provide a healthful and safe environment in which people can thrive
  - create resilience to and mitigate climate change impacts

Yellow River Ecological Corridor (YREC) Program
黄河生态走廊（YREC）项目

- **An integrated approach** to natural resources management, environment and ecological conservation, and climate change to support high-quality, green development through institutional and policy reforms, knowledge and innovation, and private sector solutions

  综合方法函盖自然资源管理、环境和生态保护以及气候变化，通过制度和政策改革、知识和创新以及私营部门解决方案，来支持高质量的绿色发展

- To protect and restore the **Yellow River basin's diverse and fragile aquatic and terrestrial ecological zones and ecosystems** and to enable more equitable and sustainable rural-urban economic development throughout the basin

  保护和恢复黄河流域多样化、脆弱的水陆生态区和生态系统，促进全流域城乡经济的公平、可持续发展

- Building on the **strategic programmatic approach** from the Yangtze River Economic Belt initiative **to maximize catalytic and systemic impacts** through targeted and concentrated investments in a vital ecological and economic corridor of the PRC

  以长江经济带战略规划方法为基础，通过对中国重要生态和经济走廊进行针对性投资，最大限度地发挥催化作用和系统性影响

Alignment with the new ADB-PRC Country Partnership Strategy (CPS), 2021-2025
协调ADB-中国国家伙伴关系战略（CPS）2021-2025

The program will focus on:

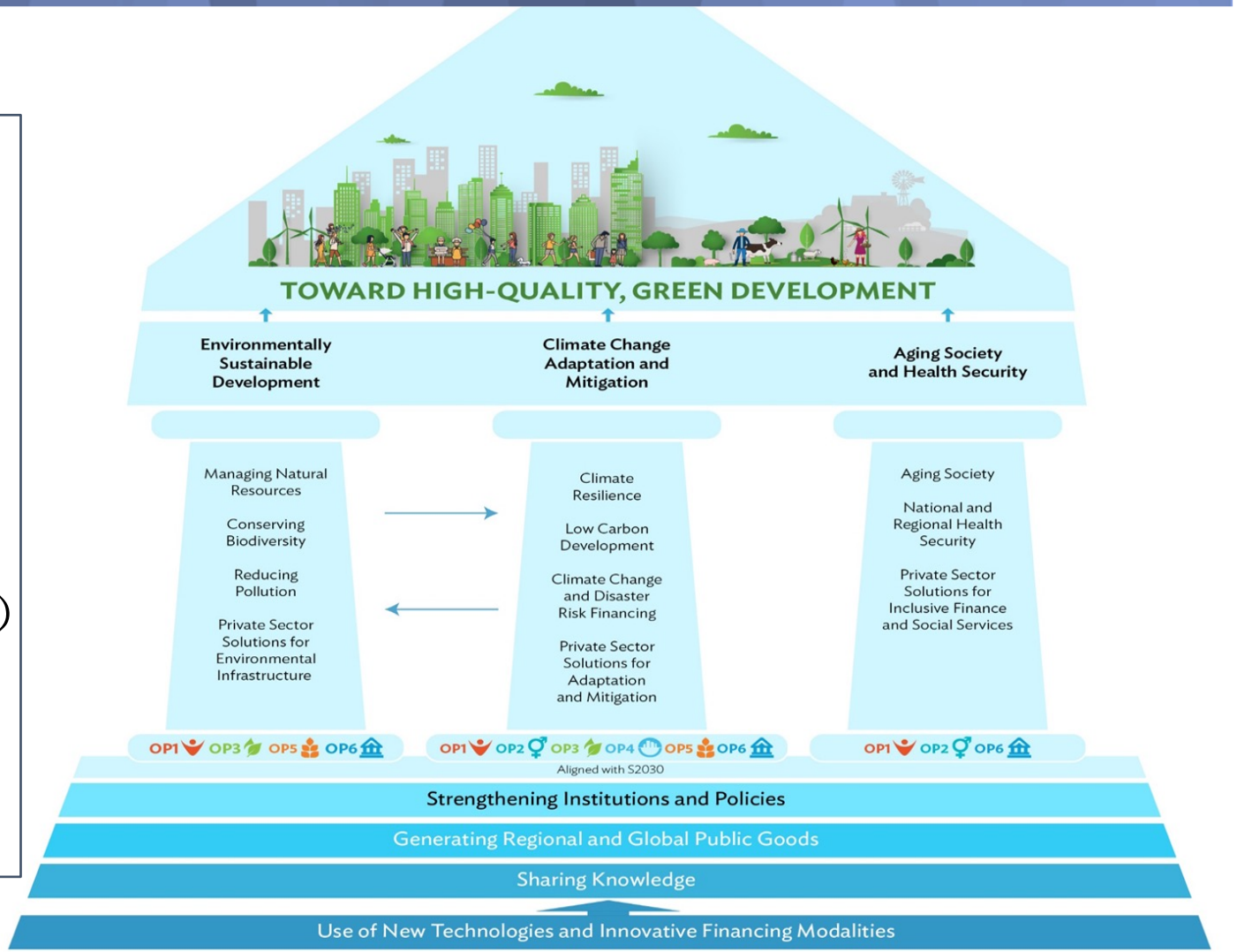
- **Environmentally Sustainable Development** (Pillar1); and

- 环境可持续发展（支柱1）；

- **Climate Change Adaptation and Mitigation** (Pillar2)

- 气候变化适应和减缓（支柱 2）

with emphasis on examining private sector solutions and co-financing opportunities.



PRC Climate Change Goals and ADB Support
中国气候变化目标及ADB支持

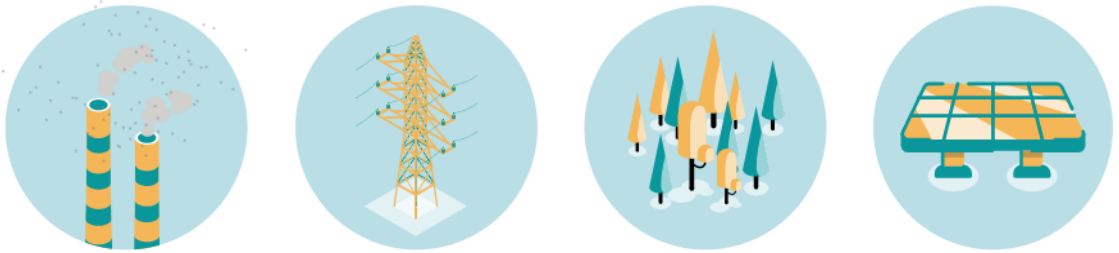
PRC Carbon Neutrality by 2060
到 2060 年实现碳中和

By 2025
Lower carbon intensity

By 2030
Peak carbon

By 2060
Carbon neutrality

The 14th Five-Year Plan's climate-related targets for 2025
“十四五”2025年气候相关目标



Reduce carbon intensity by 18% from 2020 levels

Reduce energy intensity by 13.5% from 2020 levels

Increase forest coverage to 24.1%

Increase share of non-fossil sources in the energy mix to around 20%

ADB Supporting the National Climate Change Adaptation Strategy 2035 – Ministry of Ecology and Environment
ADB支持国家气候变化适应战略——生态环境部

- Strengthen economic and social resilience to climate change
  强化经济和社会对气候变化的适应能力
- ADB supporting strategic planning, risk assessment, coastal and marine, climate finance and capacity building
  支持战略规划、风险评估、沿海和海洋、气候融资和能力建设
- Promote the use of nature-based solutions for integrated flood risk management
  促进使用基于自然的解决方案进行综合洪水风险管理
- Strengthen hazard risk monitoring and early warning systems to ensure resilience
  加强灾害风险监测和预警系统以提高韧性
- Support implementation of the strategy and shape project design through YREC
  通过黄河生态走廊支持战略实施和项目设计

Rural Vitalization Strategy and ADB's Priority Areas of Interventions
乡村振兴战略和亚行优先领域

PRC's Rural Vitalization Strategy
中国乡村振兴战略

Production Systems 生产系统
- Improving productivity, sustainability, and resilience

Value Chain Development 价值链开发
- Adding value, market connectivity, and ICT technologies

The Rural Environment 农村环境
- Waste and pollution management
- Environmental protection and rehabilitation

Integrated Rural Development 农村综合发展
- Improving the quality of life and economic well-being of people living in rural areas

MOU between ADB and Agricultural Development Bank of China
ADB与中国农业发展银行谅解备忘录

Signed	26 August 2021
Form of intervention	Rural infrastructure, environmental improvement and agribusiness value chains development
Preferred interventions	Knowledge solutions and co-financing of high-quality, innovative green agricultural and rural vitalization projects

MOU between ADB and NDRC/MOF to support PRC's Rural Vitalization Strategy
ADB与发改委/财政部签署谅解备忘录以支持中国乡村振兴战略

Signed	29 August 2018
Indicative budget	$6.0 billion from ADB, PRC and development partners
Form of intervention	Financial assistance and knowledge contribution
Preferred interventions	Catalytic, innovative, and adoption of high-level technologies

YREC Programmatic Approach – Three Principles
黄河生态走廊程序化方法——三项原则

Institutional Strengthening
体制强化

- Improved governance and institutions
- Policy reforms and incentive mechanisms
- Cooperation frameworks and enabling environments

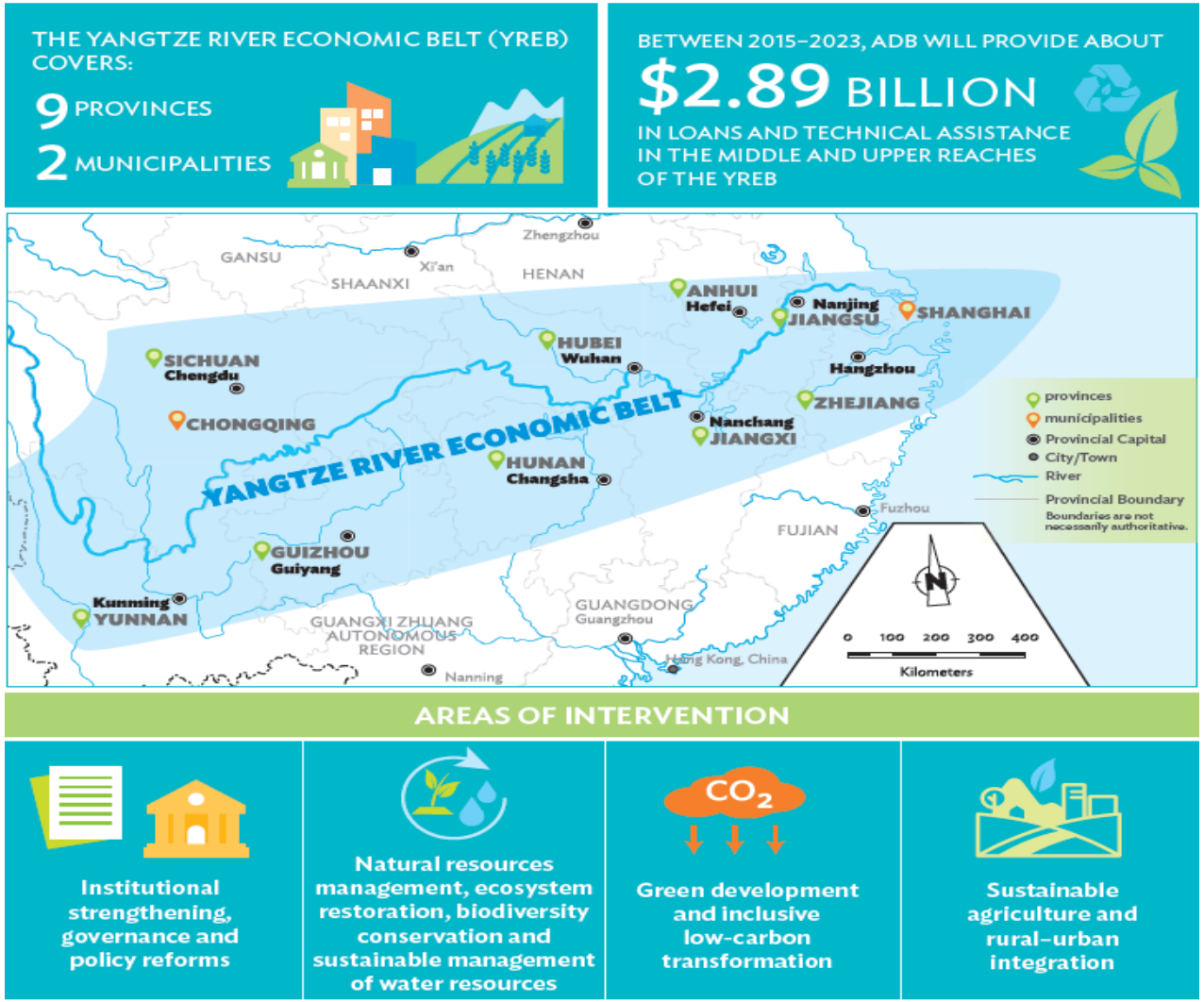
Innovative Approaches
创新方法

- Technology
- Integrated solutions
- Project pilots
- Catalyze change at scale
- Private sector solutions
- Innovative finance
- Gender mainstreaming

Knowledge Management
知识管理

- High-quality knowledge generation and dissemination
- Capacity building
- Regional cooperation
- Multi-stakeholder platforms
- Strategic partnerships

From YREB to YREC Program – Building on the Programatic Approach
从长江经济带到黄河生态走廊计划——以程序化方法为基础



- Support similar YREB Development Plan for institutional coordination
  支持类似长江经济带发展计划的机构协调
- ADB support to the YREB Development Plan with lending and non-lending assistance
  ADB通过贷款和非贷款援助支持长江经济带发展计划
- Planning tools and integrated approaches to balance national and provincial priorities with private sector
  利用规划工具和综合方法平衡国家和省级优先事项与私营部门的关系
- Focus more on upstream work for policy and institutional reforms and investment planning
  更加注重政策和体制改革以及投资规划
- Enhance the knowledge base and strategic work to maximize investment impact
  加强知识库和战略工作，最大化投资影响

YREC Thematic Areas for ADB Engagement – Fully Aligned with CPS and Strategy 2030
亚行参与黄河生态走廊主题领域——与 CPS 和 2030 战略完全一致

- Water and natural resources management, ecosystem and biodiversity conservation, and nature-based solutions

  水和自然资源管理、生态系统和生物多样性保护以及基于自然的解决方案

  - Wetland and forest restoration and conservation
  - Improved water management for quality and quantity

- Resilient climate-smart agriculture and value chains

  弹性气候智慧型农业和价值链

  - Agricultural non-point source pollution control
  - More productive water use for agriculture

- Climate change mitigation and adaptation

  气候变化减缓和适应

  - Strengthening climate resilience and risk management frameworks
  - Integrated flood risk and disaster management

YREC Thematic Areas for ADB Engagement – Fully Aligned with CPS and Strategy 2030
亚行参与黄河生态走廊主题领域——与 CPS 和 2030 战略完全一致

- Integrated urban-rural green development and circular economy

  城乡综合绿色发展与循环经济

  - Improved wastewater and solid waste management
  - Rural vitalization and integrated economic development and pollution mitigation (air, water, soil, marine)

- Application of high-level technology

  高水平技术应用

  - Big data and digital platforms for decision support systems
  - Mobile apps for enhanced community engagement

- Enhancing private sector solutions and innovative financing

  加强私营部门解决方案和创新融资

  - Improving regulatory frameworks to incentivize private sector solutions
  - Catalyzing investment in funds /FIs to support SME access to credit

Thank you

Thomas Panella
Director
Environment, Natural Resources
and Agriculture Division, ADB

SESSION I

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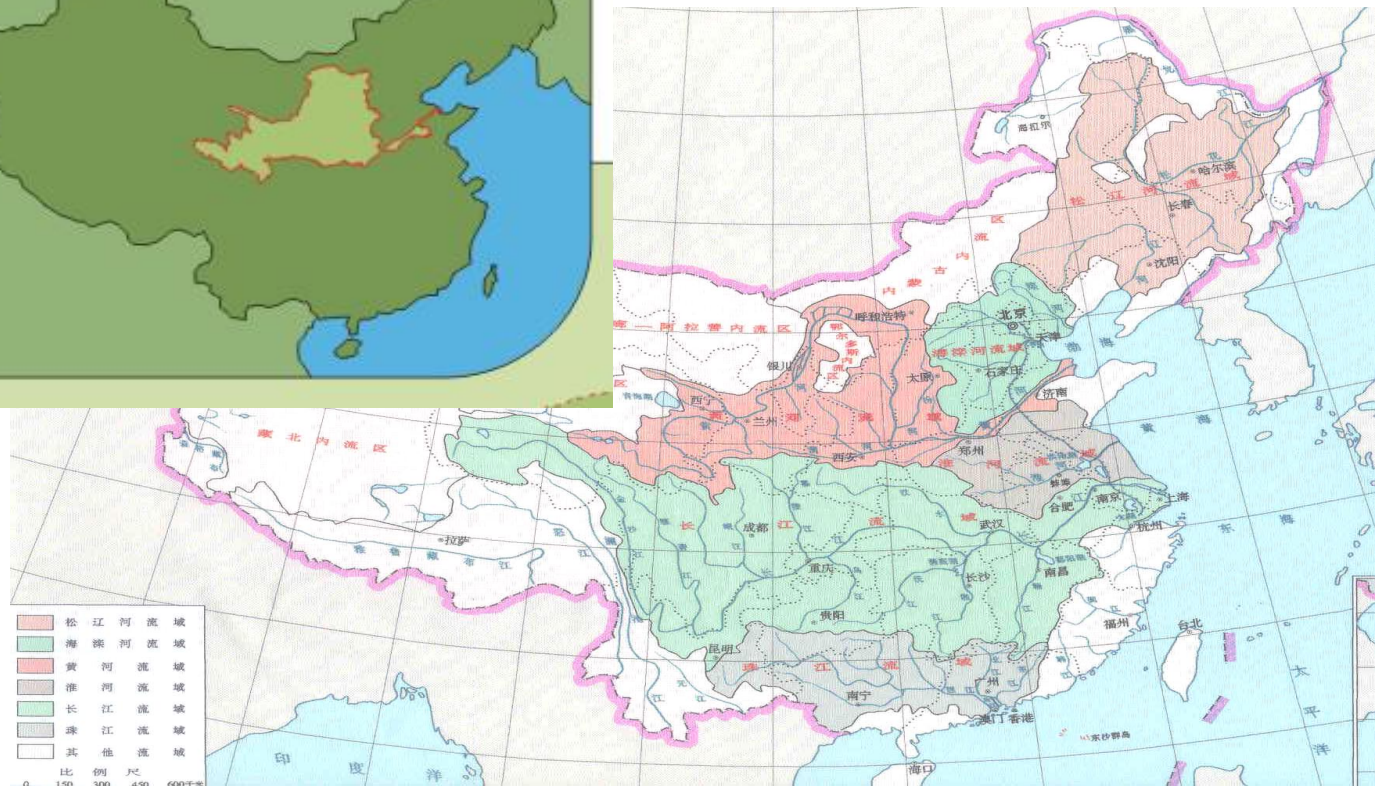
Yellow River Basin Ecological Protection and High-Quality Development Water Security Action Plan

ADB Knowledge Symposium

Sun Feng
Yellow River Conservancy Commission

Yellow River– Mother River of China



420 Million People Living in the Basin (30.3% National Population)

9 Provinces/Regions

1.6 billion ton sediment /per year

795,000 KM^2 basin area 8.2% of China

5464 km, river length is No. 5 of the world large rivers

Strategic Importance of the Yellow River Basin

1. Political, economic and cultural center
2. Significant economic zone
3. Important ecological corridor
4. Cradle of Chinese civilization and Culture
5. Important area for poverty alleviation

National Strategy:
Ecological Protection and High-quality Development of the YRB

On September 18, 2019, General Secretary Xi Jinping Chaired and addressed a symposium in Zhengzhou, "Ecological Protection and High-Quality Development of the Yellow River Basin has risen to a major national strategy", and then Chinese government set the vision for next phase from 2020 to 2035. YRCC is responsible to develop the Action Plan for Water Security in the Yellow River Basin, which is a major initiative to improve multi-level and multi-dimensional efforts for high-quality development.

Ecological Protection and High-Quality Development of the Yellow River Basin Water Security Action Plan

Ecological water security

- *Upstream: Improving water source conservation*
- *Middle Reach: Soil and water conservation (promoting natural recovery) & pollution control in tributaries*
- *Downstream: Wetland protection*
- Enhancing the function of river ecological corridors

Flood management security

- *Improving water and sediment regulation*
- *Enhancing the flood control engineering system*
- *Strengthening forecasting, early warning, pre-scheme preparation*
- *Improving flood emergency response capabilities*

Integrated water resources management

- *Strengthen "water resources as the most rigid constraint of the Yellow River development."*
- *Optimize water resources allocation, -Accelerate to build up a water-saving society*
- *Improve the ability of urban and rural water supply security*

High-Quality Development

- *Improve the legal system*
- *Establish Basin Coordination mechanism*
- *Play the role of river basin agency*
- *Build smart Yellow River to strengthen scientific and technological support capabilities*

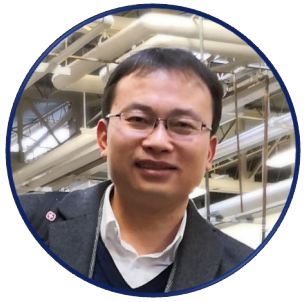
Let the Yellow River become a happy river for the benefit of the people!


Thank You for Your Attention!

SESSION II
POLICIES AND ENABLING ENVIRONMENT

Boya Jiang
Nature and Climate Lawyer
ClientEarth

'How Chinas Wetland Protection Law will boost Climate Litigation and River basin management'



Yonghui Zhu
Director Changjiang River Scientific Research Institute, Global Water Partnership - China Yangtze River

'Using innovative policy approach in addressing pollution from source to sea'

Jan Bakkes
Senior Strategic Advisor PBL Netherland Environmental Assessment Agency

with

Yang Bo
Freshwater Program Director, China The Nature Conservancy

'Integrated Management of River Basins in Times of Climate Change '

How China's Wetland Protection Law will boost Climate Litigation and River Basin Management

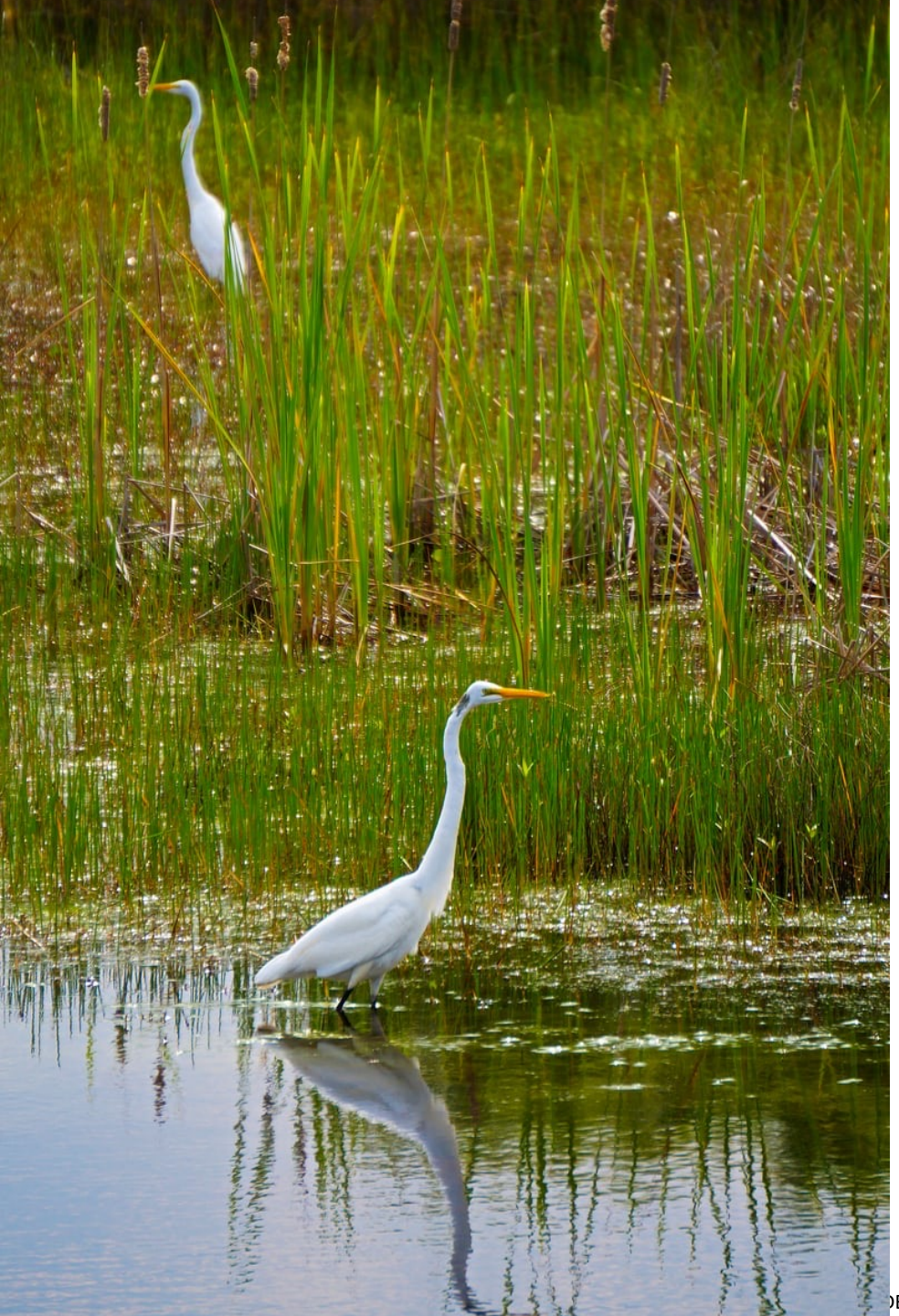
《湿地保护法》将如何推动气候诉讼与流域治理

Boya Jiang

Nature and Climate Lawyer, ClientEarth

29 March 2022

ClientEarth



Highlights of the Wetland Protection Law
《湿地保护法》中的亮点

- Enhanced public participation and information disclosure

  加强公众参与和信息公开
- Harshest penalties compared with previous regulations

  与以往相比最大的处罚力度
- Addressing climate change with special protection on mangrove and peat bogs

  通过对红树林和泥炭沼泽的特别保护助力应对气候变化

ClientEarth

Procuratorial public interest litigation on mangrove wetland and peat bogs wetland to boost climate litigation in China
通过对红树林湿地和泥炭沼泽湿地提起检察公益诉讼推动中国气候诉讼

- Over 88,000 environmental public interest cases brought by prosecutors in 2021

  2021年检察机关办理生态环境领域公益诉讼逾8.8万件
- Wetland Protection Law provide legal basis to bring climate litigation on mangrove wetland and peat bogs wetland

  《湿地保护法》为针对红树林湿地和泥炭沼泽湿地提起气候变化诉讼提供法律基础
- Judicial Interpretation on Environmental Injunction will enhance preventive protection of wetlands

  禁止令司法解释加强对湿地的预防性保护

Wetland Protection and River Basin Management
湿地保护与流域治理

- Cross reference to Yangtze River Protection Law

  《湿地保护法》与《长江保护法》的交叉适用
- Wetland protection in Yangtze River Protection Law

  《长江保护法》中的湿地保护
- Expectations for Yellow River Protection Law

  对《黄河保护法》的愿景

SESSION II
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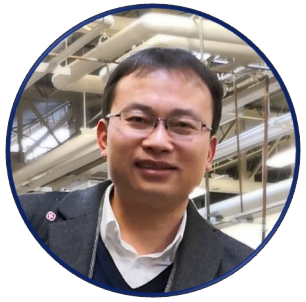

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'Integrated Management of River Basins in Times of Climate Change '

Innovative policy approach in addressing pollution control over the Yangtze from source to sea

BE_RICH: Basin Enhanced RIver CHief system

Yonghui ZHU
CRSRI, GWP China YRB
March 29, 2022

长江科学院
CHANGJIANG RIVER SCIENTIFIC RESEARCH INSTITUTE

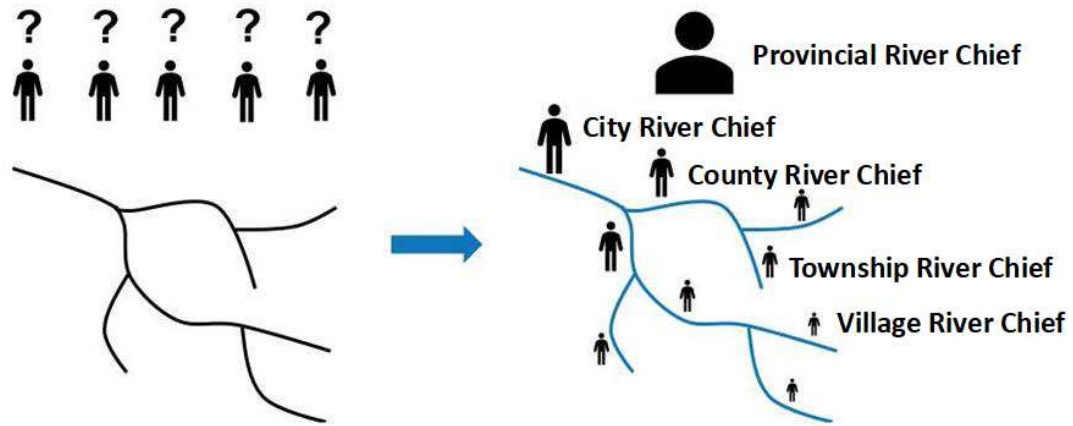
Global Water Partnership
China Yangtze River

River Chief System | Mechanism

The management and protection of rivers is a complex systematic project, involving upstream and downstream, left and right banks, different administrative regions and industries.

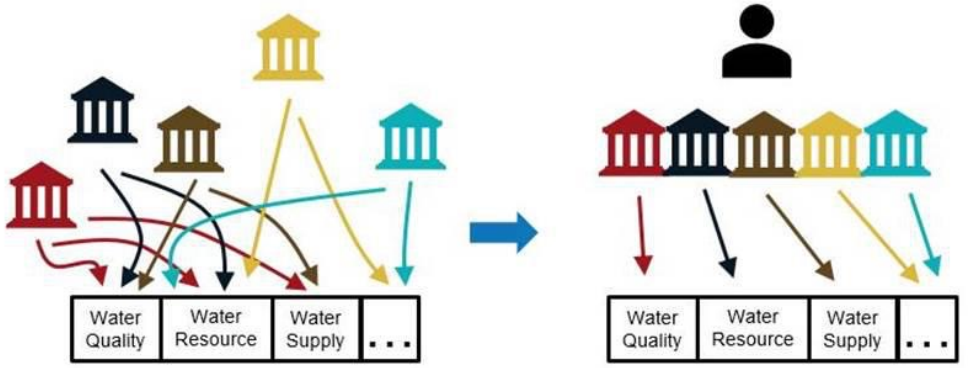
The River Chief System **(RCS)** is China's innovation to implement local governments' entity responsibility for protection and management of rivers by appointing government's principal leader as the river chief.

The River Chief Mechanism



Source: China Water Risk
© China Water Risk 2017

River chief as a coordinator of different departments



Source: China Water Risk
© China Water Risk 2017

Different level River Chiefs: provincial, city, county and township, assisted and supported by the Office of River Chief System (ORCS)

Integrated management between diverse ministries, e.g. water resources, agriculture, transportation, ecology and environment.....

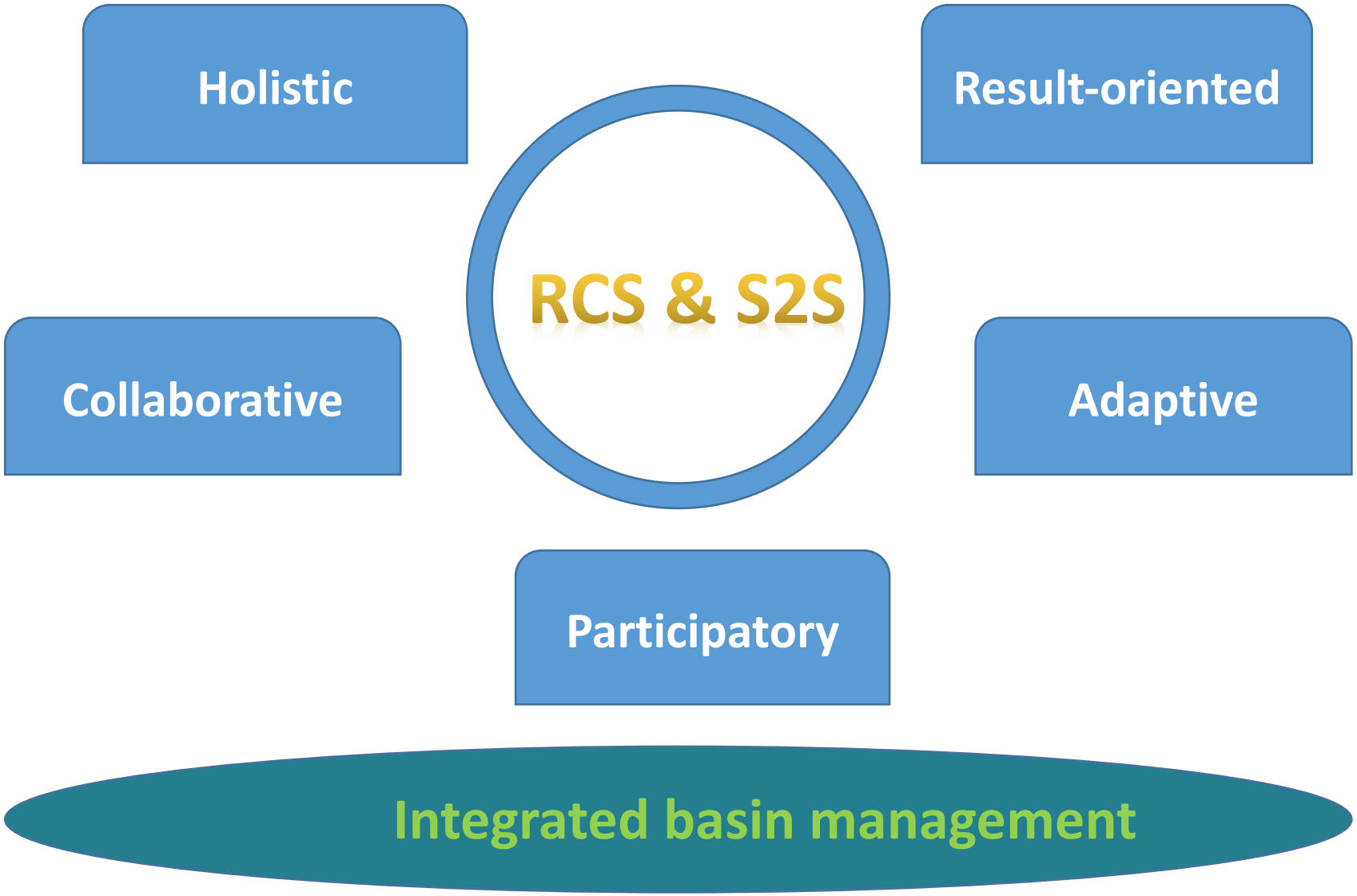
The implementation of RCS further strengthens management responsibility of local governments, but facing **challenges** in **basin level** integrated management.

Chanllenges

- **Fragmented management:** thousands of river chiefs at different levels (provincial, city, county and township) are involved
- **Interest conflict:** dispute between neighboring river chiefs at cross-sectional river reaches
- **Inconsistent standards:** water quality, evaluation index,etc

Solution:

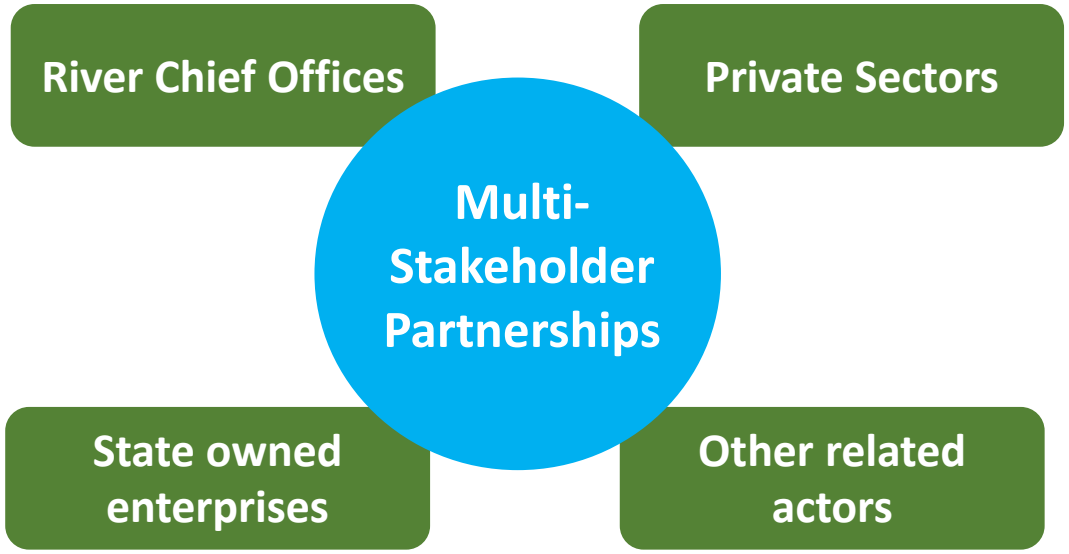
Introducing *Source to Sea (S2S) Approach* to promote the integrated management of the whole basin!


Holistic
Result-oriented
RCS & S2S
Collaborative
Adaptive
Participatory
Integrated basin management

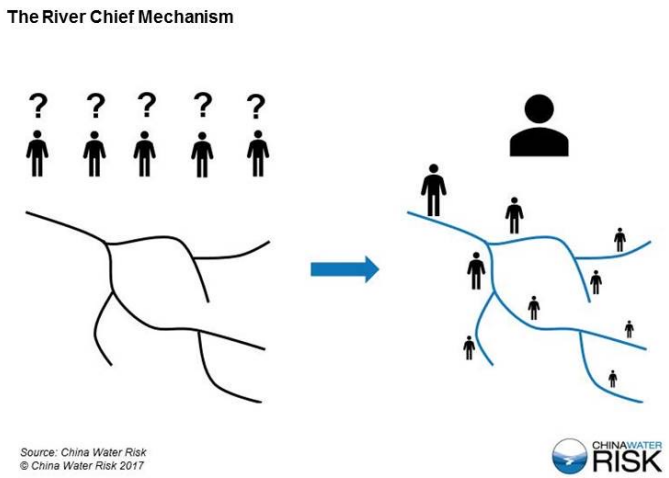
River Chief System with S2S | Building Multi-Stakeholder Partnerships for Plastic Pollution Control and Monitoring in the Yangtze River

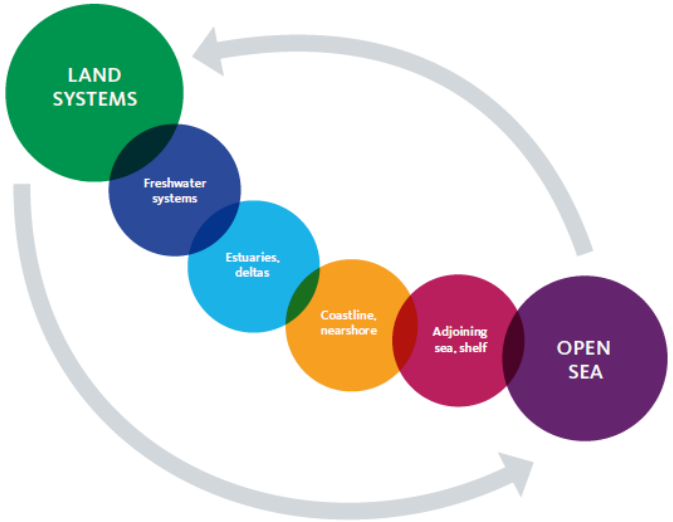
River Chiefs, enterprises, social organizations, the public and other stakeholders from Upstream and Downstream to participate in joint meeting in addressing plastic pollution control.

Building Multi-Stakeholder Partnerships (MSP) as a collaborative platform for river management.



RCS for Future





River Chief System

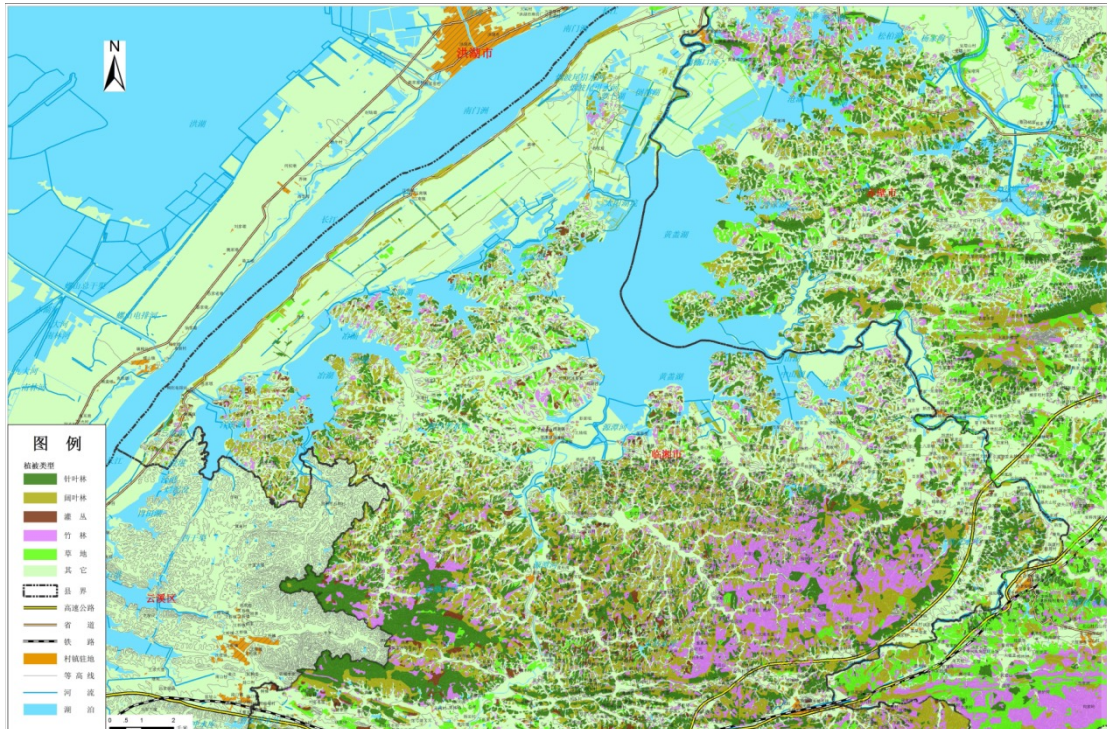
Source to Sea Approach

BE_RICH

Basin Enhanced RIver CHief system

Basin River Chief

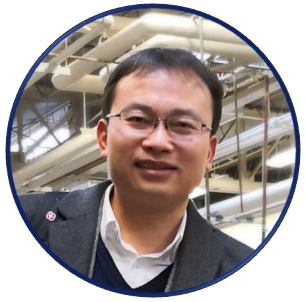
Thank you for your attention!



SESSION II
POLICIES AND ENABLING ENVIRONMENT

Boya Jiang
Nature and Climate Lawyer
ClientEarth

'How Chinas Wetland Protection Law will boost Climate Litigation and River basin management'



Yonghui Zhu
Director Changjiang River Scientific Research Institute, Global Water Partnership - China Yangtze River

'Using innovative policy approach in addressing pollution from source to sea'

Jan Bakkes
Senior Strategic Advisor PBL Netherland Environmental Assessment Agency

with

Yang Bo
Freshwater Program Director, China The Nature Conservancy

'Integrated Management of River Basins in Times of Climate Change '

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

Integrated management of River Basins in Times of Climate Change

Special Policy Study

Jan BAKKES (PBL) and YANG Bo (TNC)
29 March 2022

Mandate, scope

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

Purpose: identify and analyse promising cases of integrated management of river basins in times of climate change

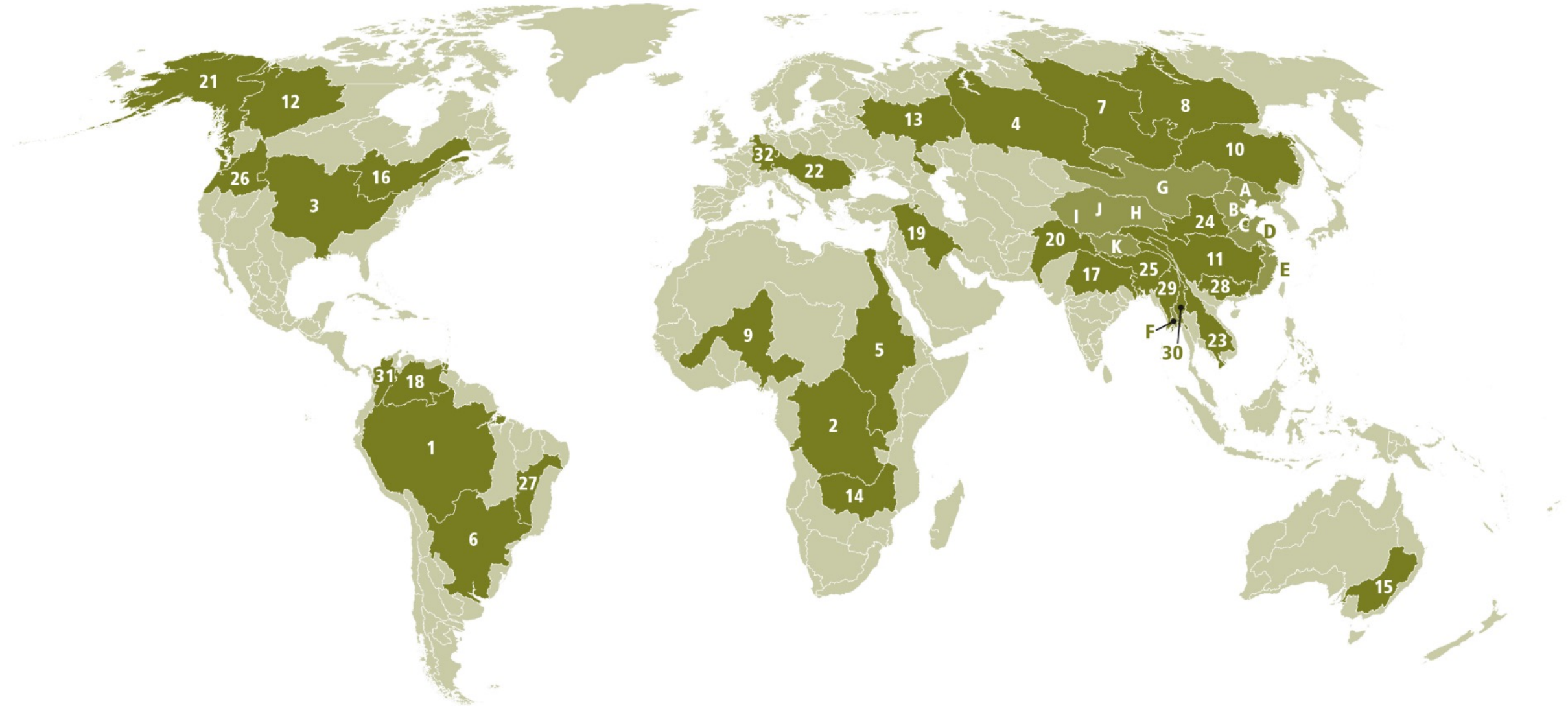
Scope: worldwide, with extra detail within China; everything within the basin

Lead organisations: CAUPD, TNC, PBL

Focus: Five principles → implications for spatial organization; timing of interventions; use of foresight; etc

Envisaged duration: 2022-2027

River basins



Study builds on recent work:

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

1. **Previous SPS** on Yangtze Basin (Ecological Compensation)

2. **Relevant work** by CAUPD, for example on Yangtze Basin development
   Strategy Research on the Yangtze River Economic Belt;
   Land and Space Planning of the Yangtze River Economic Belt 2021-2035

3. **Quick Scan** Yangtze-Rhine 1950-2050

4. **Scoping Study** for this SPS:
   https://cciced.eco/research/special-policy-study/scoping-study-managing-river-areas-in-times-of-climate-change/

5. **Ongoing work** by TNC and TNC China team, PBL and others (ADB, Deltares, collaboration on SEA, …)

and has keen interest in your suggestions, including interesting cases

Deliverables 1st half year 2022

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

- Investigative **framework** for case studies
- Explanation of the **changing game** in river basin management
- Suggestions for input by China for **UN Water Conference** 2023

and also

- Immediate policy recommendations
- Suggestions for 2 events

Known gaps in knowledge base of the study team

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

- Regional balance (heavy Northern bias)
- Decarbonisation and river basins (because new)
- Inspiring cases/stories (many more wanted)

Contact options

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

Bob Tansey (TNC) rtansey@tnc.org
HU Jingjing (CAUPD) 13488871351@139.com
Jan Bakkes (PBL) jan.bakkes@pbl.nl
MU Quan (CCICED) mu.quan@cciced.net

or via Au Shion Yee

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

中国北京西城区后英房胡同5号 邮政编码 10035
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Tel 8610 82200535 Fex 8610 82200535 E-mail secretariat@cciced.net

www.cciced.net
www.cciced.eco

SESSION III

FINANCING GREEN DEVELOPMENT WITH A RIVER BASIN APPROACH

Yu Fang
Professor & Director
Chinese Academy of
Environmental Planning

'Natural Capital Valuation and its application'

Cindy Zhang
Head of Property Treaty
Underwriting
SWISS RE Beijing

'Use insurance to cope with climate change'

自然资本价值核算与应用

Natural Capital Valuation and its Application

於方 博士/研究员

Yu Fang, Ph.D

生态环境部环境规划院，Chinese Academy of Environmental Planning

生态环境经济核算研究中心，Center of Environmental and Economic Accounting

生态产品与自然资本联合实验室, Joint Lab for Eco-products and Natural Capital

2022.3

主要内容 Contents

1 **自然资本价值核算实践**
Practices of Natural Capital Valuation

2 **自然资本价值核算应用案例**
Application of Natural Capital Valuation

3 **工作建议**Recommendations

1

自然资本价值核算实践

Practices of Natural Capital Valuation

中国环境经济核算进程
Evolution of environmental and economic accounting in China

EDP=GDP-EnDC

EnDC

ATMOSPHERE | WATER | SOLID WASTE



2008

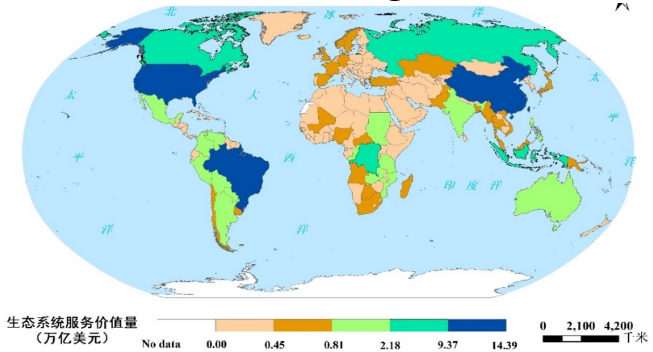
GEP

PRODUCTS | REGULATION VALUE | CULTURE



2015

The Global Gross Ecological Production



2017

2004

EDP=GDP-EnDC-EcDC

EcDC

FOREST | WETLAND | GRASSLAND

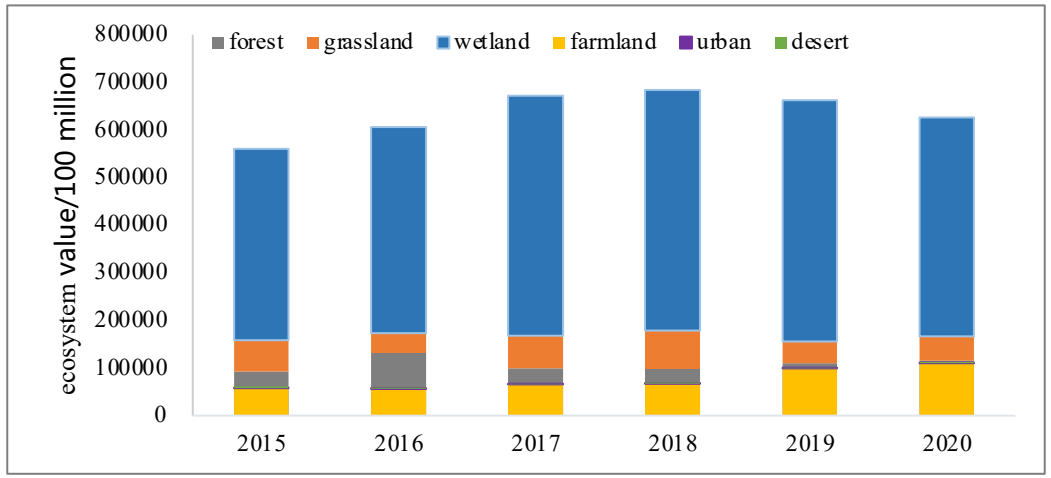


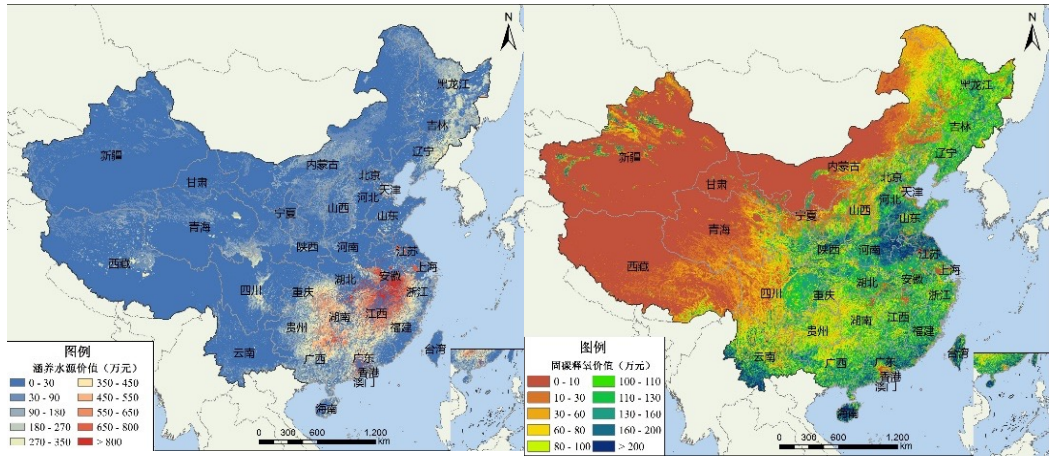
2019

GEEP=GDP-EnDC-EcDC+ERS

Lucid waters and Lush mountains are invaluable assets

全国GEP核算结果
National GEP accounting results





- 2015年-2020年我国GEP不断提高，由2015年的70.6万亿增长到82.1万亿。China’ s GEP value rised from 70.6 trillion CNY in 2015 to 82.1 trillion CNY in 2017
- 产品供给由13.1万亿增长到14.5万亿，提高11%；调节服务由49.7万亿增长到59.3万亿，增长19%；文化旅游增长较快，2020年为8.2万亿，是2015年7.7万亿的1.07倍。In the same period, Provisioning Services rised 11%, Regulating Services rised 19%, and Cultural Service rised 7%
- 湿地生态系统是我国GEP的重要组成部分，其次为森林生态系统。Wetland contributed the most of GEP value, and Forestry land ranked as second.
- 森林、湿地和农田生态系统服务价值增长较快，年均增长率分别为4.5%、2.7%和13.6%。The annual GEP growth rates of Forestry land, Wetland and Farm land averaged as 4.5%, 2.7% and13.6% respectively.

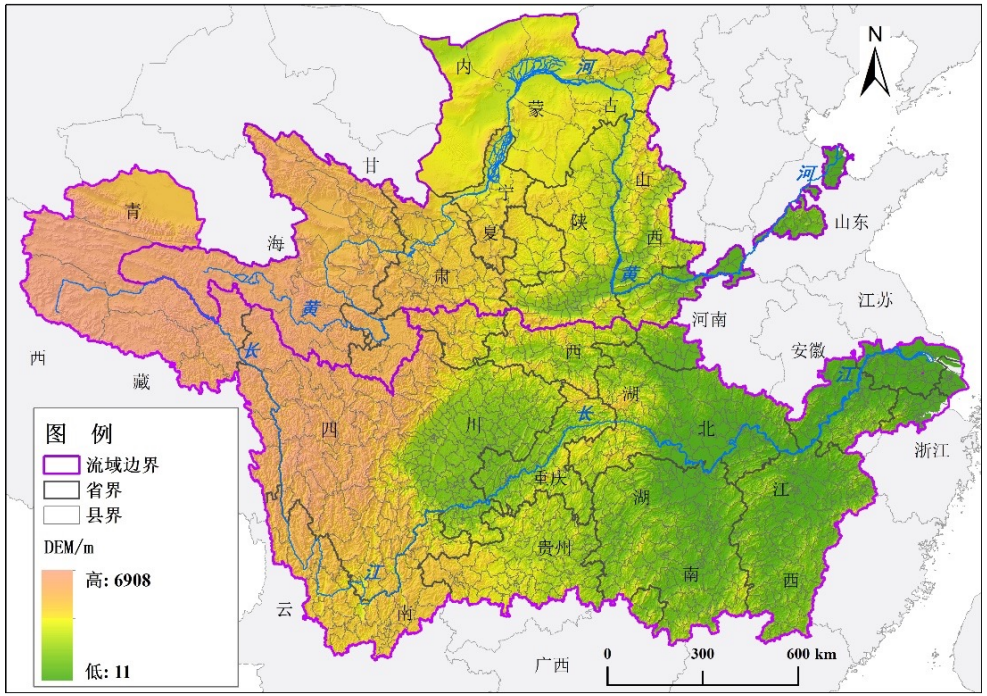
长江和黄河流域的GEP核算

Yangtze River and Yellow River GEP Accounting Results

黄河流域365个县（区、旗），面积约为**105.6万km²**，Yellow River Basin 365 counties,1.06 million km²

长江流域859个县（区、旗），面积约为**193.3万km²**，Yangtze River Basin 859 counties, 1.93 million km²

两个流域总面积约占全国国土总面积的31.1%； **Both occupied 31.1% of China’s area**

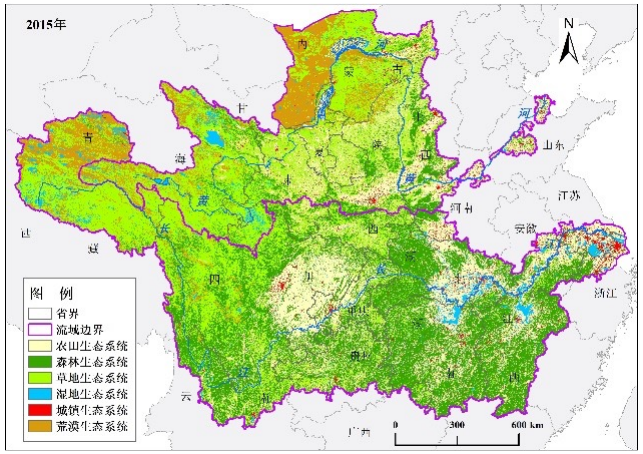


黄河流域气候类型主要是**温带季风气候和温带大陆性气候**，长江流域气候主要是**亚热带季风气候和高原山地气候**；Yellow River Basin is mainly **monsoon climate and continental climate**, while Yangtze River Basin is mainly **subtropical monsoon climate and plateau mountain climate**;

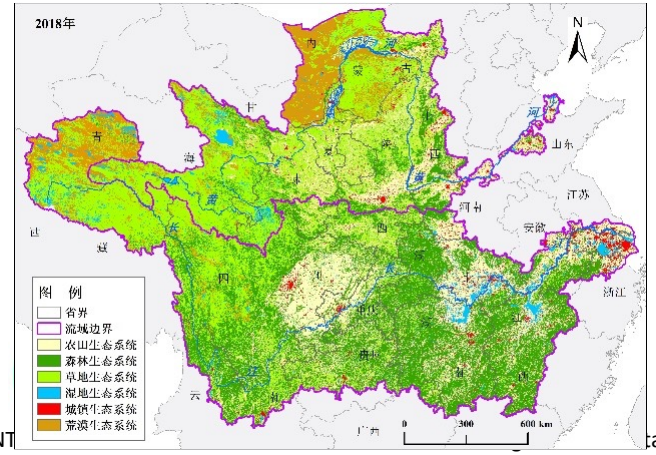
2015年至2018年两个流域的GDP总量占全国GDP的比例在**8%**和**32%左右**。近十年来，长江流域经济水平明显高于黄河流域。Yangtze River Basin and Yellow River Basin contribute China’s GDP of 32% and 8% respectively, and in recent decade, the former economic level is significantly higher than later.

长江和黄河流域的GEP核算
Yangtze River and Yellow River GEP Accounting Results

2015年



2018年



黄河流域草地生态系统面积最大，占比超过**45%**，而森林生态系统面积占比不到12%。In Yellow River Basin, grassland contributes 45% and forestry land contributes less than 12%.

长江流域森林生态系统明显高于其它类型，**农田和森林**生态系统面积分别约为黄河流域的**2和6倍**。 The forestry land of Yangtze River Basin is significantly larger than other ecosystems and the farm land and forestry land of Yangtze River Basin are 2 and 6 times of Yellow River Basin.

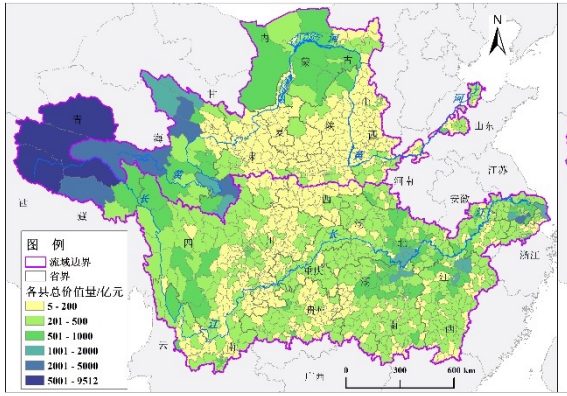
2015年至2018年，黄河和长江流域的城镇范围明显扩张，大多占用了周边农田。Between 2015 and 2018, the urban area of both basins obviously expanded and occupied surrounding farm lands.

黄河流域西部大量荒漠向草地转换，森林和湿地生态系统总体稳定，生态状况出现好转趋势；In western part of Yellow River Basin, lots of desert transformed to grass land and ecological quality started to improving.

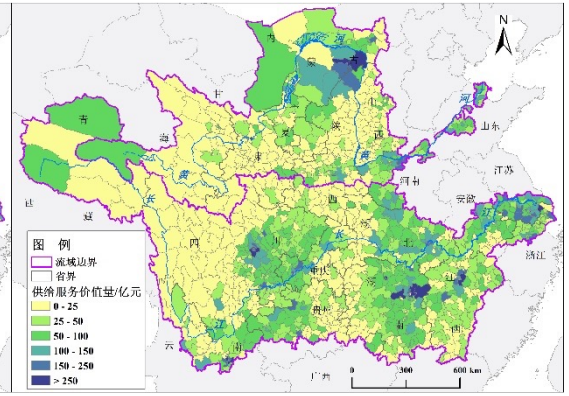
长江流域中西部地区部分草地向森林转换 ， 其他类型空间变化不明显。In middle and western part of Yangtze River Basin, some grassland is transforming to forestry land.

长江和黄河流域的GEP核算
Yangtze River and Yellow River GEP Accounting Results

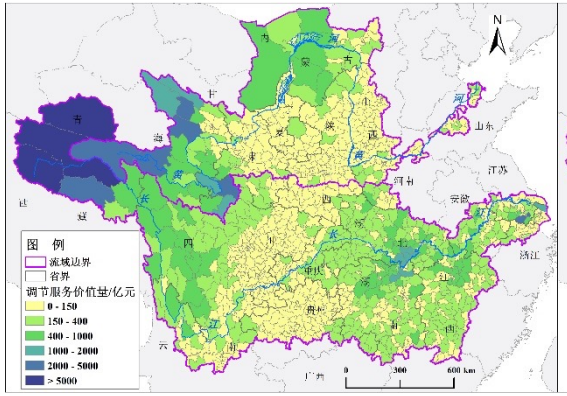
2018-Total GEP



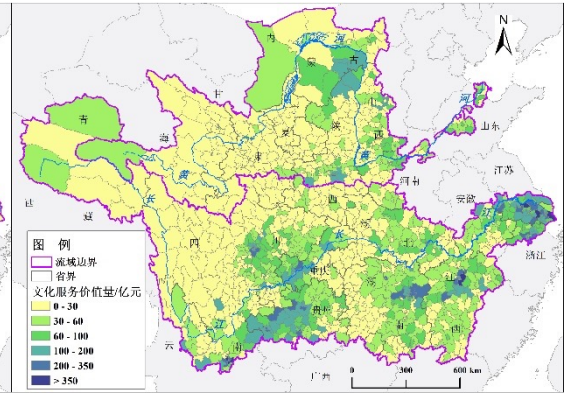
2018-Provisioning Services



2018-Regulating Services



2018-Cultrual Services



黄河和长江流域GEP分别为84631.4亿元和255154.1亿元，**调节服务**价值量均最高，2018年分别占比68.85%和61.36%。GEP of Yellow River Basin and Yangtze River Basin are 8463 billion CNY and 25515 billion CNY respectively in 2018, and Regulating services contributed 68.85% and 61.36% respectively.

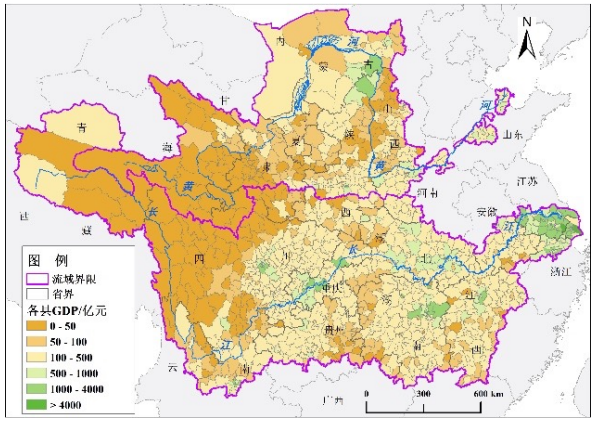
2015年至2018年间两个流域生态系统服务价值量都呈现**增加趋势**。Both basins indicated increase trending from 2015 to 2018

空间上生态系统服务价值量整体呈现**西部高，东部次之，中部低**的空间特征。In spatial, the GEP is always of high value in Western, middle in Eastern, and low in Central.

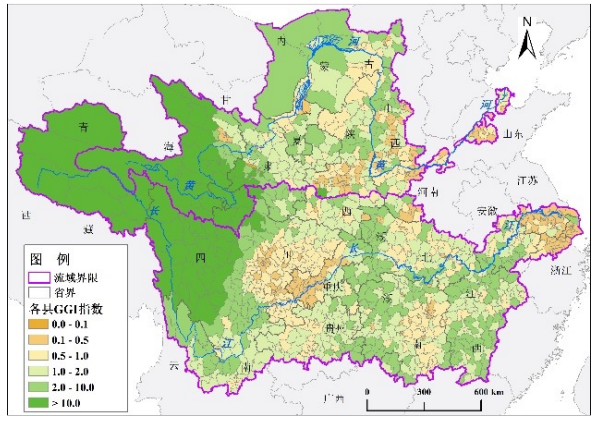
空间上两个流域的**文化和供给服务**与**调节服务**呈现出一定的互补性。Spatially, the Cultural and Provisioning services is complementary with the Regulating services in two basins

长江和黄河流域的GEP核算
Yangtze River and Yellow River GEP Accounting Results

2018-GDP in spatial



2018-GGI in spatial



生态系统生产总值GEP与GDP的比值（GGI=GEP/GDP）可作为衡量区域**生态环境保护和经济发展**之间互补关系的重要指标。The ratio between GEP and GEP GGI=GEP/GDP) is one of the key indicators to assess the relationship between environmental protection and economic growth.

2015-2018年间黄河流域**GGI大于1**，且曲线逐渐偏离1，其生态环境质量改善程度和速率都高于经济发展，说明绿水青山向金山银山转化的动能还不足。Between 2015 and 2018 Yellow River Basin's GGI larger than 1 which indicated environmental improvement is faster than economic development, and lack of capabilities to transform natural capital to economic capital

2015-2018年间长江流域的经济水平和增速相对较高，经济总量高于生态系统服务价值，**CGI指数小于1**，需要重视经济发展对生态安全可能造成的潜在威胁。Between 2015 and 2018 Yangtze River Basin's GGI smaller than 1 which indicated GDP yield more than GEP generated, and there may be risk that economic growth posed threaten to ecological security.

2

自然资本价值核算应用案例

Application of Natural Capital Valuation

福建省：全方位推进生态产品价值实现Fujian: Promote Eco-products value realization

Wuyishan、Nanping	构建GEP核算的山区样本
Xiamen， Pingtan	构建GEP核算的沿海样本
Fuzhou Jiangle	开展多层级EDP、GEP、GEEP核算试点

绿色GDP（GGDP）：金山银山

生态系统生产总值（GEP）：绿水青山

经济生态生产总值 绿水青山+金山银山

福建省生态环境厅
福建省发展和改革委员会 文件
福建省自然资源厅

闽环保综合〔2021〕7号

福建省生态环境厅 福建省发展和改革委员会
福建省自然资源厅关于印发《福建省
生态产品总值核算技术指南
（试行）》的通知

全国第一份陆海统筹核算指南
First GEP guideline on both Terrestrial and Marine Ecosystem

生态产品推进机制Eco-product management and development mechanism

森林银行 Forestry Bank collects the scattered lands to enhance their ecological production

“武夷山水”区域品牌 Regional Brand of Wuyishan Mountain and Water

武夷山水
源武夷 达天下

推进生态资源权益交易 Promote the transaction of ecological resources rights and interests

- 林权改革、森林碳汇、一元碳汇 Carbon stock trading

生态产品保护补偿机制 Eco-compensation mechanism

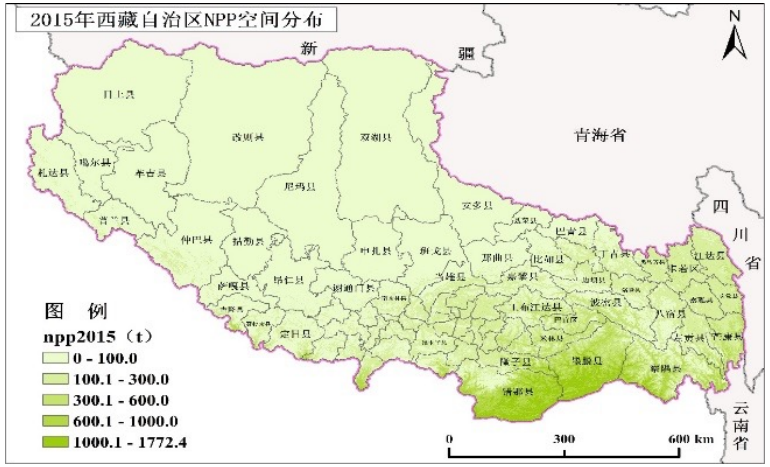
- 九龙江流域上下游生态补偿试点
- 福建省重点流域生态保护补偿办法
- 汀江—韩江跨省上下游横向流域生态补偿协议 Transboundary eco-compensation in Jiulong and Ting River
- 三明林票制度改革试点 Forestry Coupon trading reform pilot in Sanming

绿色金融支持 Supporting Green Finance

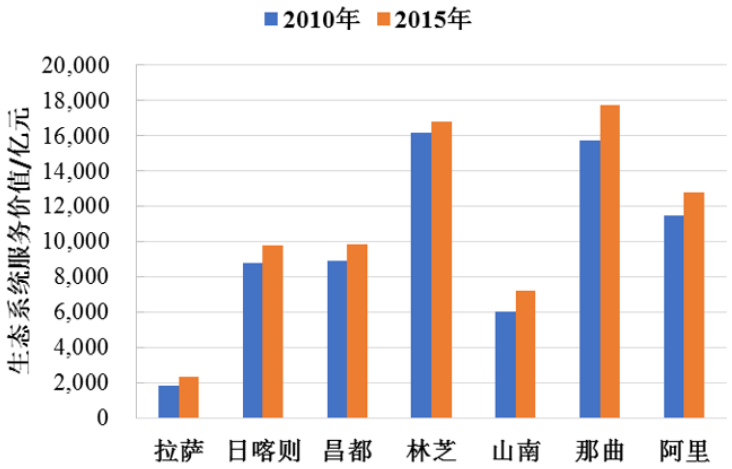
- 顺昌县顺林林木收储中心
- 林业金融服务中心
- 顺昌县林业小额贴息贷款
- 顺昌县启动碳金融试点工作 Build financial service center for small discount interest loan

西藏：基于生态产品价值核算完善生态补偿标准
Tibet: Improve Eco-compensation standard based on GEP

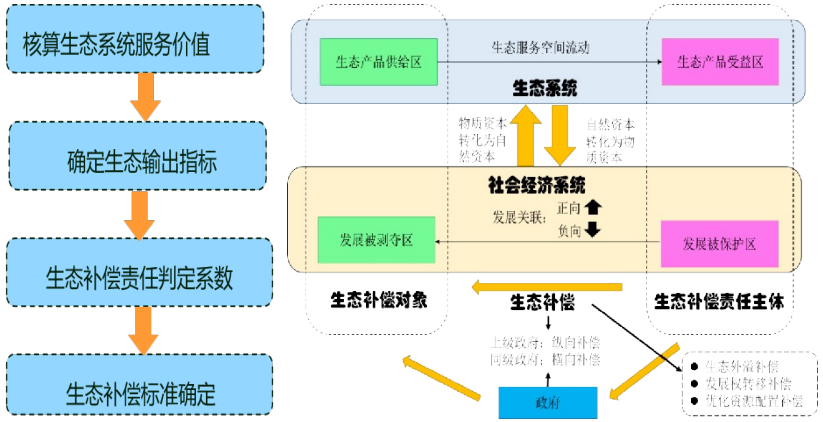
西藏自治区生态系统状况评估
Ecological Assessment in Tibet



西藏自治区GEP核算
GEP Accounting in Tibet



生态产品保护补偿机制
Eco-compensation Mechanism

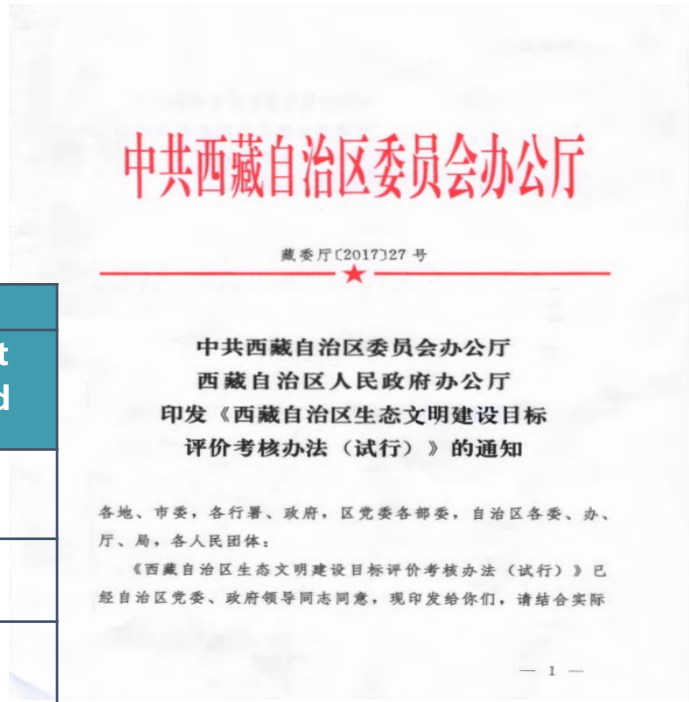


生态产品价值考核机制
Performance Assessment Baes on GEP

- 西藏自治区生态文明建设目标评价考核办法 Stipulation on Ecological Civilization Development Assessment of Tibet
- 西藏自治区绿色发展指标体系 Green Development Indicator System of Tibet

西藏不同生态系统的生态补偿金额（元/亩）
EPS standard of various ecosystems

功能区（元/亩） Key Ecological Function Zone	2015年		
	Forest	Grass	Wet land
国家重点生态功能区(KEFZ of China)	44	28	16
自治区重点生态功能区(KEFZ of Tibet)	96	70	9
自治区农产品主产区(Key Farmland)	0	37	0


中共西藏自治区委员会办公厅

藏委厅〔2017〕27号

中共西藏自治区委员会办公厅
西藏自治区人民政府办公厅
印发《西藏自治区生态文明建设目标评价考核办法（试行）》的通知

各地、市委，各行署、政府，区党委各部委，自治区各委、办、厅、局，各人民团体：

《西藏自治区生态文明建设目标评价考核办法（试行）》已经自治区党委、政府领导同志同意，现印发给你们，请结合实际

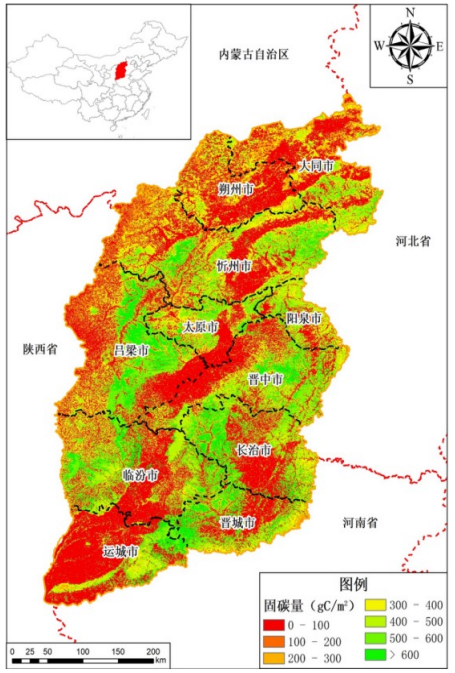
— 1 —

山西：基于生态产品价值核算和绿色GDP核算的考核体系构建
Shanxi: Performance Assessment Based on GEP and Green GDP Accounting

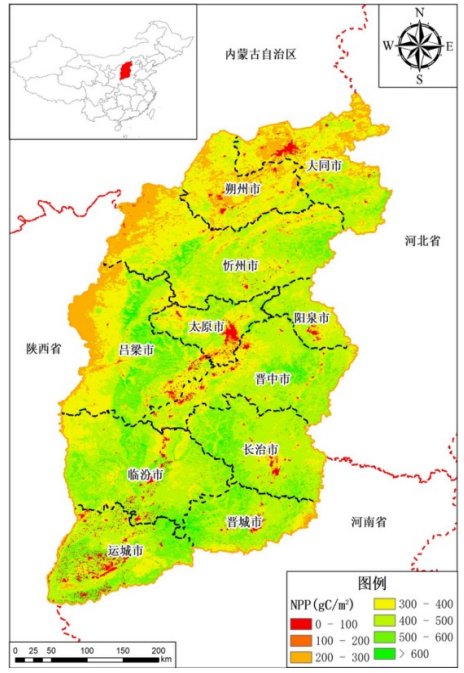
Indicator System

一级指标	二级指标
Green GDP	绿色经济Green Economy
	资源能耗 Resource Depletion
GEP	环境质量 Environmental Quality
	生态保护 Ecological Protection
GEEP	转化效率 Transformation Efficiency
	结构稳定 Stability of Economic and Ecological Structure

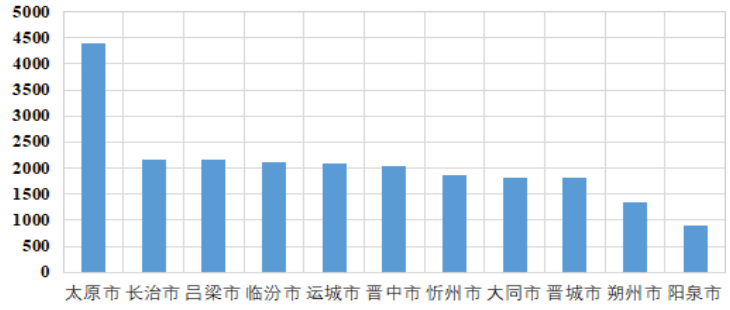
2020 Shanxi Carbon Stock Distribution



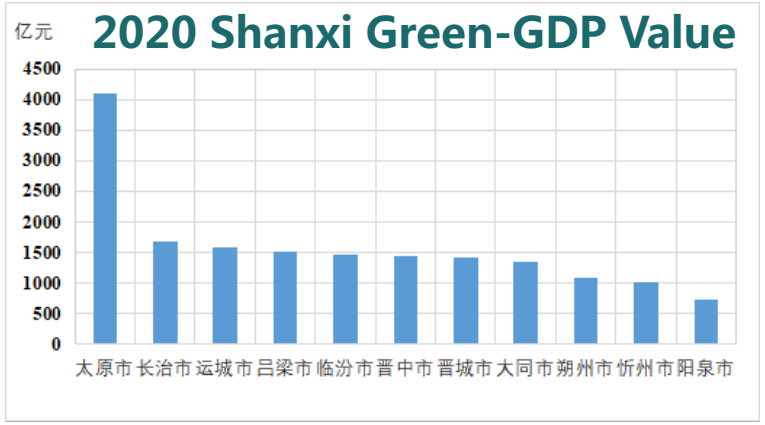
2020 Shanxi NPP in Spatial



2020 Shanxi GEEP Value

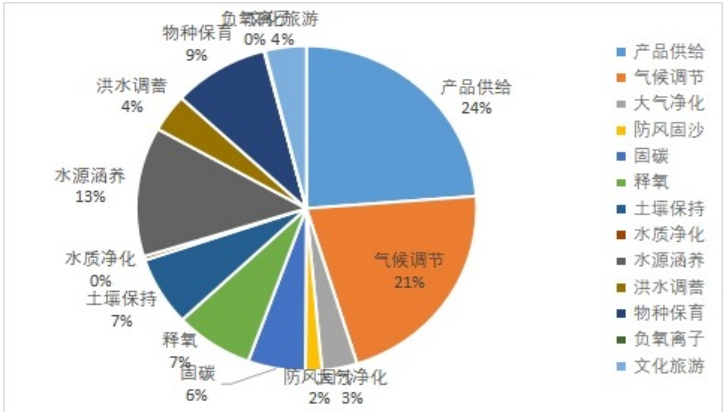


2020 Shanxi Green-GDP Value



2020 Shanxi GEP Value

2020 Shanxi Ecosystem Service Value by types



3

工作建议

Recommendations

工作建议 Recommendations

01

加快建立生态产品调查监测机制
Speed up the establishment of an ecological product survey and monitoring mechanism

- **工作职责**：构建国家技术标准统筹、区域流域技术监督、地方推进落实、社会共同参与的自然生态资源监测网络；Build up Natural Monitoring Network
- **工作机制**：形成跨行业-跨地域-跨部门-多主体参与的数据共享、验证与工作机制
  Form Data sharing, verification and working mechanism of cross-regions, multi-sectors and public participation

02

积极推进生态产品价值核算规范的制定
Promote the formulation of ecological product value accounting guidelines

- **核算框架和内容**：生态要素（非生态要素：太阳能、风能？）、自然景观（人文景观？）
  Framework identification
- **核算参数地方化**：植被生物量和固碳速率，土壤组分和有机碳，水土保持因子、地表径流系数等参数 Parameter localization
- **同类生态产品核算方法标准化**：为生态产品跨区域交易提供一套标准化的技术依据
  Methodology normalization

工作建议 Recommendations

03

研究制定基于生态产品价值核算的生态银行等绿色金融政策，促进生态产品价值实现

Deepening the Green Financing Policy design based on EDC

- **落实两办《关于深化生态保护补偿制度改革的意见》：**建立占用补偿、损害赔偿与保护补偿协同推进的生态环境保护机制。Strengthen PES Reform, establish occupation and compensation in balance principle
- **制度障碍：**地方化管理 Institutional barriers

04

推动生态产品价值核算进决策、进规划、进考核、进交易

Promote Ecological service accounting into decision making，planning, performance assessment and trade-off

- **规划引领：**将自然生态纳入约束性指标管理，强化空间规划对自然生态的优化配置作用 Plan leading: nature-based indicators
- **加强考核：**构建基于生态产品价值核算的考核指标体系与办法，推动规划、项目、政策层面基于费用-效益/效果分析的评估考核，推动核算成果进入领导干部考核体系 Performance evaluation based on natural capital accounting
- **决策支撑：**通过基于自然资本核算的决策主流化，统筹区域发展与自然生态平衡，促进气候变化和生物多样性全球环境问题解决。Through natural capital into decision –making mainstreaming, coordinating regional development and ecosystem balance and promote the solution of climate change and biodiversity.

敬请批评指正！

Thanks for your attention

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SESSION III

FINANCING GREEN DEVELOPMENT WITH A RIVER BASIN APPROACH

Yu Fang
Professor & Director
Chinese Academy of
Environmental Planning

'Natural Capital Valuation and its application'

Cindy Zhang
Head of Property Treaty
Underwriting
SWISS RE Beijing

'Use insurance to cope with climate change'

Swiss Re

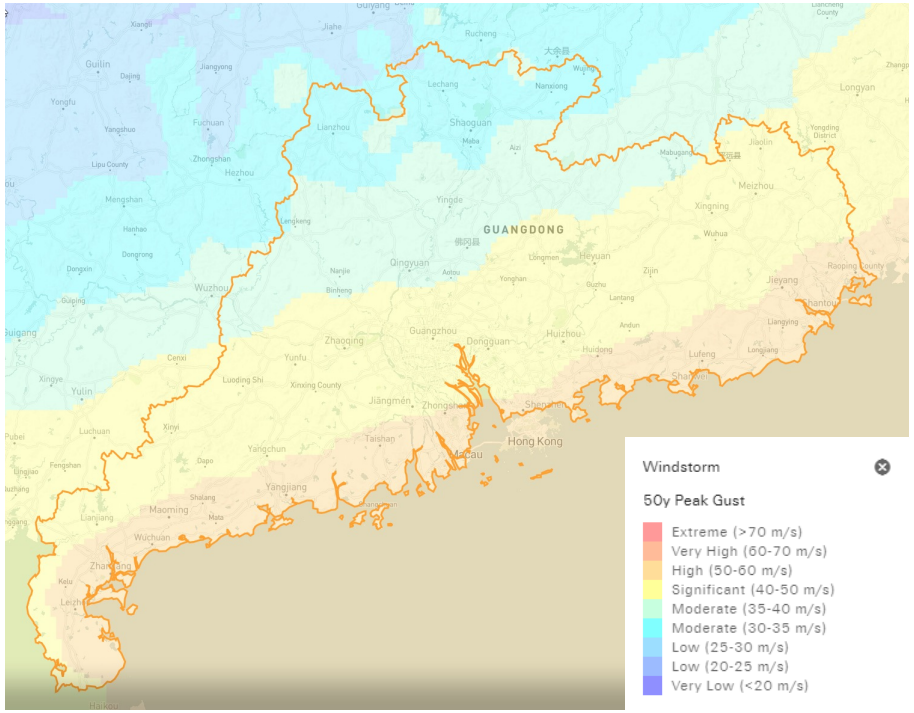
Use insurance to cope with climate change

- A case study in Pearl delta area

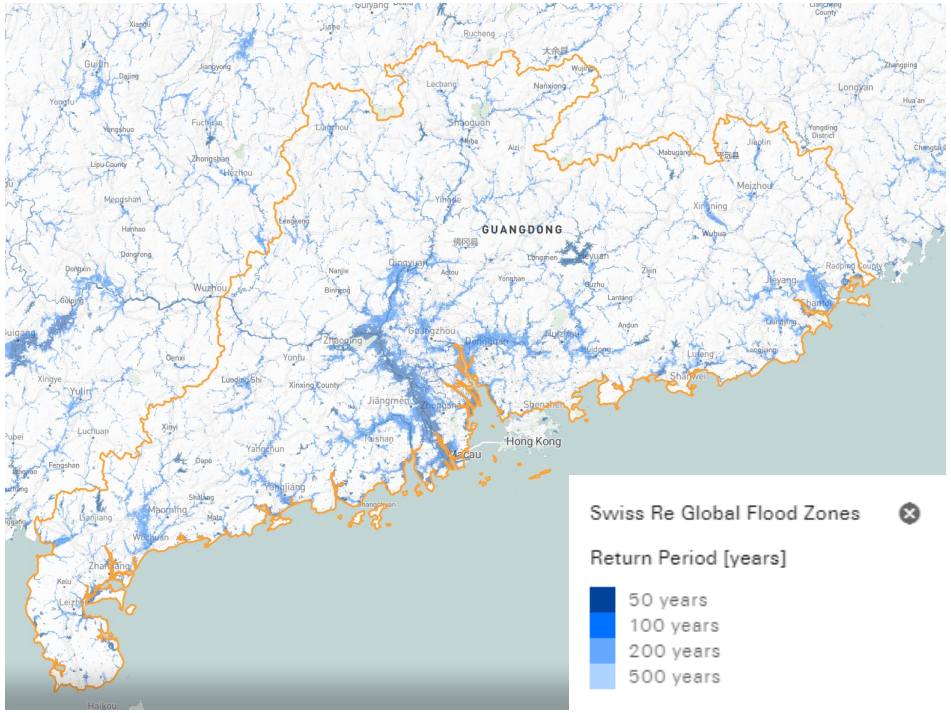
Cindy Zhang
Head Property Treaty Underwriting China
Swiss Re

About GuangDong Province in China

- Guangdong Province is one of the most prosperous province in China, located in pearl delta area.
- It is also highly exposed to typhoon and heavy rainfall.
- In average, 2~3 typhoons make landfall in Guangdong every year, brings strong wind and heavy rainfall.



Typhoon exposure in Guangdong*



Flood exposure in Guangdong*

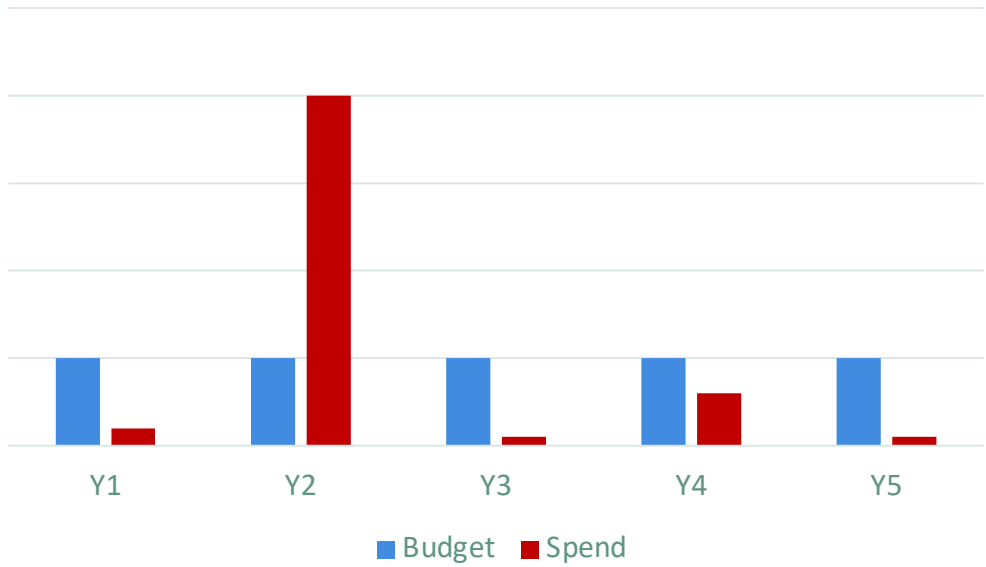
* From Swiss Re CatNet®

Guangdong suffered huge economics loss from catastrophic events

- In 2014, Super Typhoon Rammasun affected 3 cities in Guangdong, causing 1.23 bn RMB economic loss (200mio USD), 99,000 residents were evacuated under emergency.

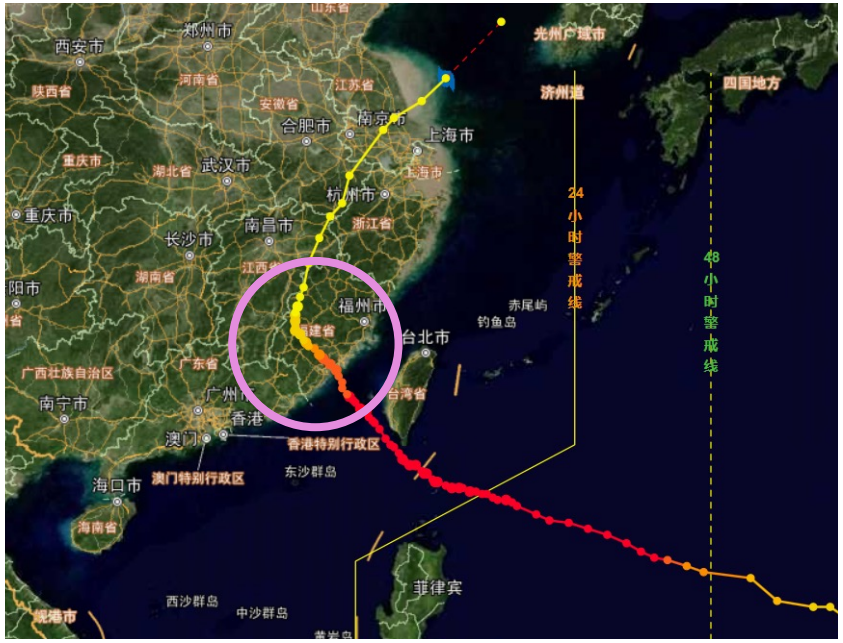
Dilemma of the local government: Fixed disaster relief budget vs. random event

- Guangdong government is responsible to mobilize resource for disaster relief. At the beginning of year, a fixed budget would be allocated for that, however, there is high uncertainty on when the catastrophe would happen and how severe it is.
- The Department of Finance in Guangdong needs a financial mechanism so they can enlarge the accessible capital for disaster relief when mostly needed.



Government nat cat (natural catastrophe) insurance, how it works

- In 2015, Swiss Re designed an insurance product for the local government.
- Every year the government spend a fixed budget to purchase nat cat insurance.
- Once there is a heavy typhoon or rainfall, the scheme would pay a lump sum payment to the government for disaster relief. It can be 5~10 times of the annual premium.
- Unlike conventional property insurance in which the payment amount is decided after loss adjustment, Swiss Re helped the government to design a parametric nat cat insurance, which means the payment is based on the intensity of the event itself.
  - For typhoon, it is based on wind speed
  - For rainfall, it is based on precipitation
  - For earthquake, it is based on magnitude

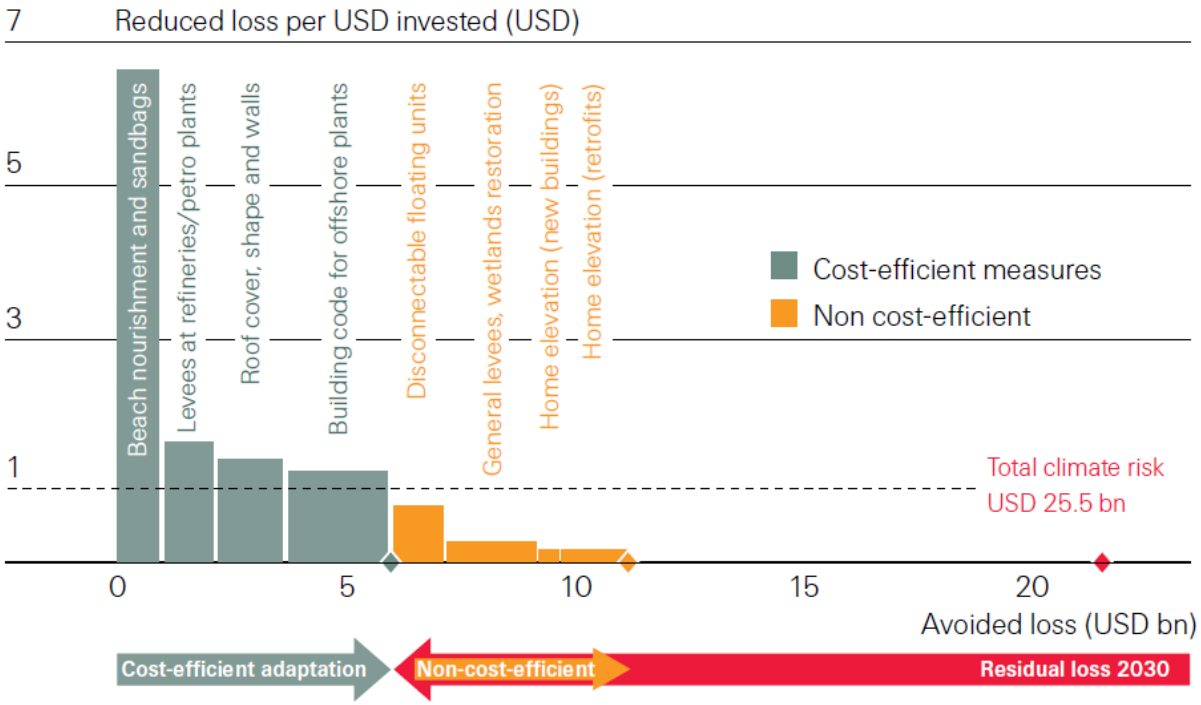


How does this insurance help?

Since the establishment in 2015, the Guangdong Government Scheme has provided over 1 bn RMB payment to the local government.

Year	Event	Payment RMB
2016	Typhoon Haima	10 mio
2018	Typhoon Mangkhut	75 mio
2018	Typhoon Ewiniar	16 mio

There are various measures to cope climate change and nat cat threats



Source: Swiss Re, ECA Group, Building a Resilient Energy Gulf Coast

- Investment on infrastructure can be a cost-effective way to reduce nat cat losses
- While using insurance for risk transfer is suitable for residual risks

Any questions?

Swiss Re

Thank you!

Cindy Zhang
Head of Property Treaty Underwriting
SWISS RE Beijing

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PANEL DISCUSSION

Lance Gore
Principal Water Resources Specialist
South Asia Department, ADB

IWRM Experiences from South Asia: Bhutan; India: Karnataka & Odisha; Nepal: Upper Bagmati River Basin

Nathan A. Rive
Senior Climate Change Specialist,
Central West Asia Department, ADB

with

Ganjina I. Fazilova
Associate Project Officer, Tajikistan
Resident Mission, ADB

'River Basin Management in CWRD DMCs: Experiences from Pakistan and Tajikistan'

Francesco Ricciardi
Senior Environment Specialist
Sustainable Development and Climate Change Department, ADB

'Mainstreaming biodiversity conservation and environmental flow in the Alaoa Multipurpose Dam project, Samoa'

Ryutaro Takaku
Principal Water Resources Specialist
Southeast Asia Department, ADB

'IWRM in Cambodia (Case Study for Project Design)'

Moderated by Thomas Panella
Director
Environment, Natural Resources and Agriculture Division, ADB

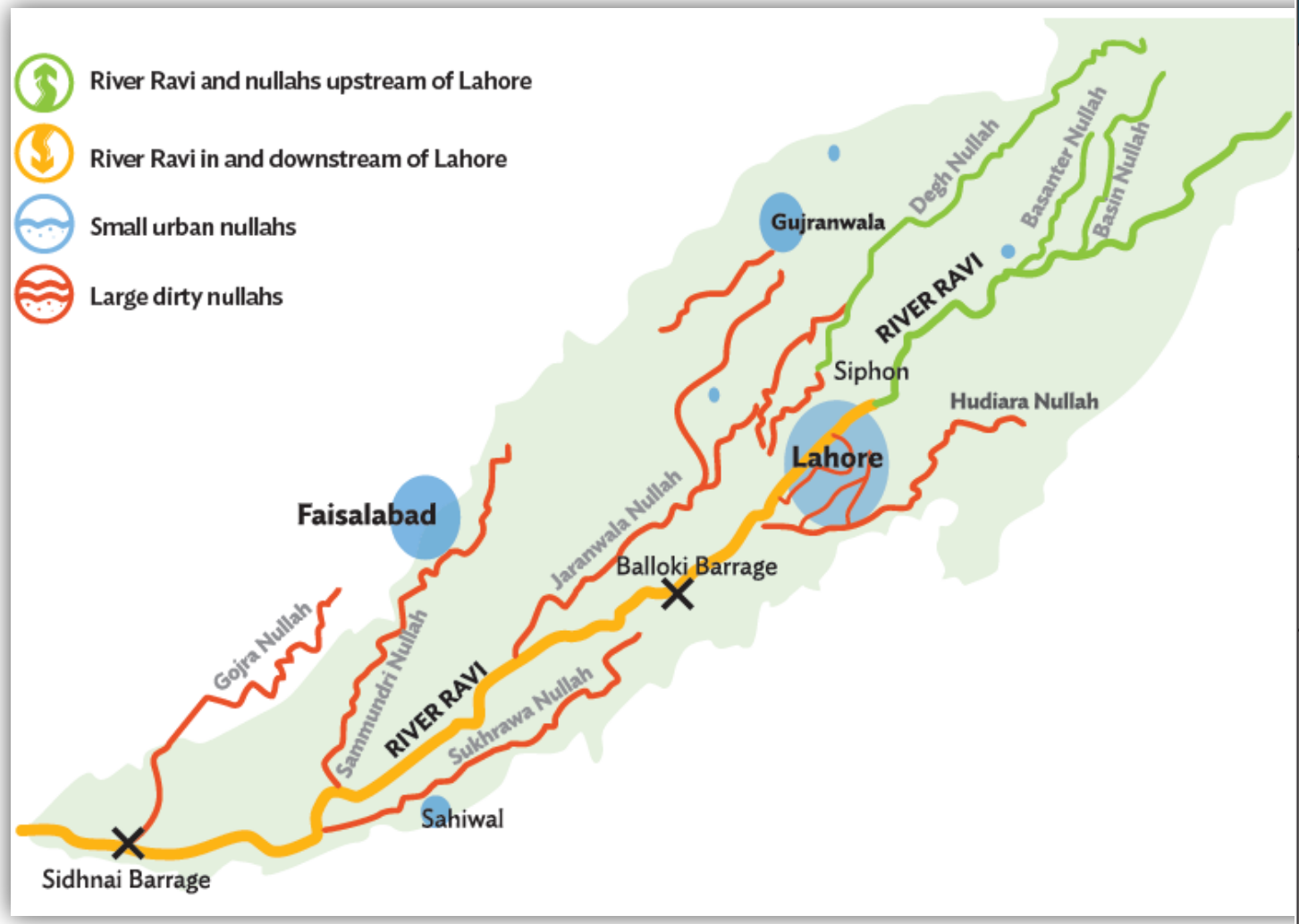
River Basin Management in CWRD DMCs: Experiences from Pakistan and Tajikistan

Nathan A. Rive
Senior Climate Change Specialist,
Central West Asia Department, ADB

Ganjina I. Fazilova
Associate Project Officer,
Tajikistan Resident Mission, ADB

Integrated River Basin Management: Lessons from the People's Republic of China and the Asia and Pacific Region

Vision statement: “A tapestry of diverse healthy river environments that nurture and support human wellbeing”



Settings	
	**River Ravi Upstream of Lahore** River and nullahs are relatively uncontaminated and have low odor. The upper part of the Degh nullah falls into this setting. The lower part is included in the Large Dirty Nullahs.
	**River Ravi in and Downstream of Lahore** Significantly modified from its natural flow through its length with two barrages, various nullahs that enter and leave the river, and large dirty nullahs that carry wastewater into the river.
	**Small Urban Nullahs** Carry municipal waste from the surrounding local communities to the river or large nullah. They are highly contaminated and have very strong odor.
	**Large Dirty Nullahs** Result from the merging of several small nullahs and carry a toxic mix of industrial and municipal effluents. There are two types: • Hudiara-Nullah Type, where the water is highly turbid and is often characterized by a very strong odor. • Degh-Nullah Type where the water is less turbid and less odorous.

A phased approach

PHASE 1

5-10 YEARS (2020–2025)

Eight projects are planned, focused on near-term opportunities to demonstrate the possibilities and improve:

- water access and quality treatment
- ecological health
- recreational value

PHASE 2

20-YEAR HORIZON

More widespread improvements, extending earlier work across the Basin and revitalize River Ravi's natural functions, particularly in small urban *nullahs* and large dirty *nullahs*. Waters will be much cleaner and more pleasant to be around, but the full Vision will not be achieved across the whole Basin as most interventions will exclude tertiary wastewater treatment.

PHASE 3

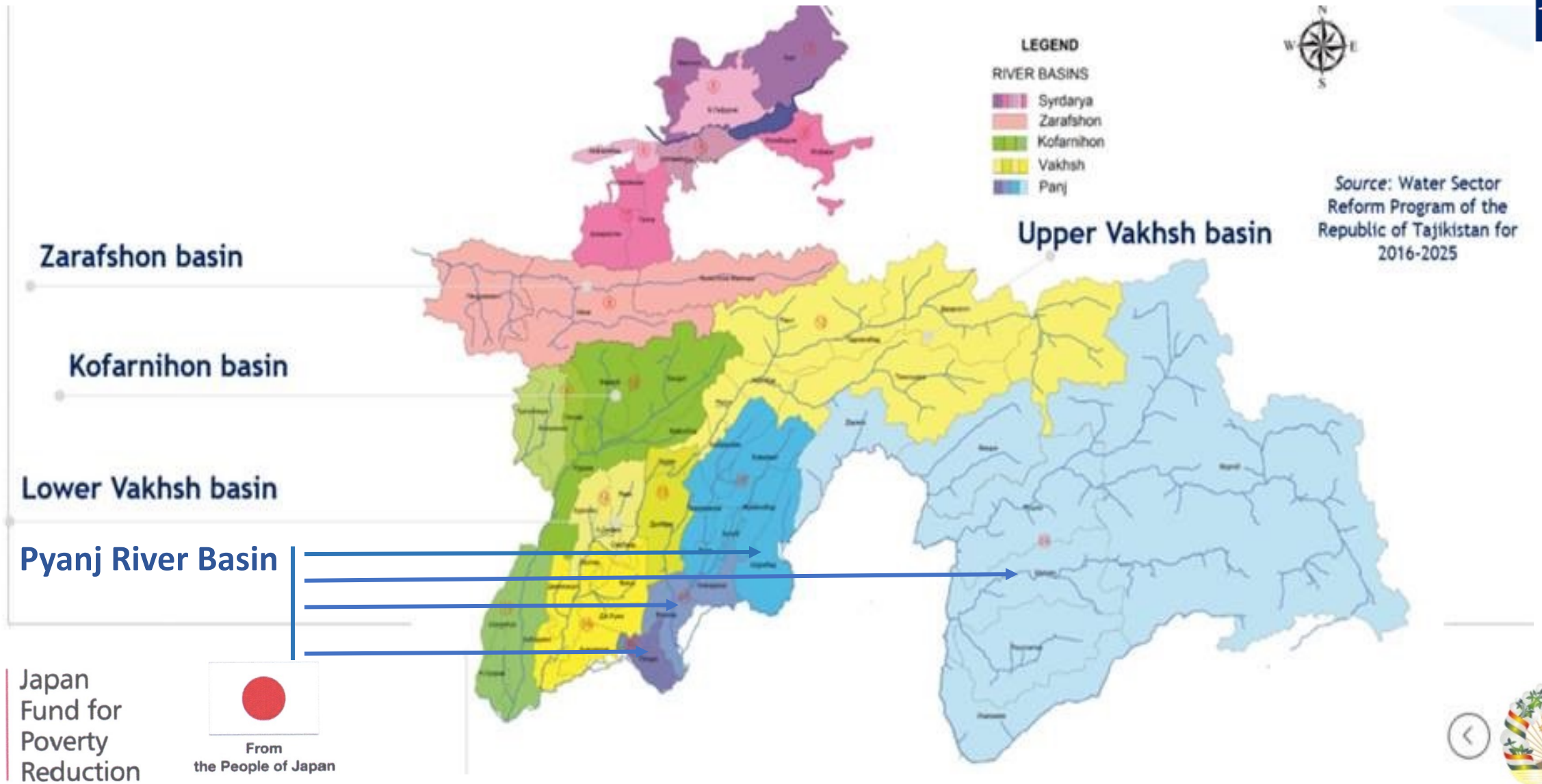
30-YEAR HORIZON

Envisages tertiary treatment in most parts of the Basin and widespread restoration while achieving or exceeding all aspects of the Vision.

Strategy

1. Delineation, demarcation and **acquisition of the land where needed** along the River Ravi and nullahs
2. Centralized and decentralized **wastewater treatment, combining** engineering and nature-based solutions
3. Spearhead **Integrated Urban Water Management** (IUWM)
4. Promote **Water Stewardship**
5. Promote **sustainable and profitable agricultural practices**
6. Progressive **eco-revitalization** of the River Ravi and its nullahs
7. Comprehensive **basin-wide institutional strengthening and awareness program**

WATER RESOURCES MANAGEMENT IN THE PYANJ RIVER BASIN



Japan Fund for Poverty Reduction

From the People of Japan

PROJECT OBJECTIVES

- Improve water resources management to boost agriculture production
- Improve food security and reduce poverty in the Pyanj River Basin in the southern part of Khatlon Province of the Republic of Tajikistan

Output 1

- Establishment of River Basin Organization
- Creation of PRB Council
- Development of the Pyanj River Basin Management Plan
- Development of Database on Pyanj River Basin

Common Challenges

- Fragmented institutions, lack of ownership
- Poor infrastructure and services
- Lack of quality hydrological, environmental, and climatic data
- Lack of implementation and enforcement of existing policies and regulations
- Low capacity for planning and management of water resources
- Lack of experience in new technologies
- High vulnerability to the impacts of climate change

Thank You!

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IWRM in Cambodia (Case Study for Project Design)

Ryutaro Takaku
Principal Water Resources Specialist
Southeast Asia Department, ADB

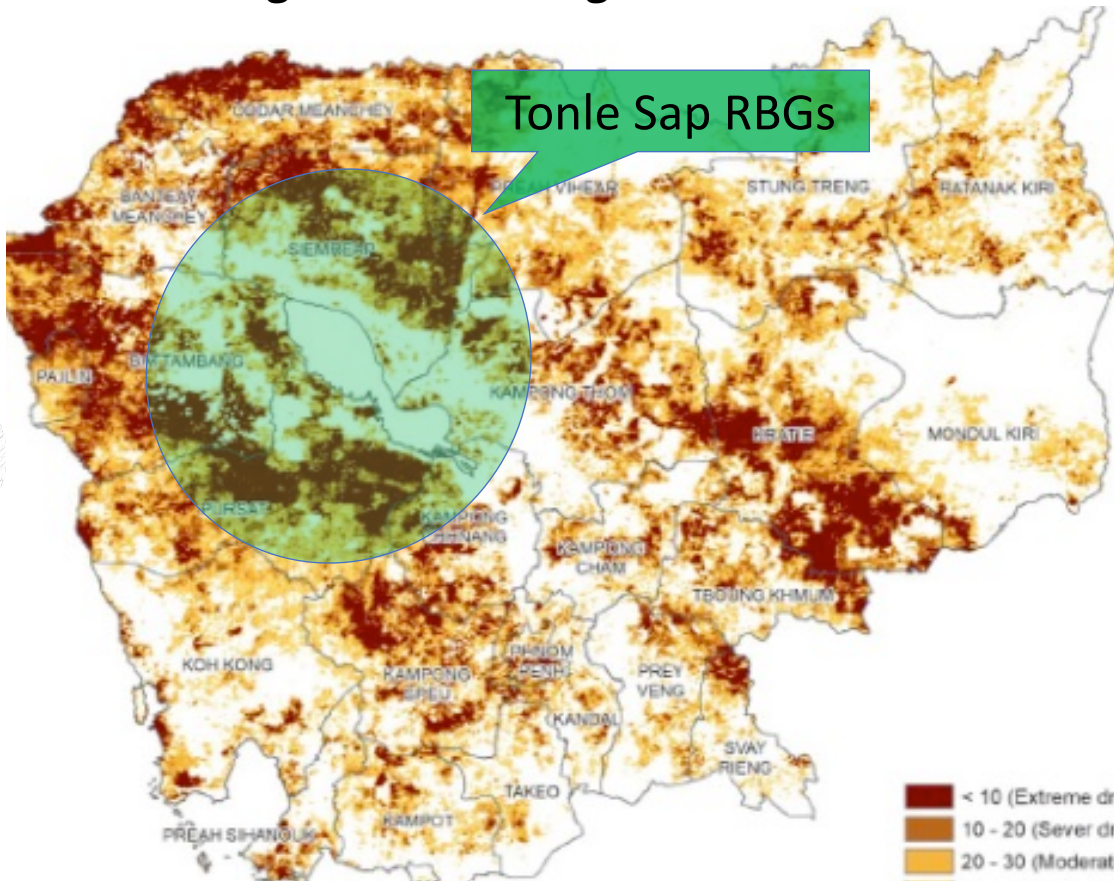
IWRM in Cambodia (Case Study for Project Design)

- Cambodia has not used its endowed water resources effectively.
- Available water is limited in the dry season.
- Frequent floods happen in the wet season.
- Serious climate change impacts are projected.
- There is a concern about eco-hydrology degradation.

Challenges

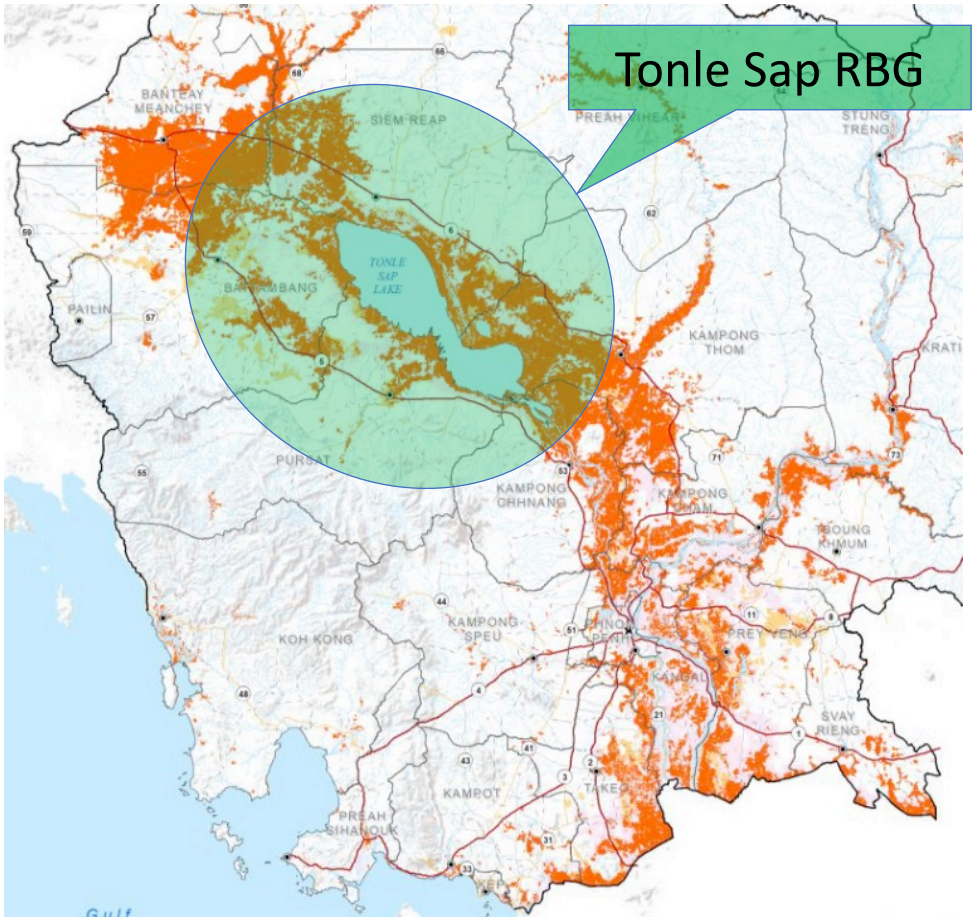
Too Little Water in Tonle Sap River Basin Group (RBGs) during Dry Season

Agricultural droughts in Dec 2019



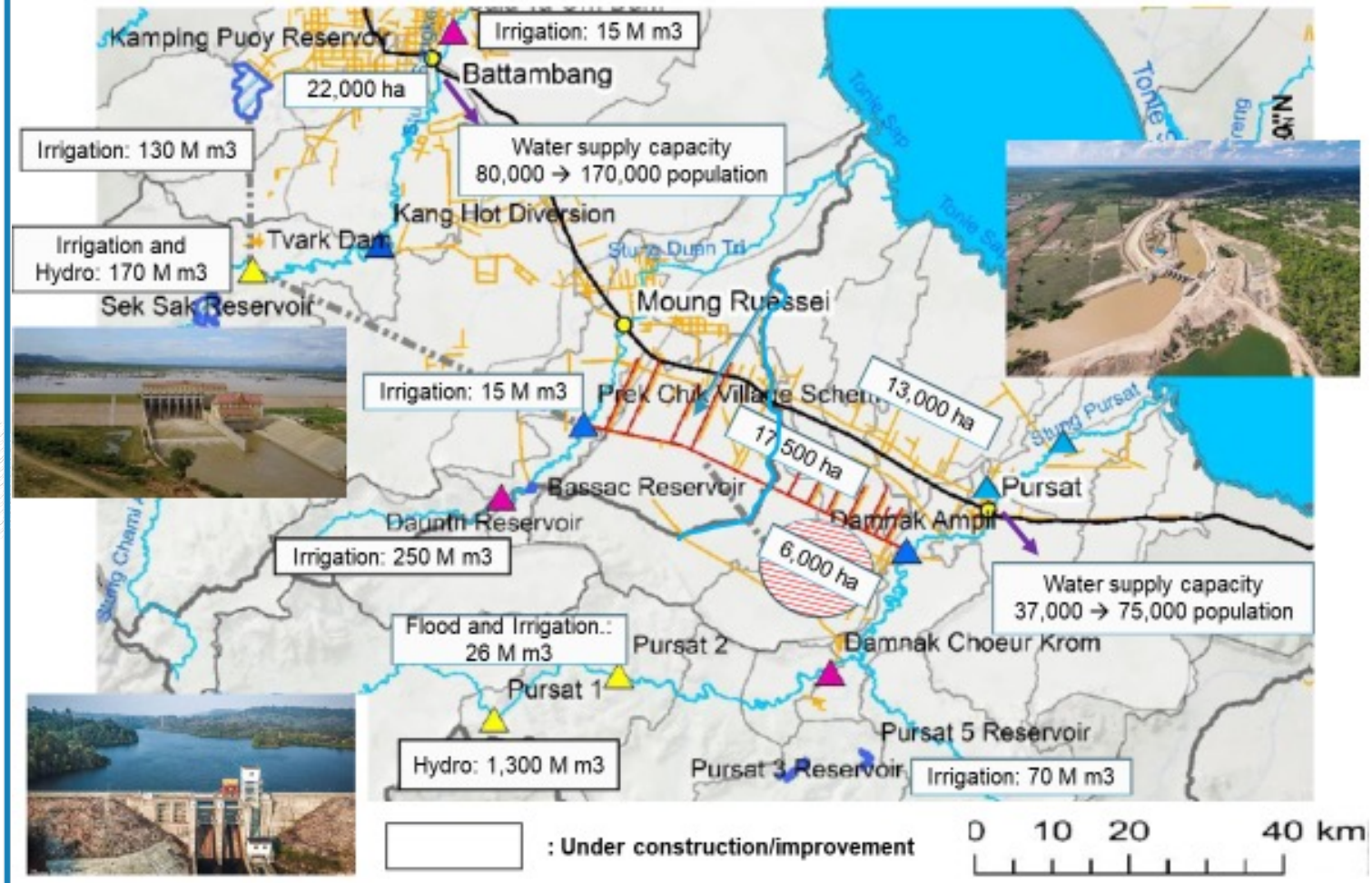
Too Much Water in Tonle Sap RBGs during Wet Season

2020 Oct flood



Challenges

Some WRMs were developed



However:

- **Weak WRM planning and coordination**
- **Limited and inadequate water supply capacity**
- **Loss of lives and damage to property caused by floods**

Drought with low water productivity, flood, degraded eco-hydrology issues unresolved

Proposed Solutions

1.WRM Planning and coordination capacities

- River basin committees
- RBM plans
- Multiple reservoirs integrated operation plans
- River flow management plans
- Hydromet system

2.Water supply capacity during dry season increased

- Off-river storages for dry season cropping
- Irrigation systems upgraded
- Fish passages
- Existing irrigation weirs remodeled
- WUAs

3. Flood risks during wet season reduced

- Existing reservoirs remodeled
- Flood risk management measures
- Flood risk maps
- Flood forecasting and early warning systems
- Community flood preparedness plans

Key Considerations to be given

- *Sustainability on IWRM*
- *Role of central government, provincial government, community-based WRM communities*

Thank You!

Ryutaro Takaku
Principal Water Resources Specialist
Southeast Asia Department, ADB

IWRM Experiences from South Asia

Bhutan

India: Karnataka & Odisha

Nepal: Upper Bagmati River Basin

Lance Gore
Principal Water Resources Specialist
South Asia Department, ADB

Challenges

Bhutan:

- More than enough water, but mostly inaccessible
- Wants to preserve the environment, while …
- Accelerating sustainable development

Karnataka & Odisha:

- Water scarcity, competition, and pollution
- Food security

Upper Bagmati River Basin:

- Heavily developed, degraded, and stressed
- Cultural and economic significance

Common challenges:

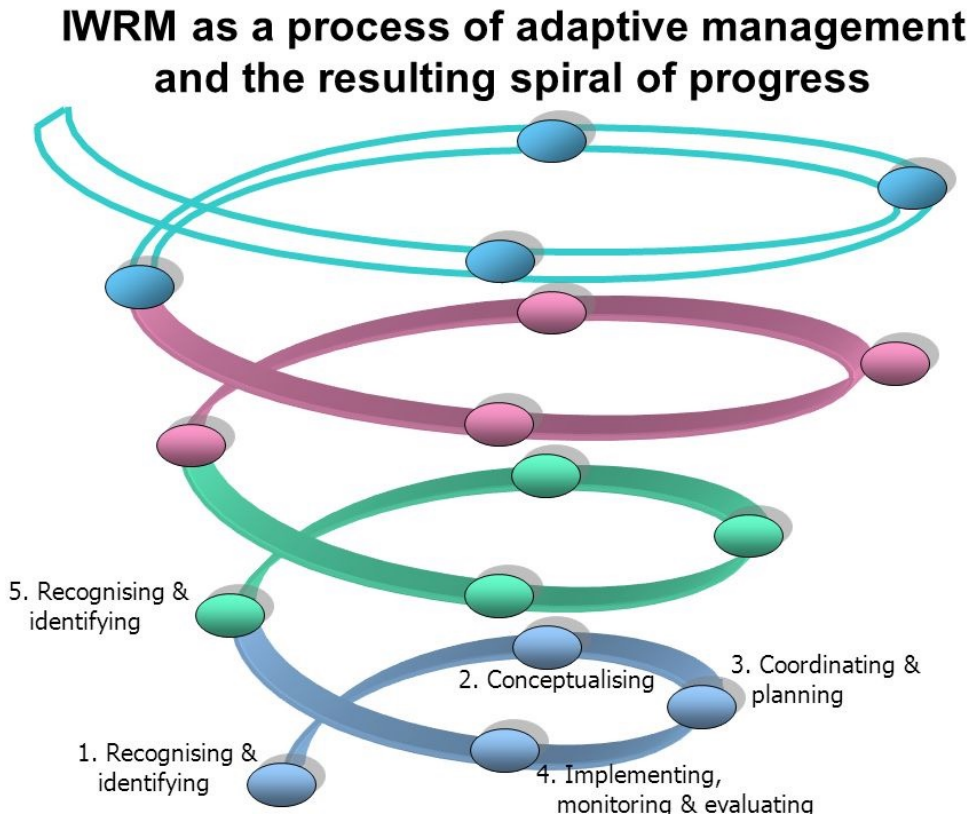
- Limited tools (policy, legislative, information, planning
- Limited resources (staff, knowledge, and funding)

Proposed Solutions

- Strengthen policies and legislation
- Establish and strengthen River Basin Organizations and Water User Associations
- Gather and organize existing information, identify and address information gaps
- Facilitate coordination
- Capacity development
- Exposure to best practices and state-of-the-art tools
- Long-term engagement

Recommendations for other Asia-Pacific countries

- Keep it simple
- Start with what you have
- Organize the existing basin
- Engage with stakeholders
- Be transparent
- Have a goal
- Make a long-term roadmap to achieve that goal
- Define roles, responsibilities, and accountabilities
- Be patient and invest the time and resources
- Learn and seek outside expert help
- Demonstrate value
- Evolve



Thank You!

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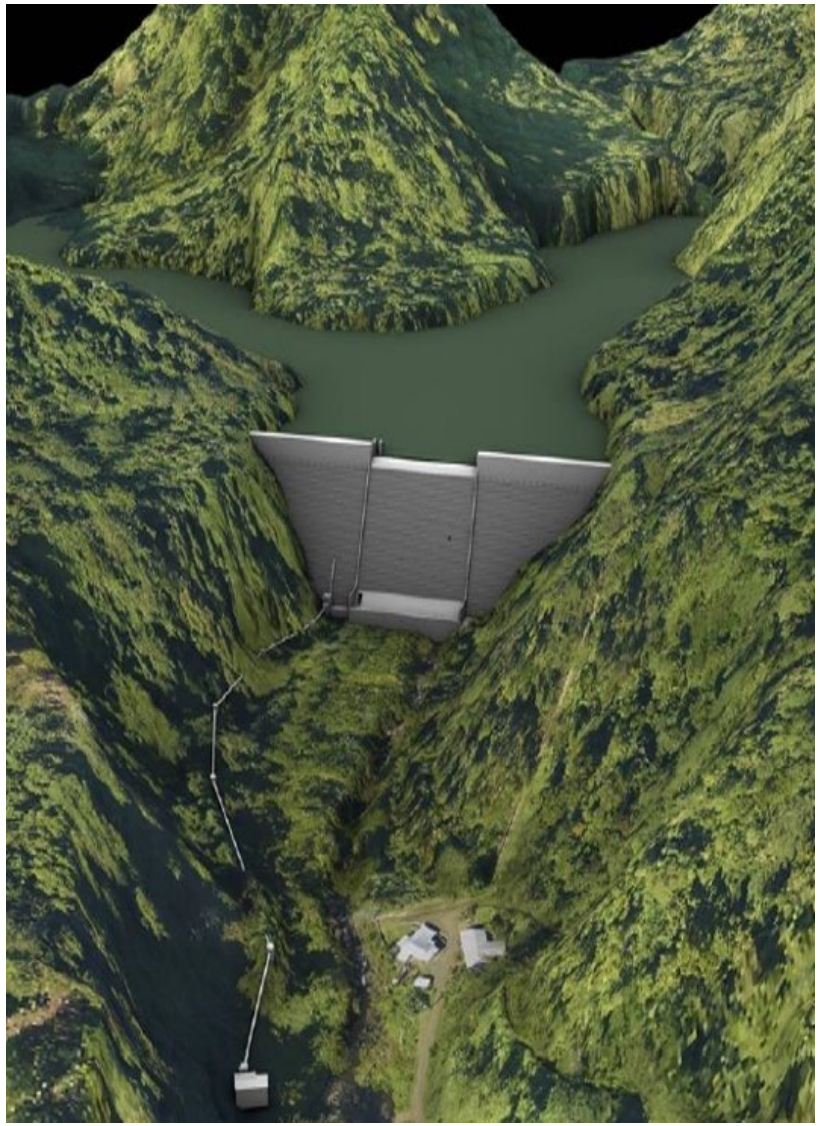
Mainstreaming biodiversity conservation and environmental flow in the Alaoa Multipurpose Dam project, Samoa

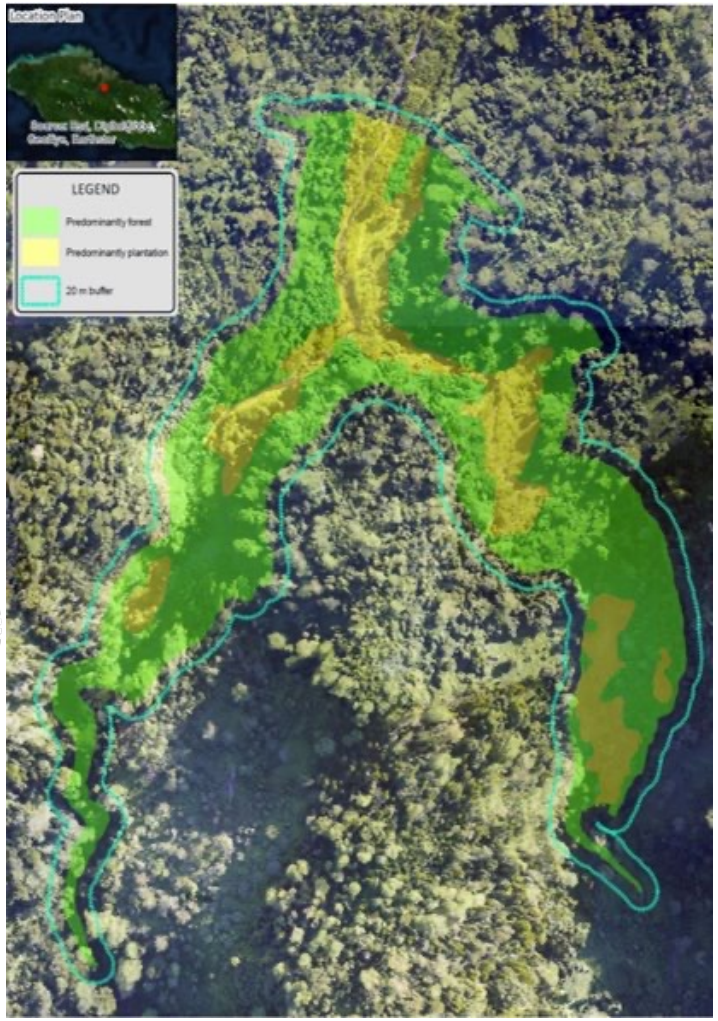
Francesco Ricciardi
Senior Environment Specialist
Sustainable Development and Climate Change Department, ADB

The proposed project:

- Multi-purpose dam coupled with small hydropower plant. The Project will help Samoa
  - (i) **attenuate Vaisigano River floods**; (ii) **increase the resiliency of the Apia water supply**; and (iii) **increase Samoa's renewable energy production capacity**.

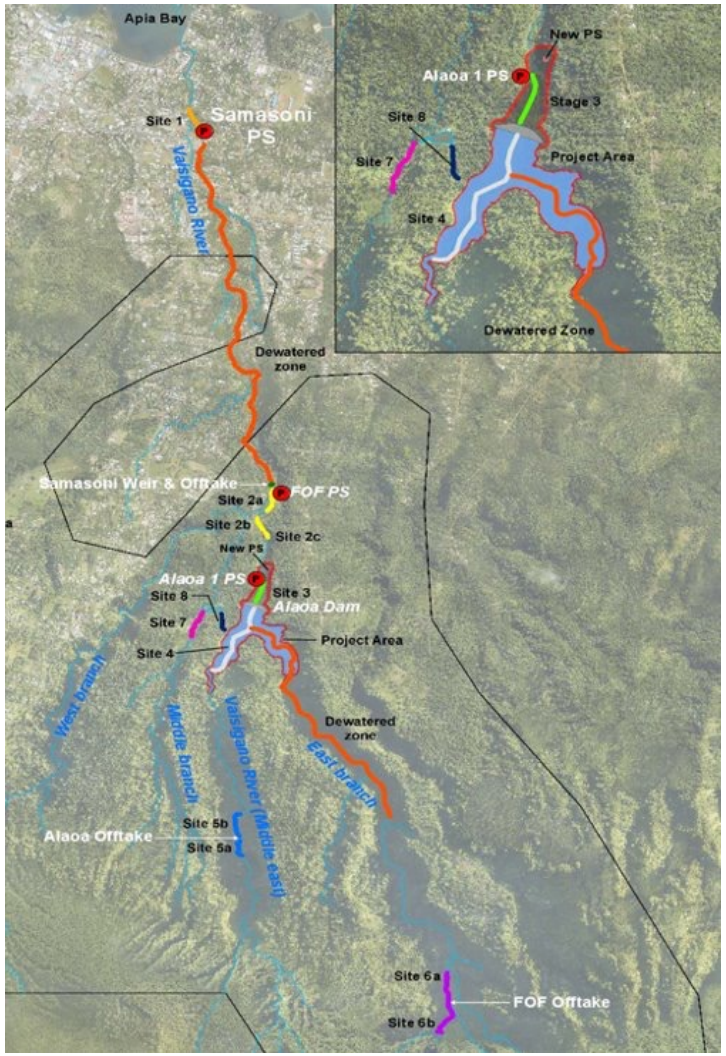


Challenges



- Almost one-third of freshwater biodiversity face extinction
- The proposed project is in **Critical Habitat** – both terrestrial and aquatic
- The environmental impacts could be irreversible, reducing habitat for critically endangered species and blocking upstream migration with unpredictable negative effects on livelihoods and ecosystem services

Proposed Solutions



- Consider **alternative designs and locations**
- Incorporate a **scientifically based environmental flow** in the Dam design
- Develop and mainstream a **Biodiversity Management and Monitoring Plan (BMMP)**
- Implementation of a **Biodiversity Offset Plan**, aiming to compensate the residual impacts to gain no net loss or even net gain in biodiversity

Plan developments at the river basin level

- Consider **early-stage, scenario-based assessments** that include in-depth EFlows assessments, biodiversity and social assessments.
- The proposed water-resource developments in a basin can be assessed leading to the selection of **viable configurations of future developments.**
- **Nature-based basin planning** should lead to reassessment and possible realignment of all existing and proposed proposals so that they do not destroy the integrity of the river ecosystems and the people who depend on them.

Thank You!

Francesco Ricciardi
Senior Environment Specialist
Sustainable Development and Climate
Change Department, ADB

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Principal Water Resources Specialist
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Moderated by Thomas Panella
Director
Environment, Natural Resources and Agriculture Division, ADB

CLOSING REMARKS

Thomas Panella
Director
Environment, Natural Resources
and Agriculture Division, ADB

Thank You!

谢谢你!

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Integrated River Basin Management Approaches: Lessons from the People's Republic of China and the Asia Pacific region.

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THE PEOPLE'S REPUBLIC OF CHINA

ClientEarth

PBL Netherlands Environmental Assessment Agency

Swiss Re

MINISTRY OF WATER RESOURCES
THE PEOPLE'S REPUBLIC OF CHINA

The Nature Conservancy

长江科学院
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Global Water Partnership
China Yangtze River

CAEP

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