

Future Earth in Asia: Priorities and Activities

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FE Platform

- Internationally collaborative
- Inter- and trans-disciplinary
- Solutions-oriented
- Co-designed and co-produced in partnership with the "users" of research

futurearth

research for global sustainability



photos: www.dawide.com

To provide the knowledge required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to global sustainability



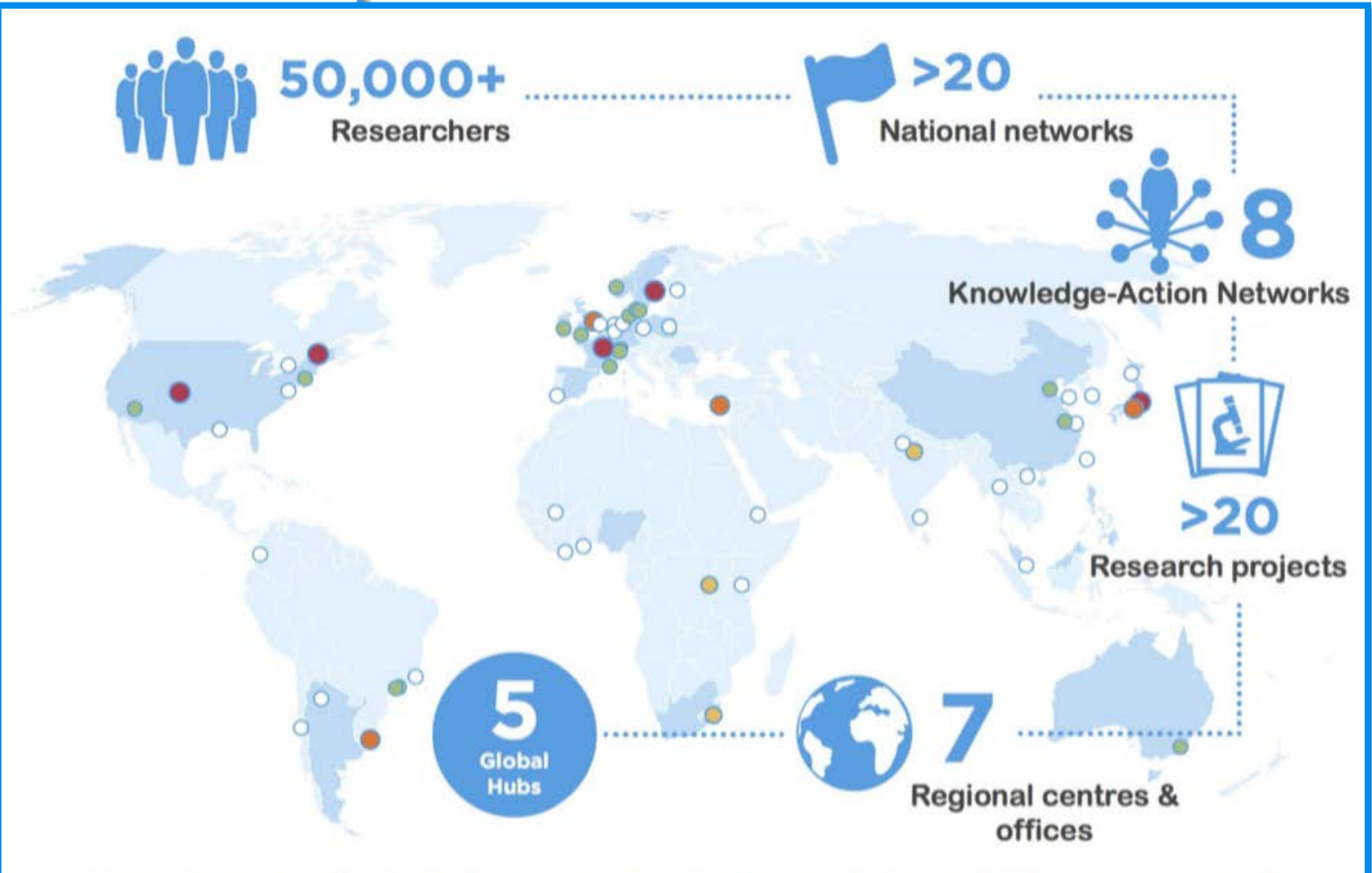
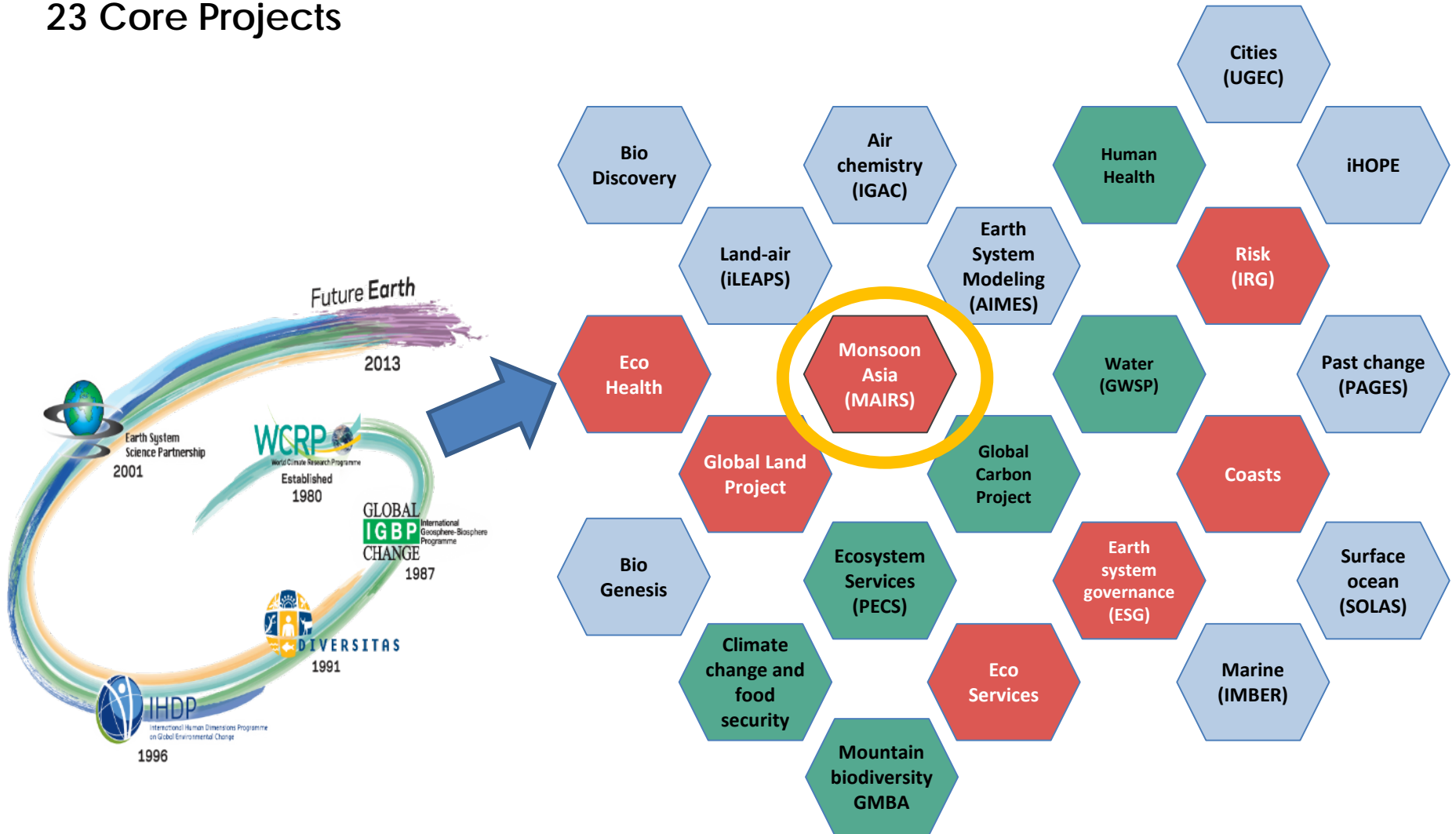


Figure 3. A map of Future Earth's regional architecture, including global hubs (red), regional centres (dark orange), regional offices (yellow), project offices (green) and projects (white). Countries in dark blue have national committees or networks.

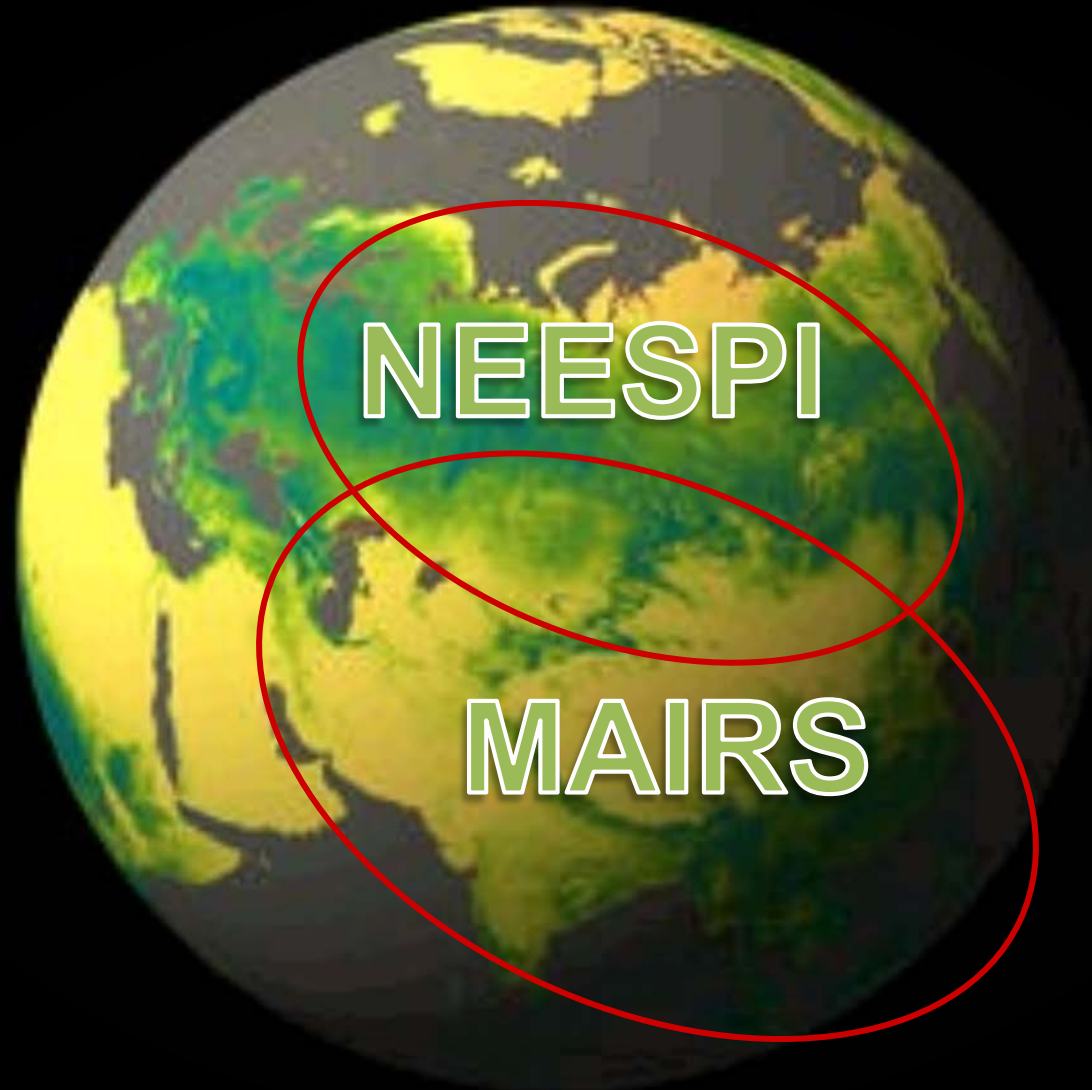
FORMALLY ALIGNED COMMUNITIES...

23 Core Projects

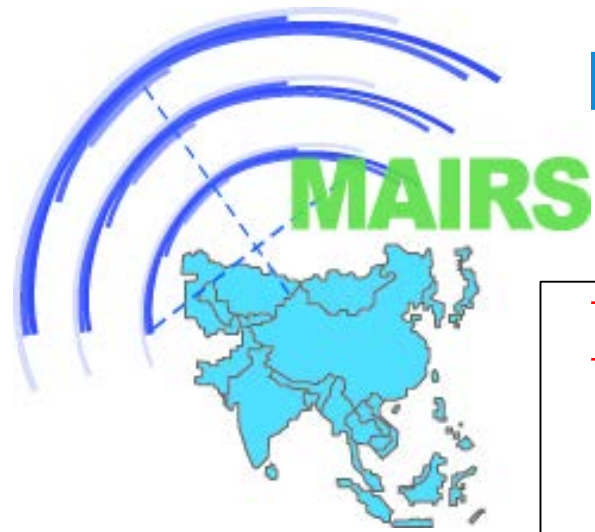


NEESPI and MAIRS

Two regional programs that cover Asia



MAIRS: MONSOON ASIA INTEGRATED REGIONAL STUDIES



Mission: To significantly advance the understanding of the interactions between the human-natural components of the overall environment in the monsoon Asian region, and implications for the global earth system, in order to support strategies for sustainable development.

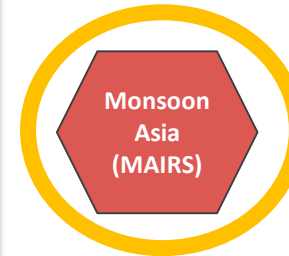


Initial Strategic Research Plan for Future Earth in Asia

Editors Michael Manton, Tetsuzo Yasunari, Aililkun,
Hein Mallee, Rodel Lasco, Ramachandran Ramesh



Monsoon Asia Integrated Regional Studies
2005 - 2015



MAIRS involved in and supported by LCLUC for projects, ST meetings, workshops and training since 2007

Open Science Conference
2014

Transition to Future Earth in Asia Core Project
2015





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10 Key issues identified

1. Co-design and co-implementation within diverse culture
2. Uniqueness of monsoon climate

Formation of FE Regional Hub and Center

5. Accelerated urbanization
6. Sustainable food, water and energy systems
7. Safeguard ecosystems
8. Pathways guided by Asian tradition and cultures
9. Social equity and inclusion
10. Institutions and governance



FUTURE EARTH: SECRETARY



5 Functions

- Coordination
- Research Enabling
- Communication and Outreach
- Capacity Building
- Synthesis and Foresights



Future Earth Hubs and Projects: 5 Hubs, 4 Regional Centers, 23 Core Projects, 60,000 Scientists

WHO WE ARE | NEWS & EVENTS | RESOURCES | RIHN | CONTACT

The Regional Centre for Future Earth in Asia builds networks among research communities and stakeholders in the region and promotes the Future Earth initiative in Asia to enhance global sustainability.

NEWS

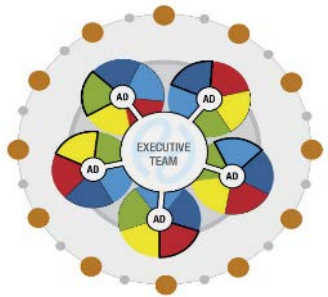
04 Apr 2016 | KYOTO, JAPAN

The Third Future Earth workshop on Water-Energy-Food Nexus

Co-design for sustainable development to be discussed at PSC-23 in Taipei

On 16 June, 2016, a session titled "Co-Design Science for Sustainable Society with Stakeholders" will take place at the 23rd Pacific Science Congress [PSC-

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“未来地球计划”中国国家委员会
Chinese National Committee for Future Earth

futureearth
Research for global sustainability

ICSU
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Objectives
CNC-FE Science
Committee
Research Priorities
People

Research Priorities

1. Pollutions linked with environmental and climate Change

Theme 1: Pollutions linked with Environmental and Climate Change (PECC)
(PI: ZHANG Xiaoye)

Scope
FE Theme 1: Dynamic Pollutions;
FE Theme 3: National Development and Transformation Towards Sustainability

- How do **air, water and soil pollutions** change due to human activity and natural phenomena?
- What factors of the **environment, climate, societal trends, drivers and processes** affect these changes and how they interact?
- How to comprehensively characterize the status of environmental pollution at different spatial scales?
- What are the key driving forces of environmental pollution, and their interactions?
- What are the **options, opportunities and risks** of the changes **towards sustainability**? How are they related to human health, emerging technologies and economic development pathways?
- How should the **national pollutions be governed and managed sustainably**? What are their **linkages with regional and global** environmental and climate changes and governance?

Goals

- **Research** – causes of **pollutions in China, future changes and cascading effects**
- **Knowledge Back-up** – PECC scientific outputs and related **national countermeasures**
- **Dissemination** – effective influences on **policy-maker** and dissemination to the **public**
- **Outreach** – communications, education and training of PECC from **science to society**

THEMES FOR FUTURE EARTH

Japan

1. Water-energy-food nexus
2. Biodiversity
3. Urban-rural interactions
4. Sustainable Technology & institution
5. Natural disasters

China

1. Pollution linked with environmental and climate change
2. Urbanization and social harmonic development
3. Climate variability over monsoon region and human activities
4. Global change and responses on critical zones
5. Food, Energy Supply and Future Development
6. Biodiversity and ecosystem services
7. Industrial transformation and green production
8. Disaster early warning in the context of global environmental change
9. East Asia traditional culture and sustainable development
10. Sustainability in polar regions
11. Observations and knowledge services for the earth system
12. Earth system model, climate economy model and scientific policy

KNOWLEDGE ACTION NETWORK (KAN) SET – ASIA PRIORITIES

8 Challenges



8 Challenges	3 Themes	Dynamic Planet	Sustainable Development	Transformations to Sustainability
1. Water, food, energy for all		Food-Energy-Water Nexus		
2. Decarbonise socioeconomic systems & adapt				
3. Safeguard natural assets		Natural assets		
4. Build healthy, resilient cities		Future cities		
5. Sustainable rural futures				
6. Improve human health under GEC				
7. Sustainable consumption and production				
8. Social resilience to future threats		Risks Reduction		



3 themes

62 SRA



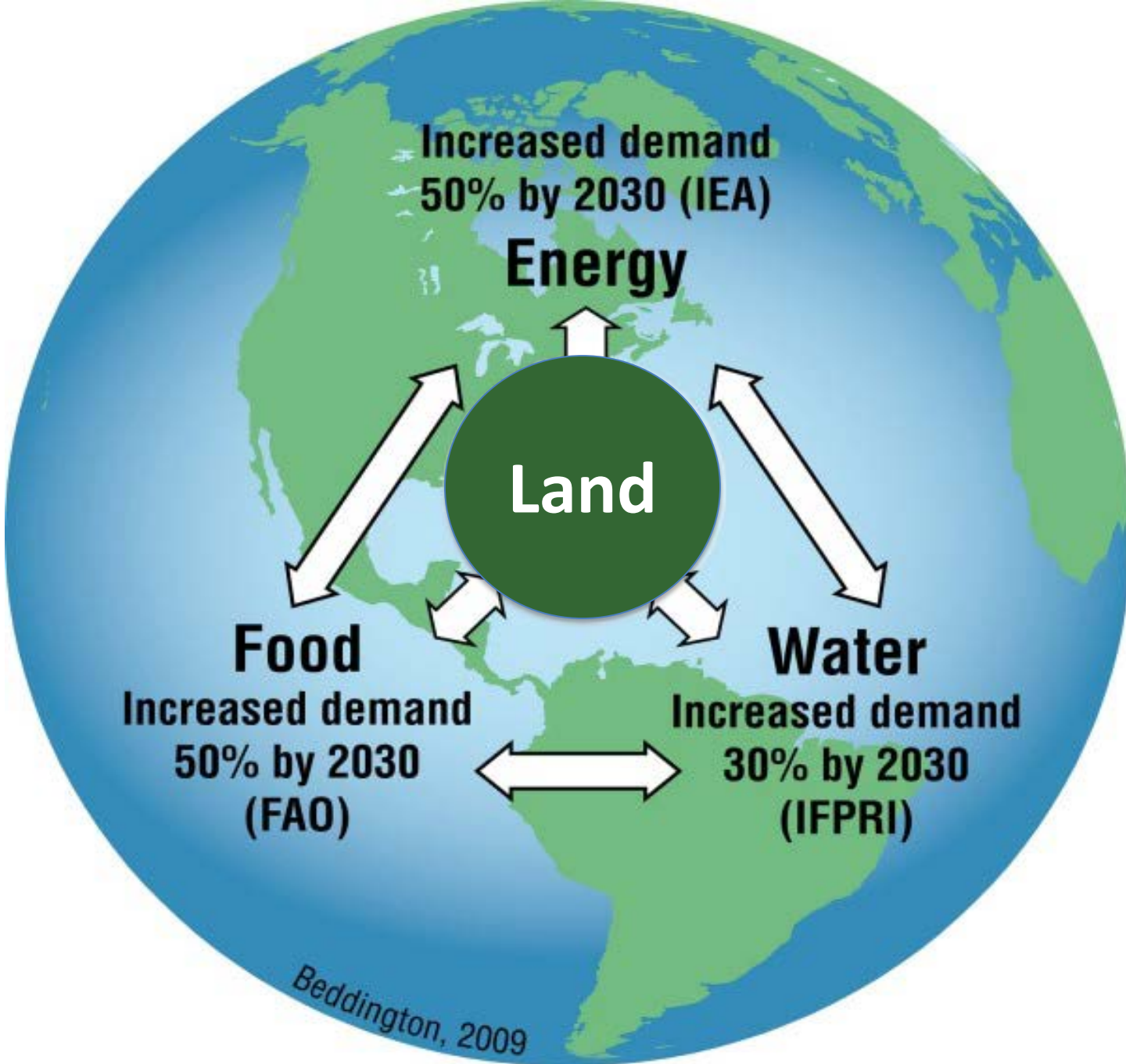
SDGs

Table 1. Knowledge-Action Network statuses and targets 2016-2018

Knowledge-Action Network	Current status	2016-2018 targets
<p>Water-Energy-Food Nexus</p>	<ul style="list-style-type: none"> • Formed initial development team, including members from the Core Projects, Science Committee and external partners • Launched discussions on the initial streams of activity • Will Launch Belmont Urban Nexus 	<ul style="list-style-type: none"> • By Q2 2017, will complete the scoping process for the initial activity streams and will submit science and engagement plan to the Governing Council • By Q3 2017, will receive funding for a series of research proposals on the Nexus in the urban context from the Belmont Forum • By Q4 2018, will publish reflections from the
<p>Cities</p>	<ul style="list-style-type: none"> • Launched discussions on the initial streams of activity based on the outcomes of the Livable Urban Future Cluster • Book edited by the Urban FTI project in progress • Engaged in the Habitat III policy process with a white paper in preparation • Formed development team and will launch in April an internal consultation process and formed development team • Will launch Belmont Urban Nexus call (expected Q4 2016) 	<ul style="list-style-type: none"> • By Q1 2017, will complete scoping process to define a research, engagement and fundraising plan • By Q1 2017, will form development team • By Q1 2017, will prepare funding proposals to be submitted to the Belmont Forum, INFEWS and ERANET • In 2016-2018, will produce a series of synthesis products, including the launch of the Urban FTI book at the Habitat III conference in Quito, Ecuador

WEF NEXUS IN ASIA



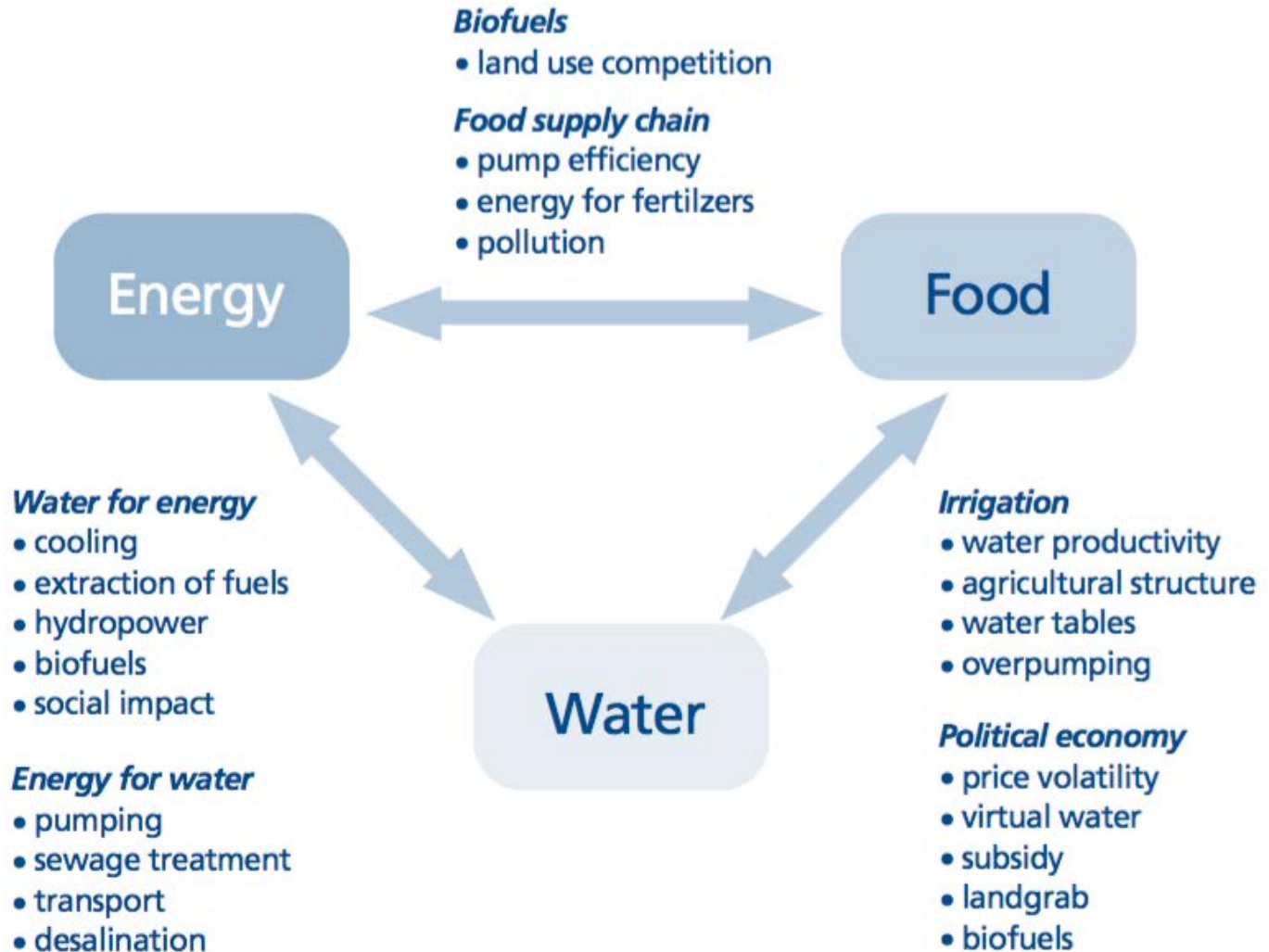


Global Challenges

- Adaptation to climate change
- Population growth (societal changes, consumption patterns)
- **Water: Support more with the same or less**
- **Food: Produce more with the same**
- **Energy: Generate more with the same resources**

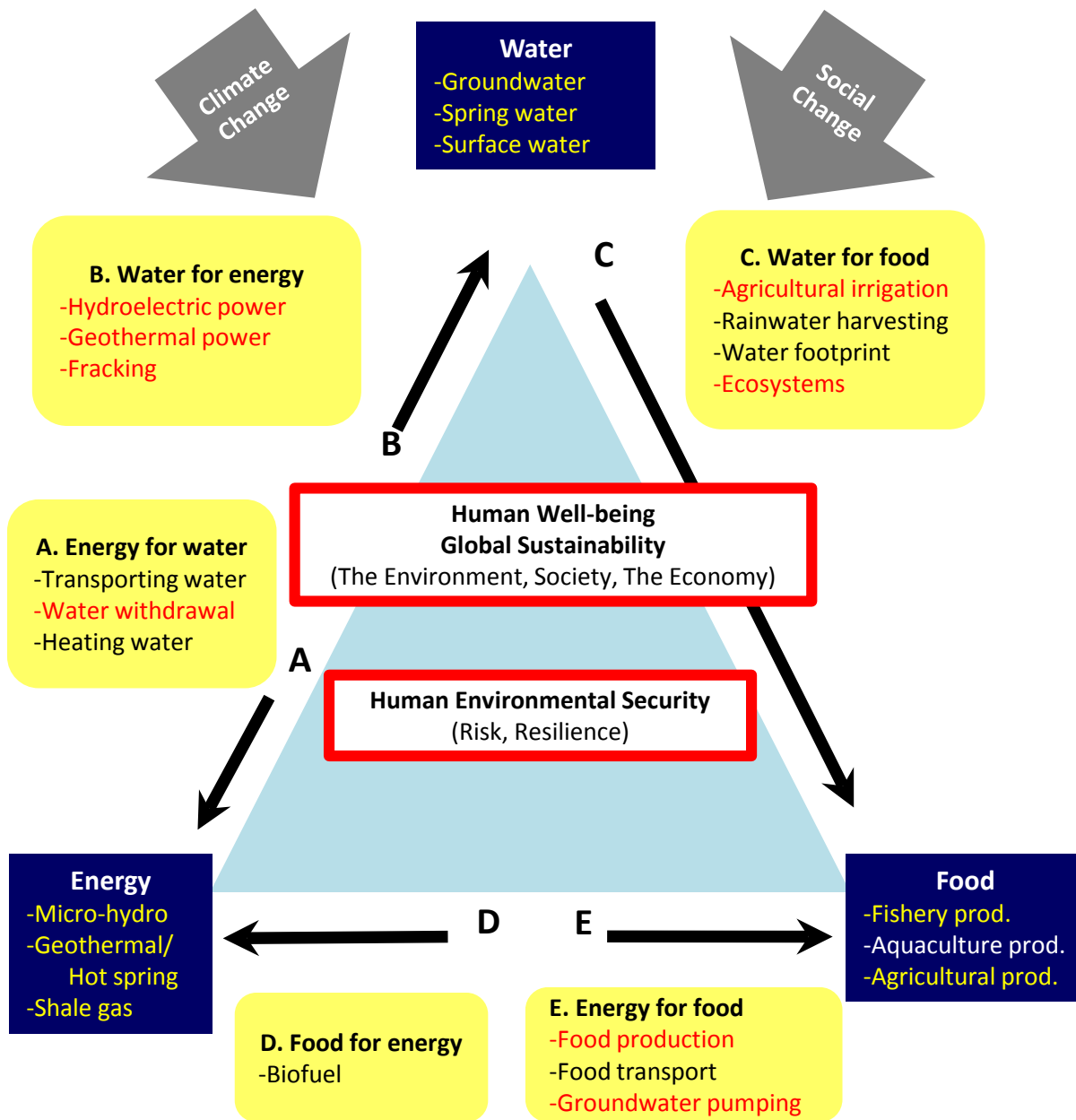
WEF NEXUS IN ASIA & PACIFIC

Figure 2. Schematic of the WFE nexus and its constituent issues.



Belmont
Call
coming up
soon!

RIHN Nexus



Background

Increase pressure on water, energy & food resources presenting communities with increased levels of tradeoffs and potential conflicts

Demands for water, energy & food are estimated to increase by 40%, 50% and 35% by 2030

Purpose

Design optimal policy to increase human-environmental security within the complexity of water-energy-food system

SOME UNIQUENESS OF ASIA

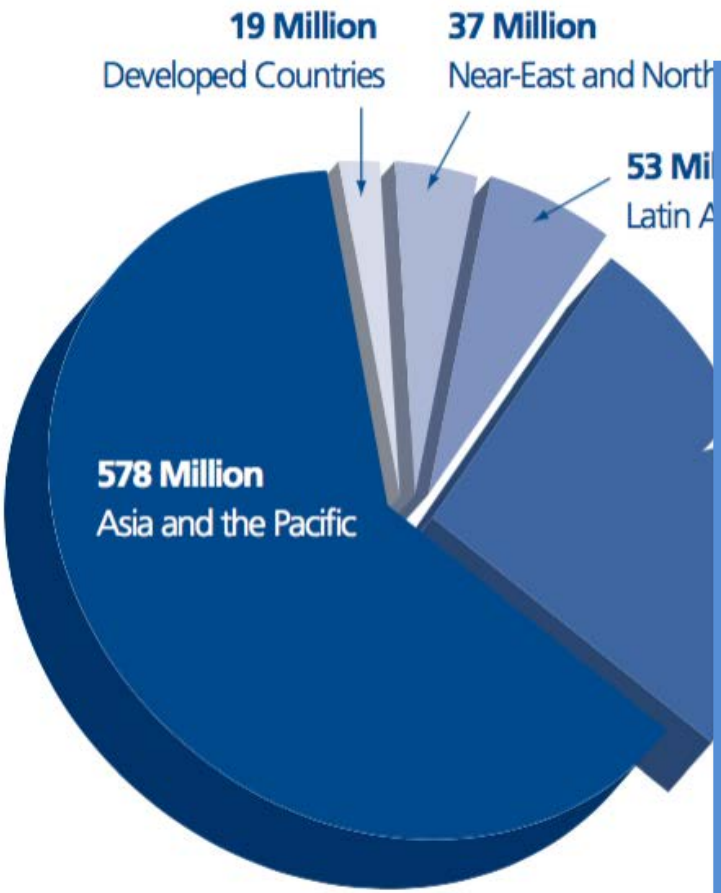


- MUCH TIGHT TELE-CONNECTIONS



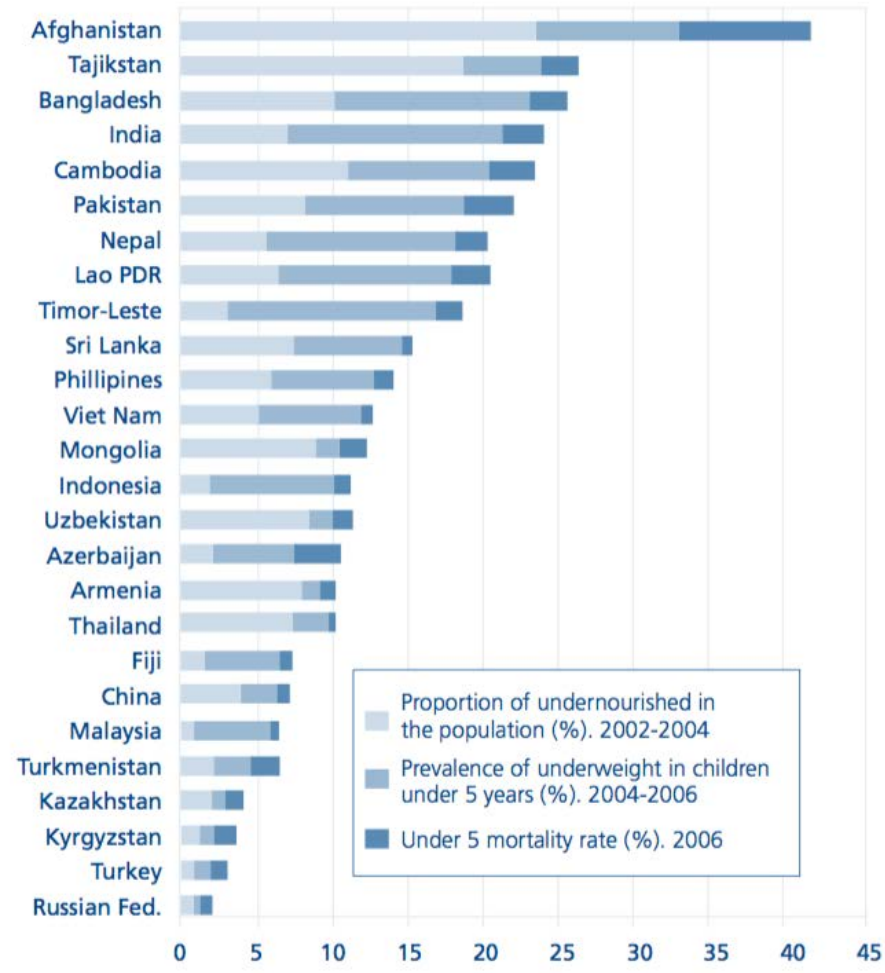
• LARGE NUMBER OF UNDERNOURISHED POPULATION

Figure 9. Undernourished population by region, 2010.



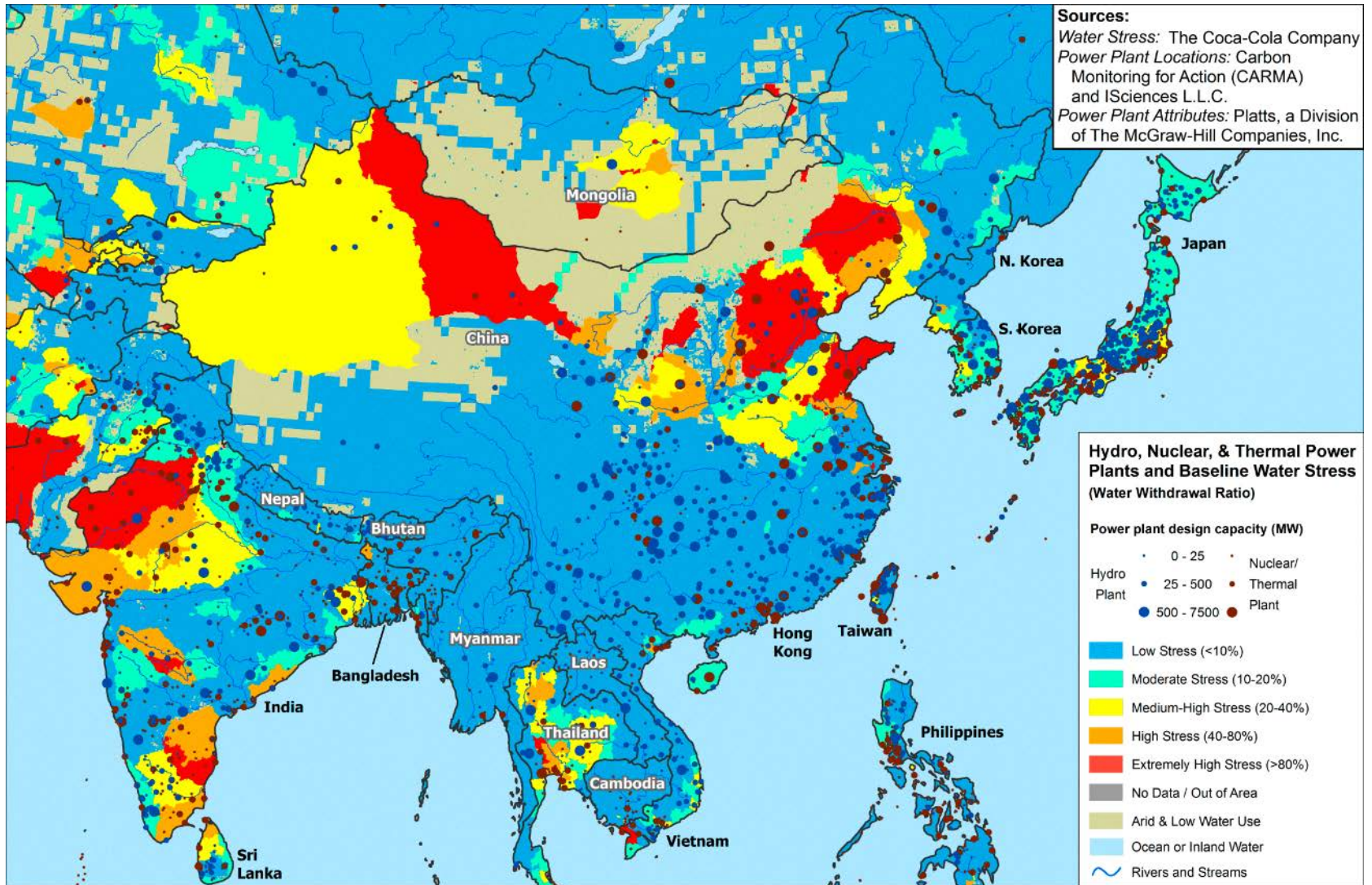
Source: FAO-ROAP (2010).

Figure 11. Global Hunger Index in Asia and the Pacific.

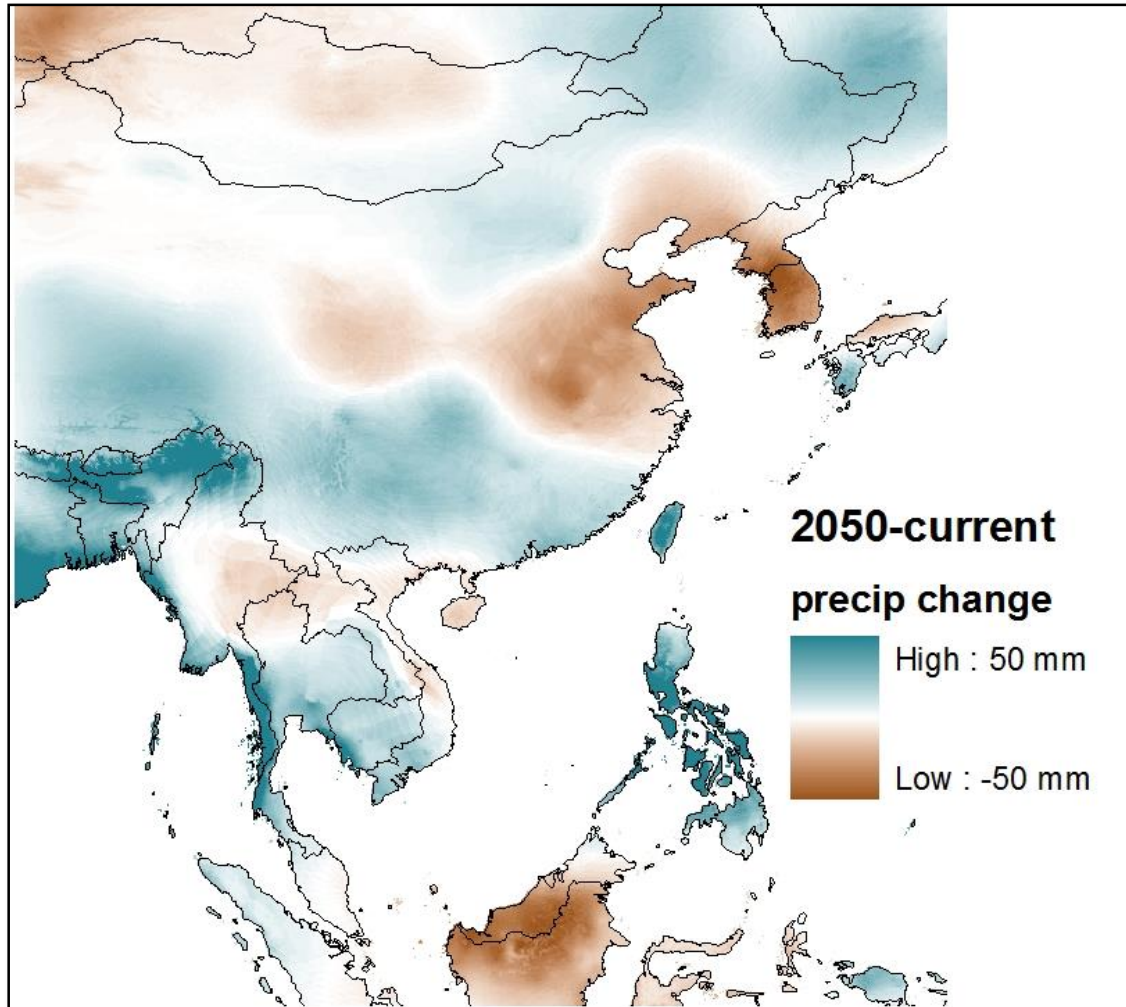


Source: UNESCAP (2009).

• SEVERER WATER STRESSES



- **THERE IS A GREAT VARIATION IN PREDICTED CLIMATE CHANGE ACROSS THE SOUTHEAST ASIA**



• SEA LEVEL RISES IMPACTS

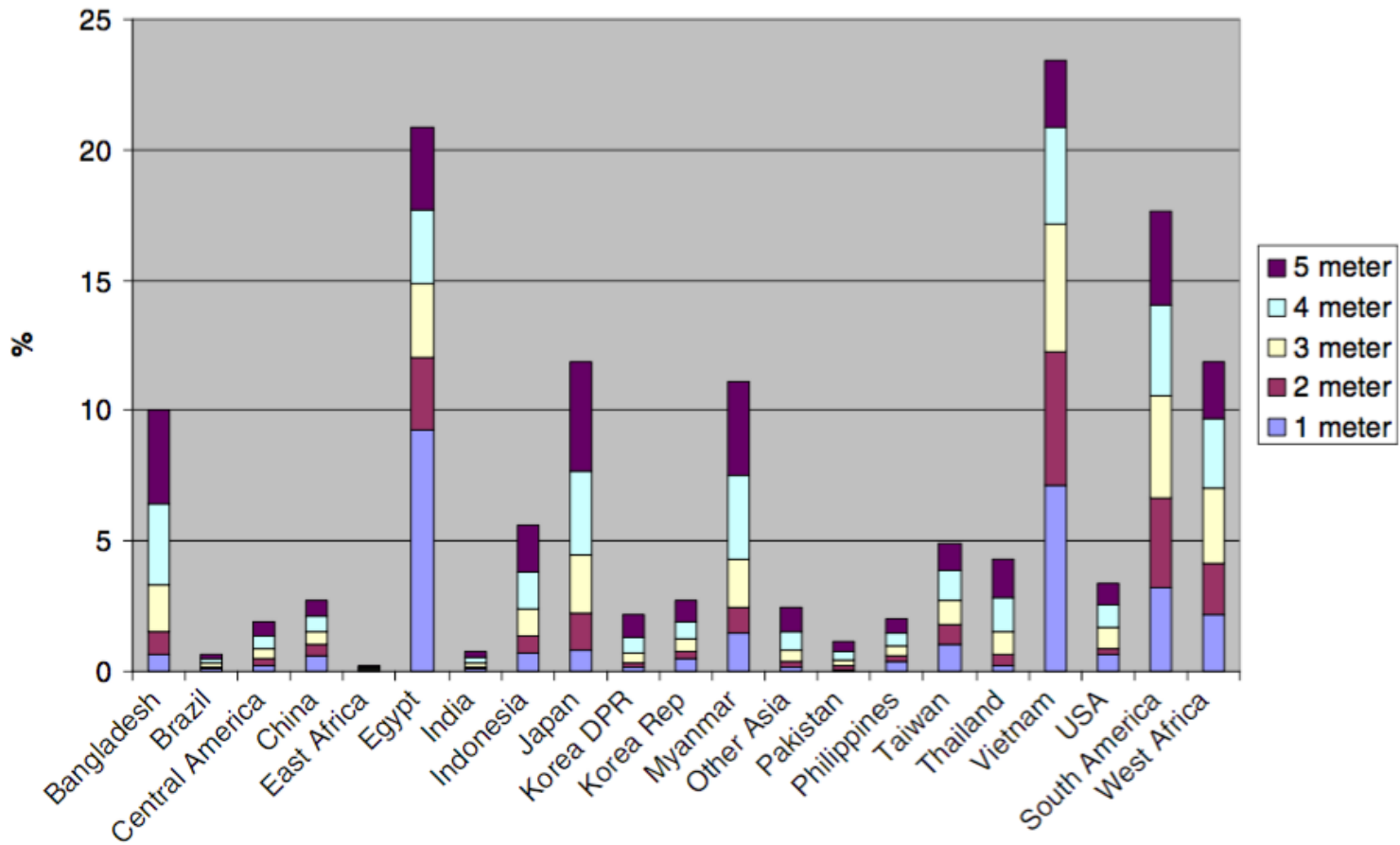
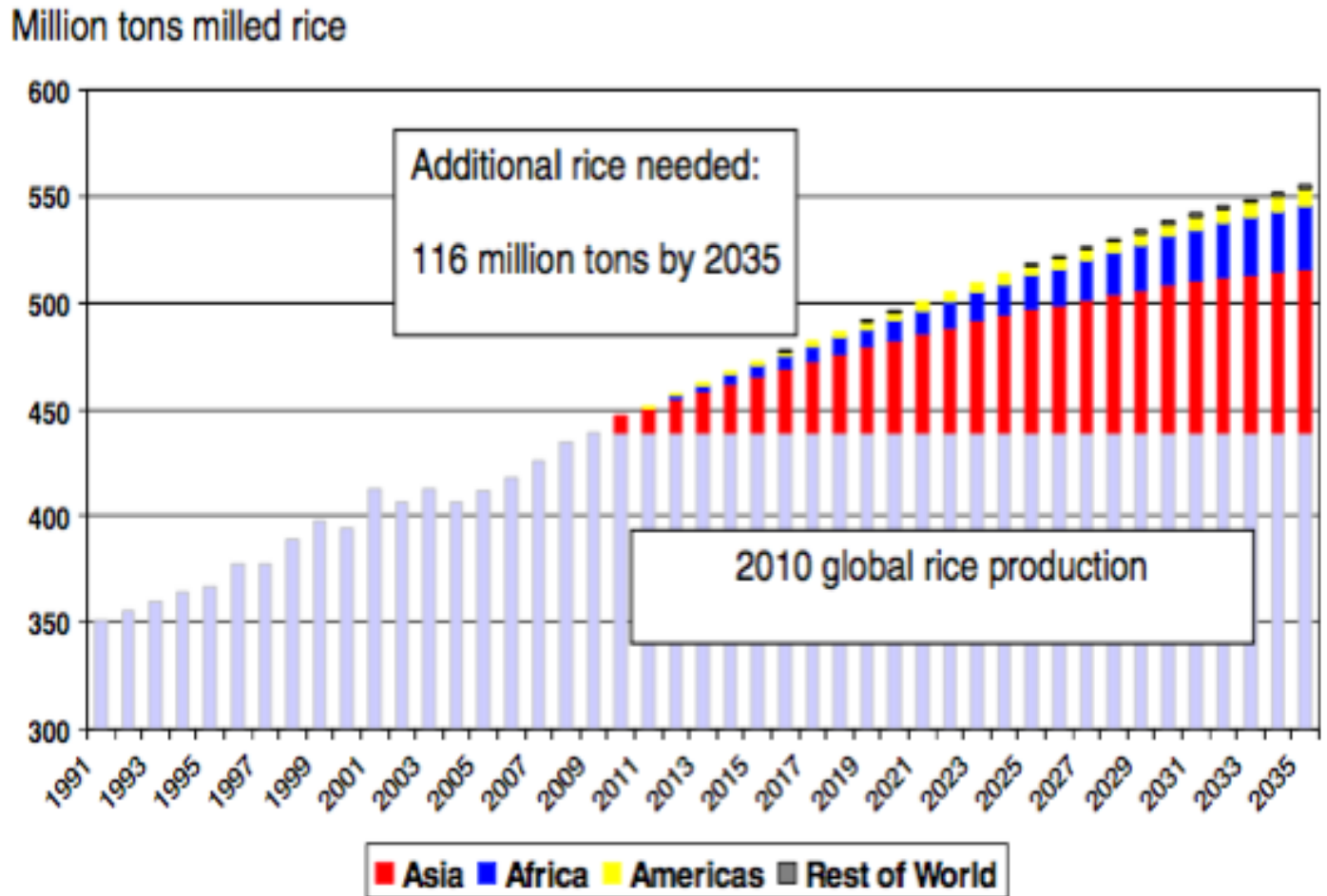


Fig. 1 The percentage impacts of sea level rise on agricultural land

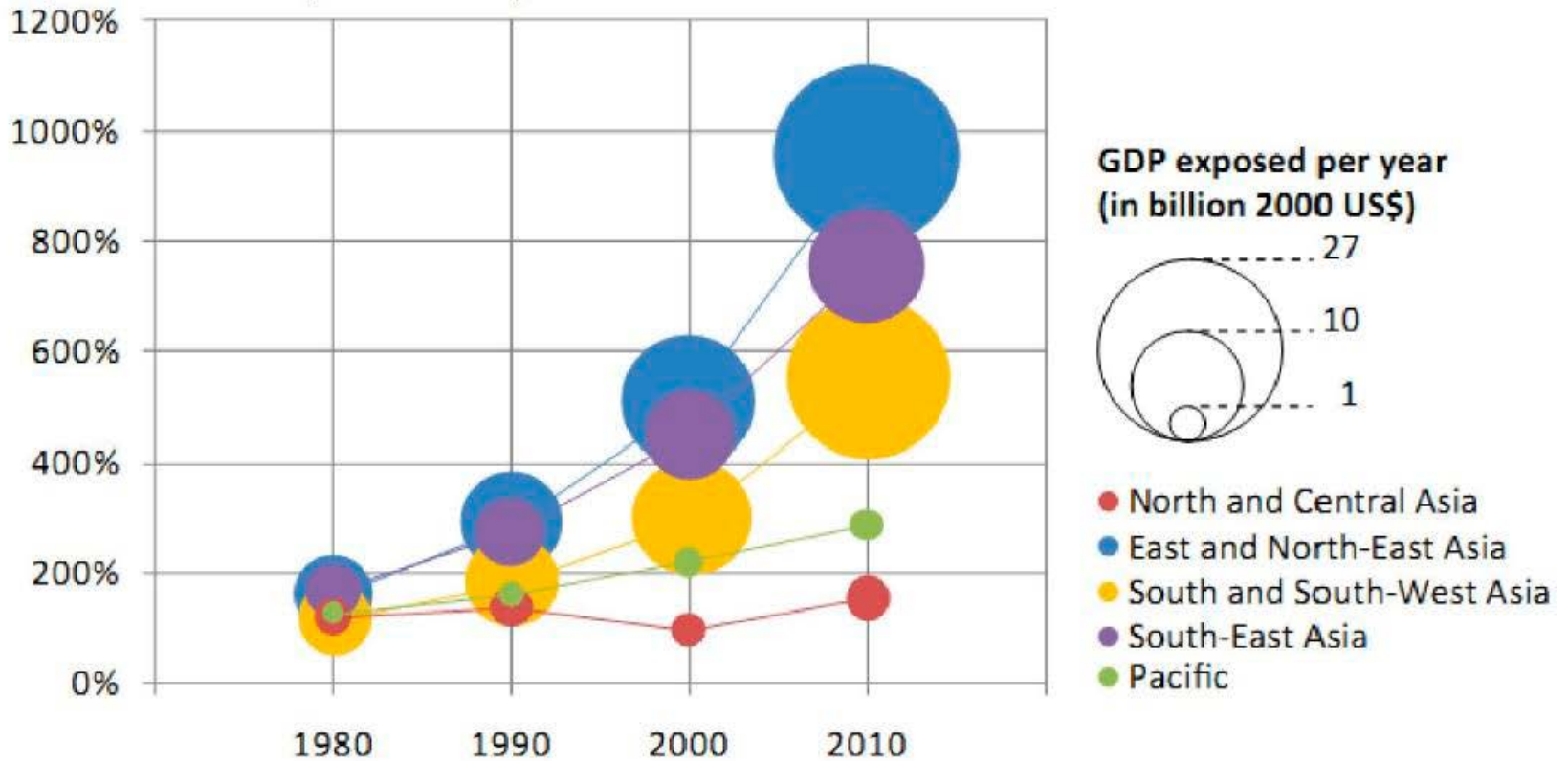
• DIET PATTERN: RICE DEPENDENT NATIONS

Fig. 4 Global rice production increases needed to meet demand by 2035 (IRRI, AfricaRice, CIAT 2010)



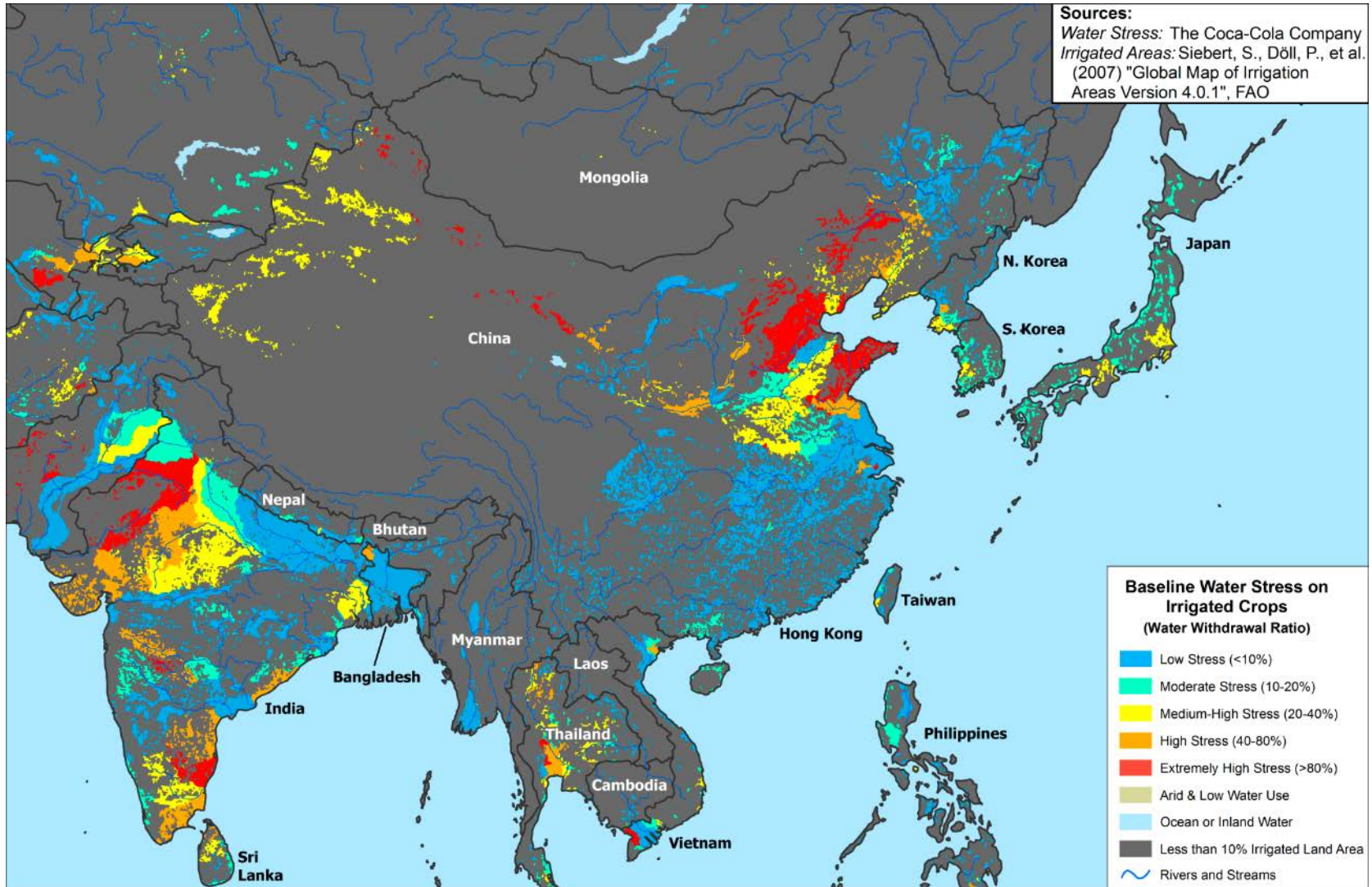
• DISASTER PRONE

Exposure increase (1970 = 100%)

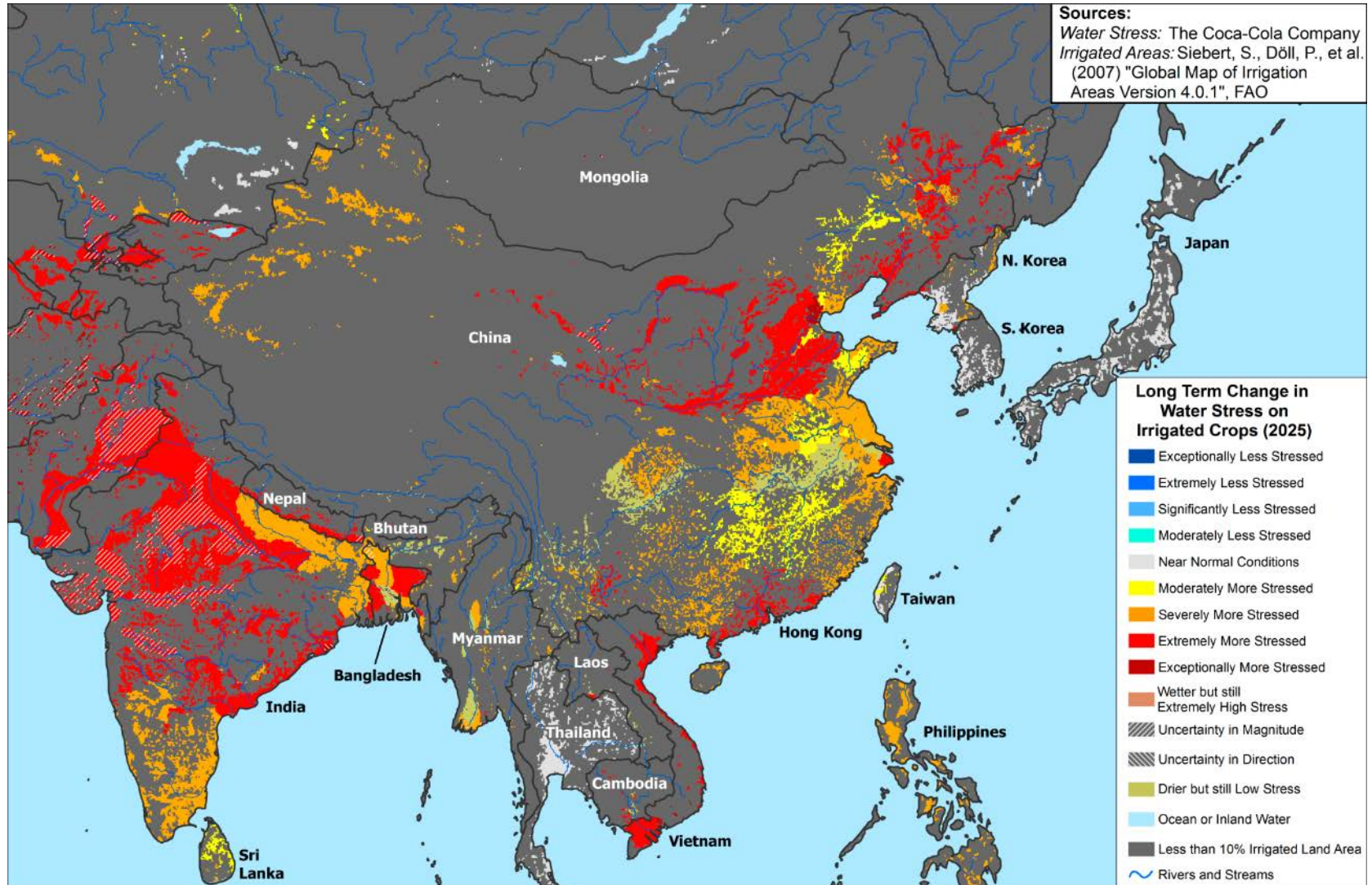


Source: UNISDR, Global Assessment Report on Disaster Risk Reduction, Geneva, 2011. Global analysis, reprocessed at subnational level by UNEP/GRID Geneva

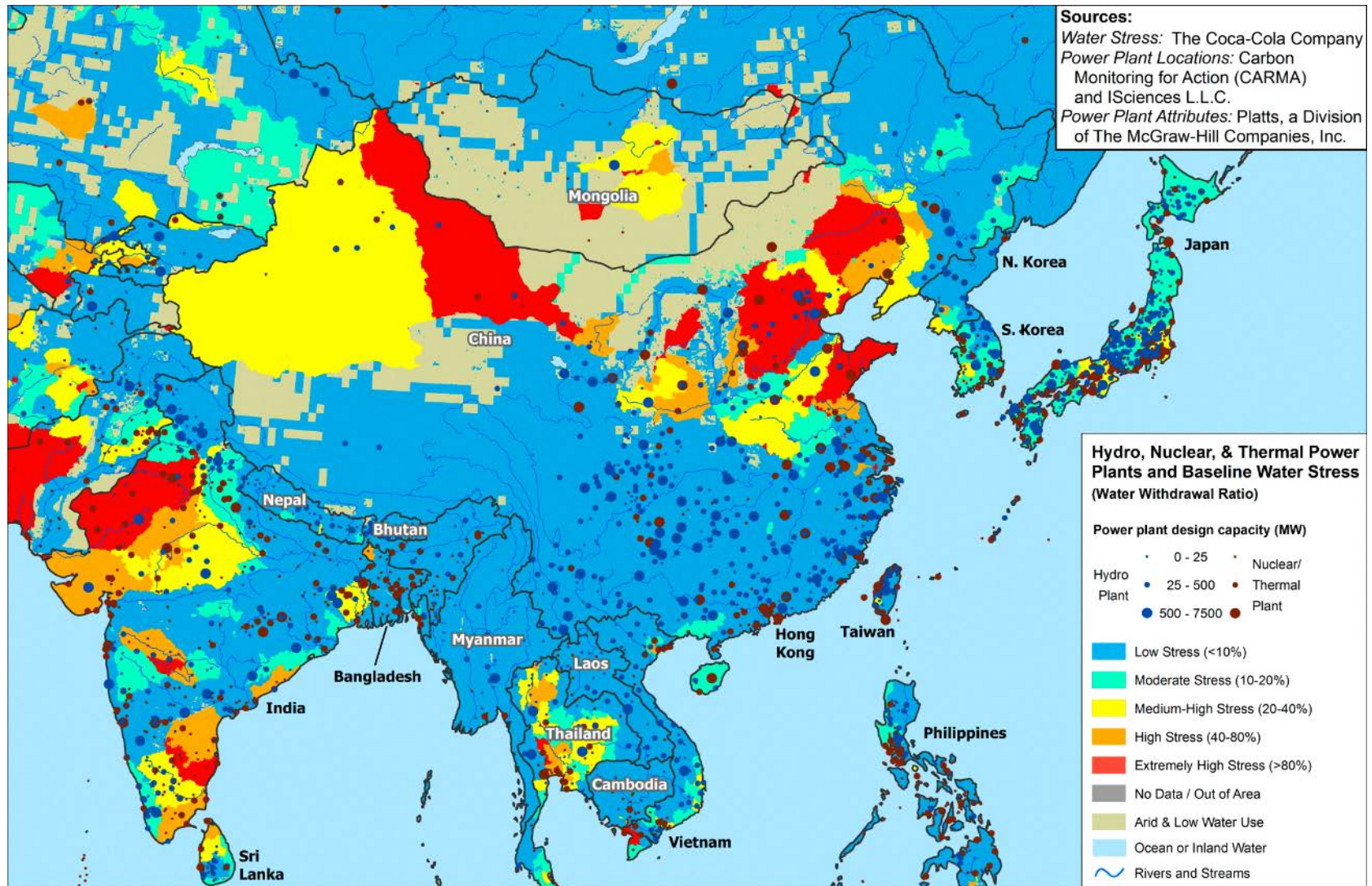
Water and Food Baseline: 2000



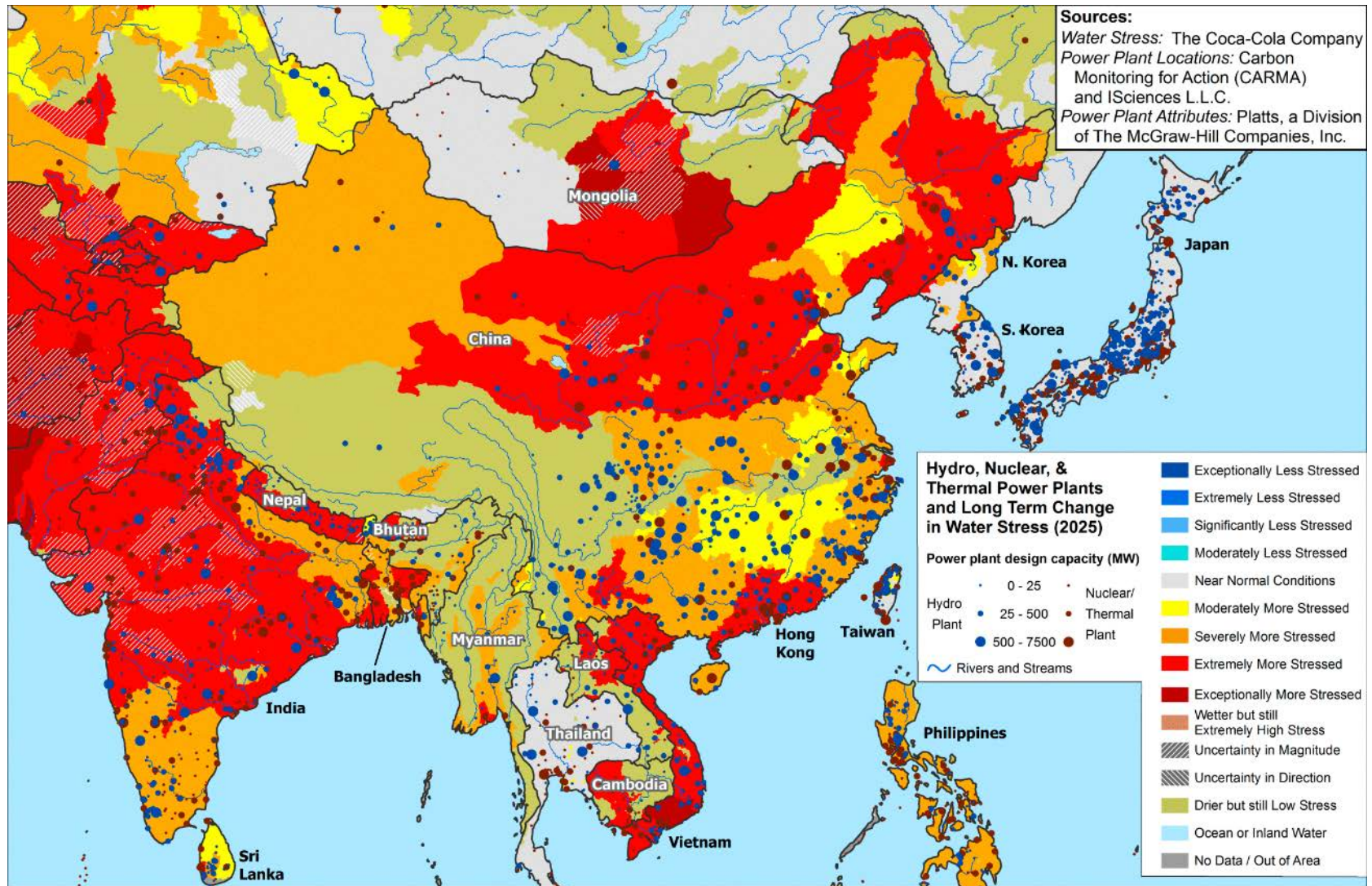
Water and Food: 2025



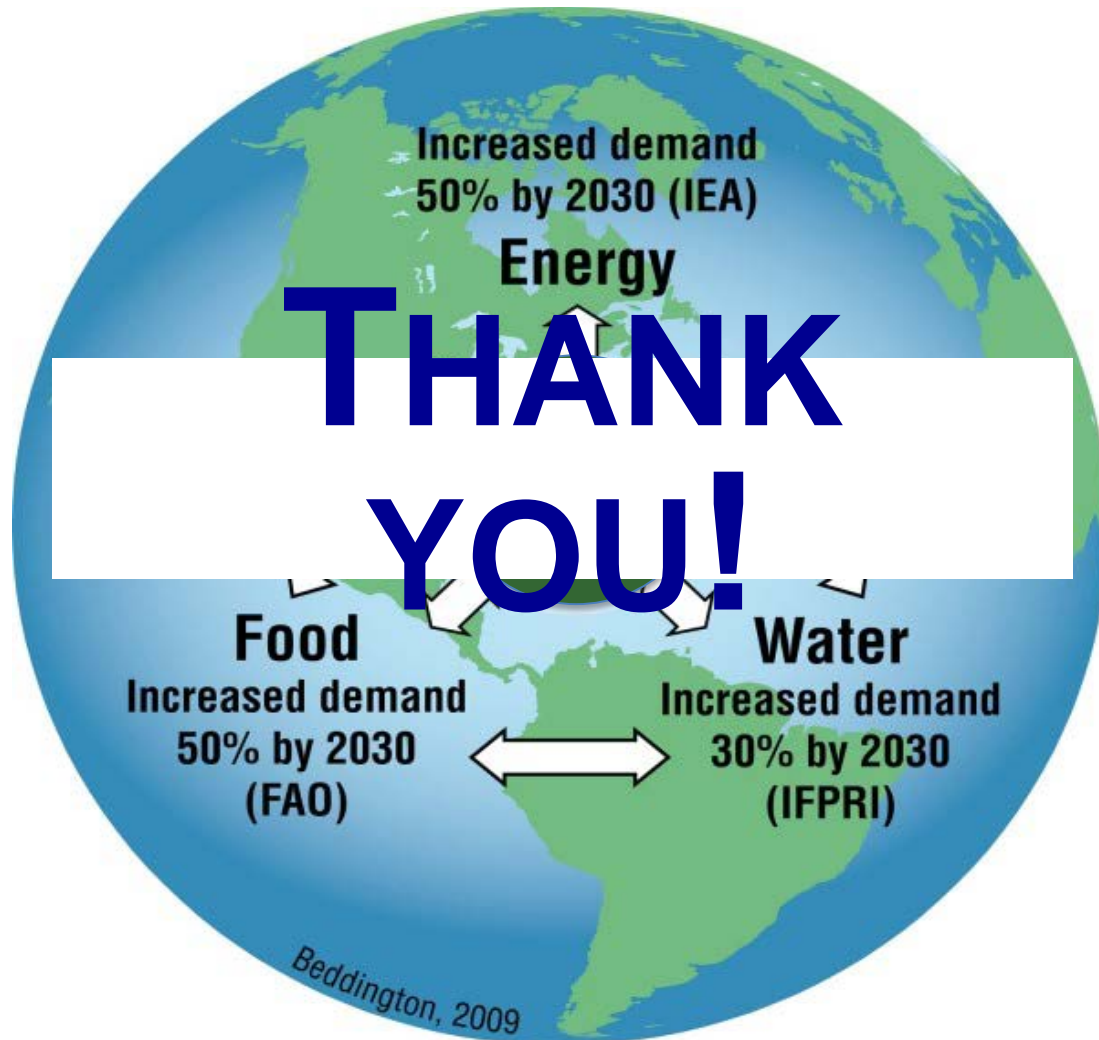
Water and Energy Baseline (2010)



Water and Energy: 2025 under A1B scenario



FUTURE EARTH? FUTURE LCLUC?



FE WEF Nexus Workshop Series:

- What is the role of observations and governance in the WEF Nexus?

At the 20th LCLUC Anniversary

- What is the role of the land system in WEF Nexus?
- What is the role of the LCLUC in WEF Nexus?
- Why Asia?