



**Food and Agriculture  
Organization of the  
United Nations**

# **WATER ENERGY FOOD SECURITY: FAO'S APPROACH**



## Water Energy Food Security Nexus

Water, Energy and Food Security are inextricably linked

- Water for Agriculture and food production
- Water for energy generation
- Energy for food production and irrigation

Agriculture consumes 70% of fresh water Globally.  
Food production consumes about 30% of energy

### Pakistan

**Agriculture consumes over 90% of fresh water.**  
**Agriculture about 10% of total energy consumed.**

Demand on water and energy is increasing as a result of population and increasing temperature due to climate change

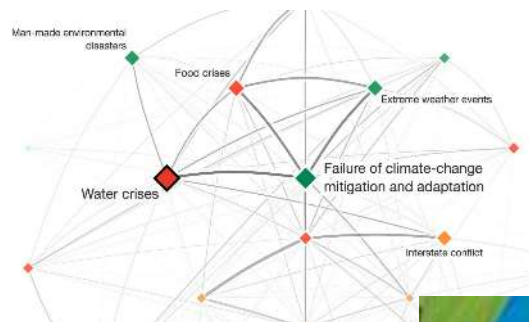
Understanding and managing the complex interactions between water, energy and food security is essential to cope with changing climate and for achieving SDGs



## The nexus concept and its added value

- Flexible concept, it provides a platform for building a common language and, thus, dialogue
- Not entirely new, but it is a critical frame for times of heightened competition and trade offs
- Provides space for dialogue across and within sectors by clearly recognizing interdependencies, conditions and constraints

Economic Forum 2008, Global Risks

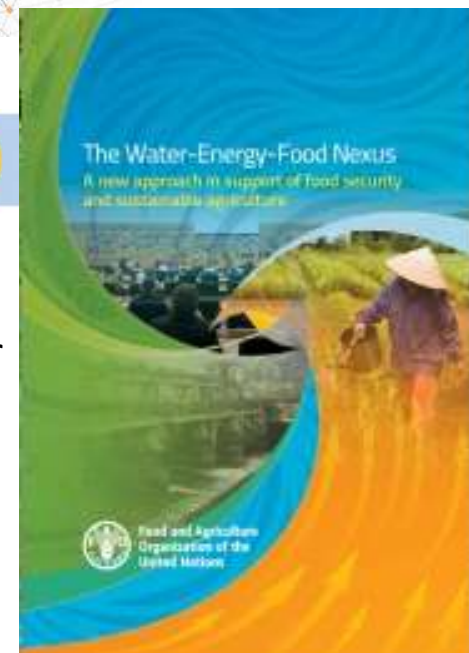


Bonn Nexus Conference 2011

**Bonn2011 Conference**  
The Water, Energy and Food Security Nexus  
Solutions for the Green Economy  
16-18 November 2011



FAO publication: nexus for  
food security and  
sustainable agriculture



“The Water-Energy-Food Nexus describes the complex and inter-related nature of our global resources systems”

“It is about balancing different resource user goals and interests – while maintaining the integrity of ecosystems”



## Water for Food

- Daily water requirements per person:
  - Drinking: 2 - 3 litres
  - Domestic needs: 20 - 300 litres
  - Food: 2 000 - 3 000 litres
- Water needed to produce:
  - 1 kilo of wheat: 1 000 litres
  - 1 kilo of rice: 2 500 litres
  - 1 kilo of veg.: 322 litres

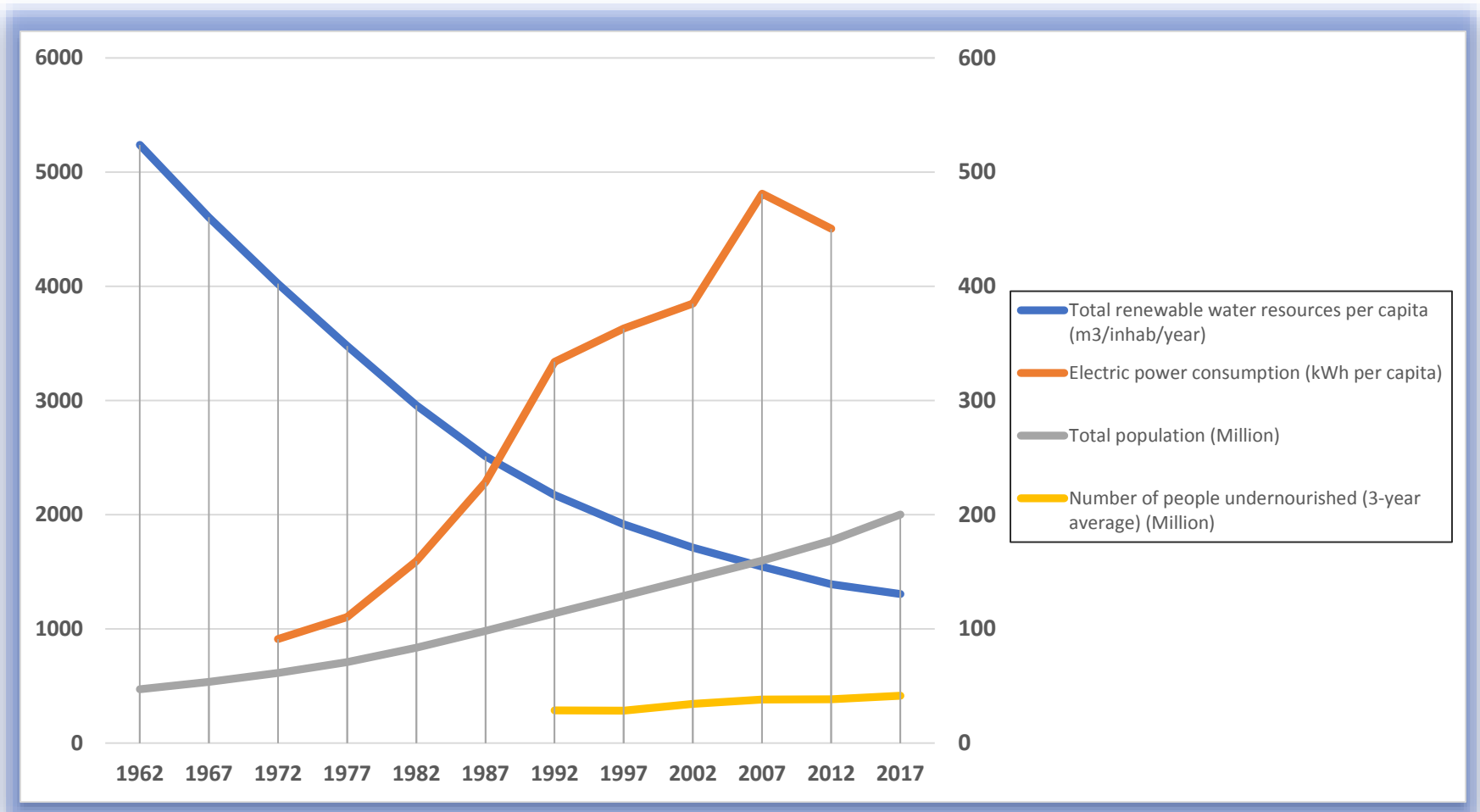


## Water for Energy

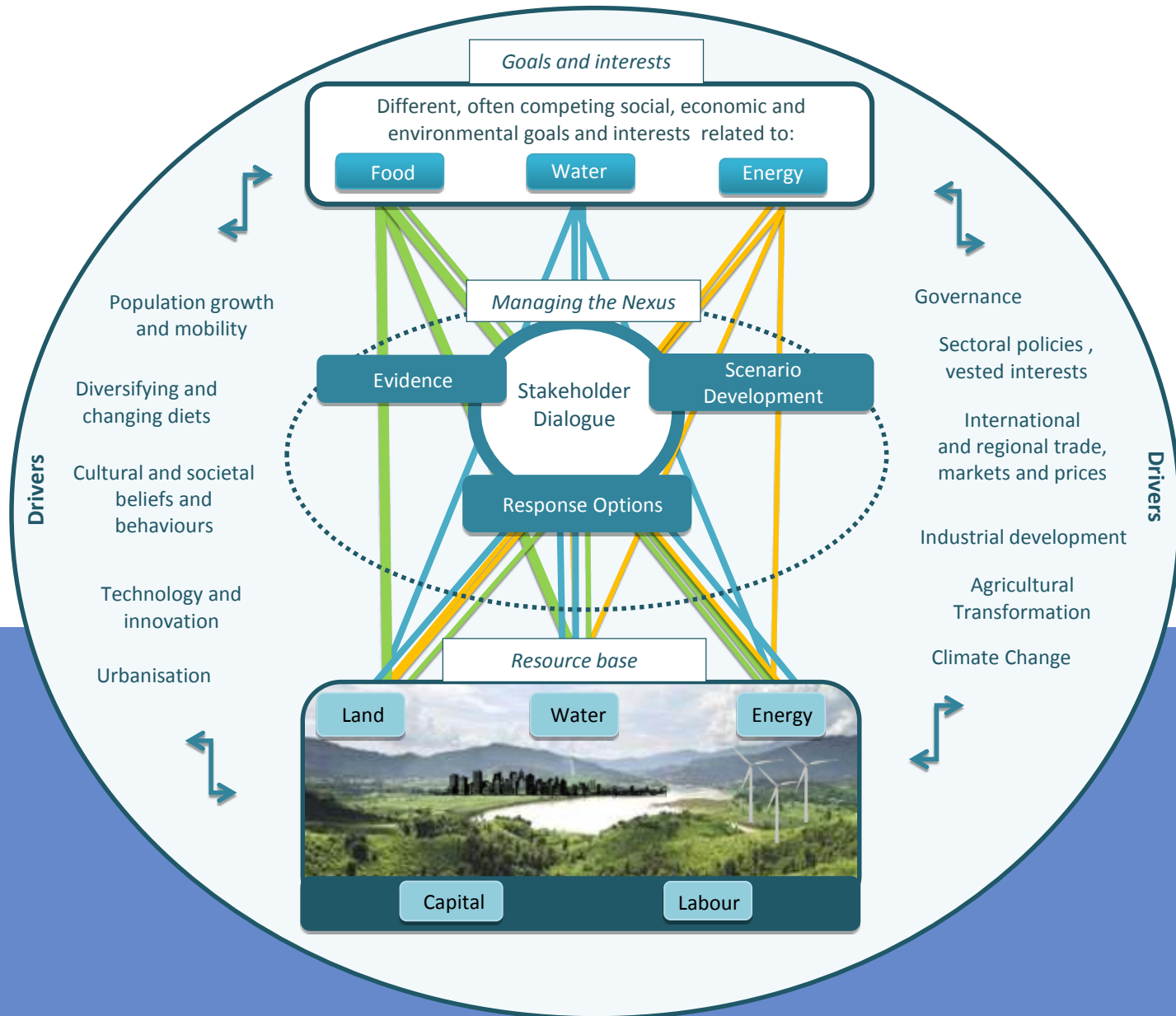
- 1 kcal of food  $\approx$  1 liter of water
  
- with 2 500 liters of water we can:
  - feed one person for one day
  - drive 15 km on biofuel
  
- Hydropower – Timing? Water diversion from agriculture and/or industrial food production and sanitation?



## Population, Water Availability, Food Security and Energy Nexus



# The FAO approach to the Water-Energy-Food Nexus





## Pakistan – Analysis and Climate Change Projections

Climate change is already impacting the water, energy, food nexus in Pakistan.

Yields of major crops will decrease whereas crop water requirement will increase as a result of increasing temperatures.

Outdated Agriculture practices, poor knowledge transfer and decision making at farm level.

Demand for water, energy, food is increasing – hence intensifying pressure on land and water resources to produce more food and more energy.





## FAO Approach - Way Forward to reconciling competing interests and trade offs

- Build evidence:
  - data and analysis
  - understanding the complexity
- Engage Stakeholders – this is key
- Develop scenarios
- Design response options and working areas:
  - Policies (Water, Ag/Food security, poverty) interventions
  - Institutions, Technologies and people
  - Across sectors and within sectors
  - Clear accountability framework
- Ensure alignment of all investments and initiatives

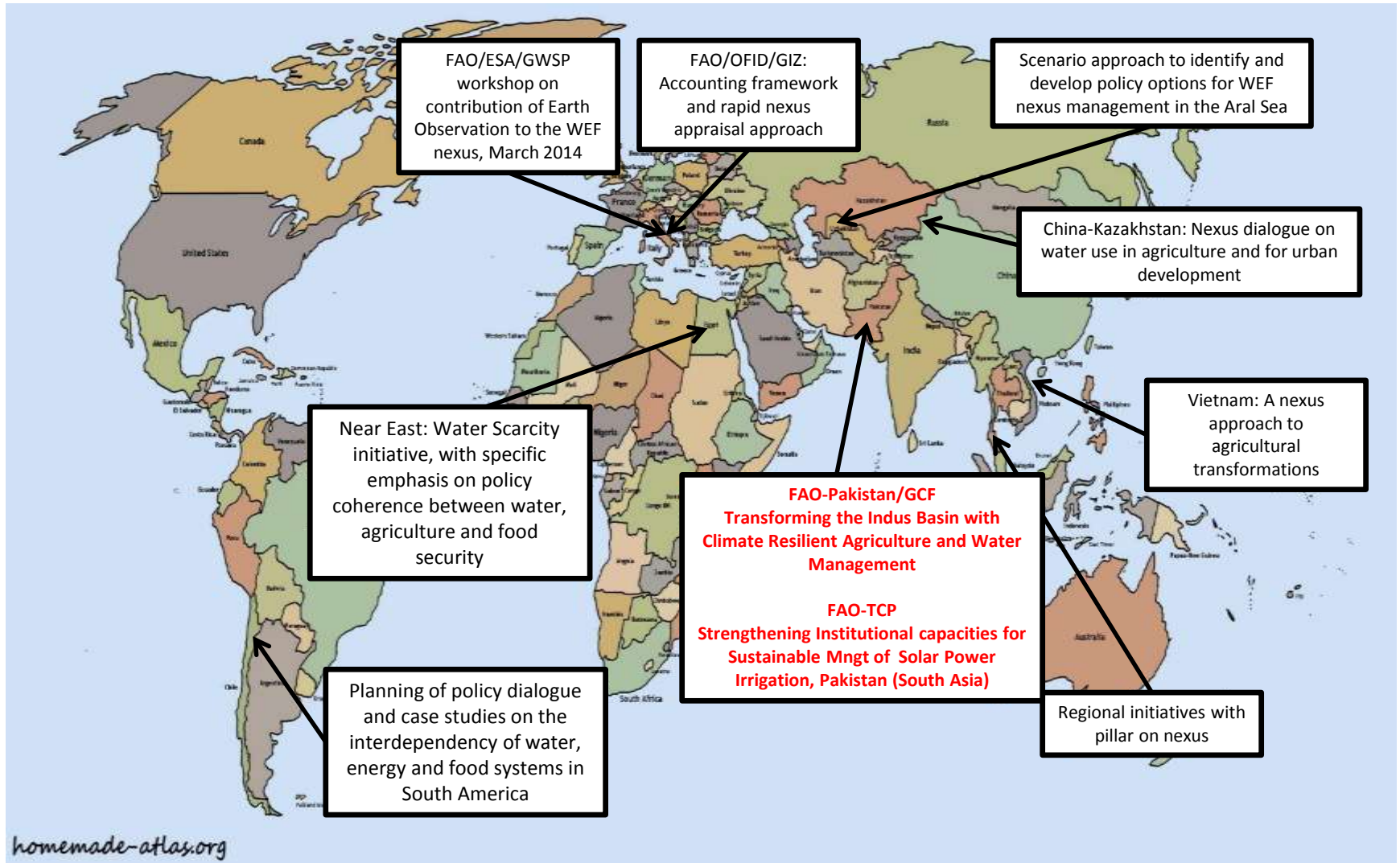


## Wrap up – 6 principles for action

1. Base strategies on a mutually agreed evidence base
2. Ensure cost-effectiveness
3. Improve governance and institutional capacity at all levels
4. Adapt responses to local conditions
5. Ensure policy alignment between water, energy, agriculture, food security and environment
6. Anticipate change through robust decision-making and adaptive management



# Selected FAO Nexus activities





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**Thank You**

**<http://www.fao.org/pakistan>**