

Mekong2Rio: International Conference on Transboundary River Basin Management,  
Phuket, Thailand, 1-3 May 2012

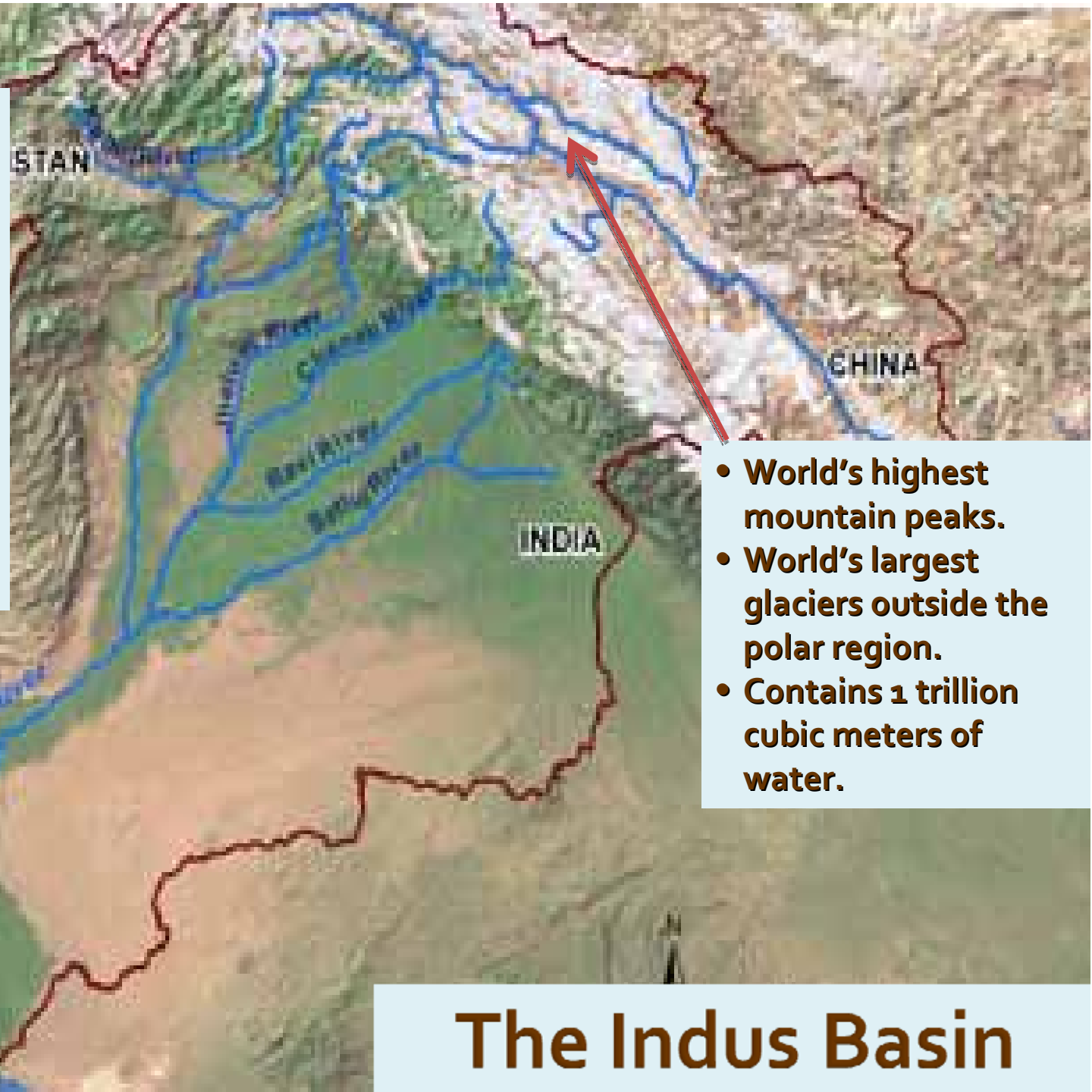
# Food Security Challenges – Asia: The Indus Case

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- Indus Basin Plains  
297,200 sq. km.
- Extend 1,900 km.
- Large and highly transmissive aquifer  
recharge 69 BCM,  
usable 54 BCM.
- Alluvial channels  
with aggregate  
length 3,540 km.



- **World's highest mountain peaks.**
- **World's largest glaciers outside the polar region.**
- **Contains 1 trillion cubic meters of water.**

## The Indus Basin

# Water and food security challenges

## Prior to Indus Waters Treaty

- Water security prior to the Indus Waters Treaty was threatened.
- Agro based economy was at the verge of collapse.
- Country faced frequent famines.
- High financial burden to import food.
- Weak nexus between water, food and energy.

# **Water and food security challenges**

## **Post Treaty Related Challenges**

- **Major Hydraulic Shock - water availability in the west and irrigated area, the food basket of Pakistan in the east.**
- **Massive inter-river hydraulic works to transfer water from west to east.**
- **This drastically altered the natural flow, rivers were confined within narrow channel.**
- **Sediments which previously nourished the delta were trapped.**

# Water and food security challenges

## Post Treaty Related Challenges (contd....)

- Water level rose to the surface, resulting in twin menace of water logging and salinity.
- With eastern rivers given to India, water availability prior to Indus Water Treaty of 5,650 m<sup>3</sup>/p/y declined to 3,500 m<sup>3</sup>/p/y.
- Massive infrastructure developed on rivers, resulted in serious structural safety risks and perpetual huge O&M costs.
- Strong nexus was created between water, food and energy.

# Post Treaty

- Strong nexus was created between Water, Food and Energy:

Water →	Food →	Energy
<ul style="list-style-type: none"><li>• Skewed water availability corrected from 80% (summer) to 20% (winter) to 60% and 40% respectively.</li><li>• Storages helped transfer 20 BCM from summer to winter.</li><li>• Better water regulatory control.</li><li>• Groundwater supplements water supply by providing 50% of irrigation water.</li></ul>	<ul style="list-style-type: none"><li>• Irrigated area increased from 10.75 Mha to 18 Mha.</li><li>• Productivity increase<ul style="list-style-type: none"><li>• Wheat from 12.5 MT to 24.2 MT (94%).</li><li>• Rice from 3.3 MT to 6.9 MT (109%).</li><li>• Sugarcane from 33.1 MT to 55.3 MT (67%).</li><li>• Cotton from 6.3 M. Bales to 14.3 M. Bales (130%).</li><li>• Vegetables and fruits being exported.</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Hydropower increased from 119 MW to 6,720 MW.</li><li>• 3,000 large industries electrified.</li><li>• Tube wells electrification.</li><li>• Village electrification increased from 607 to 137,756 villages .</li><li>• Consumers increased from 311,596 to 18,671,114.</li></ul>

# Future Food Security Challenges

- No additional water available – Indus Basin is a single basin.
- Large quantities of salts influx into the basin and rapid sedimentation of storage reservoirs would degrade land quality and reduce water availability & would affect productivity adversely.
- Rapidly growing population is a serious threat to the water, food and energy security.
- Global warming and climate change could reduce flows to the basin's rivers by 30 to 40% as a result of retreating glaciers which presently contribute 70% to the rivers flows.
- The existing 16 agro-climate zones would need redefining and drastic changes in cropping pattern.

# Combined Basin Potentials – India and Pakistan

- Total Water Availability - 247 BCM
- Hydropower Potentials - 93,628 MW
- Hydropower Developed - 16,649 MW (18%)
- Irrigated Area (India+Pakistan) - 73 Mha
- Increase water use efficiency can save upto 50% of water.
- Large potential for productivity enhancement per unit of water and land.



# Way Forward

## Transboundary Initiatives

- Joint monitoring and data sharing – climate change impacts, glacier melt and monsoon pattern change.
- Transboundary flood and drought management.
- Joint research on enhancing food productivity.
- Joint investment in developing energy resources of the basin.
- Joint efforts in water use efficiency plans.
- Initiating transboundary energy sharing agreements.
- Creating a strong cross-border nexus of water, food and energy.
- Vigorously following the Track-II Diplomacy to address common basin challenges.

**THANK YOU!**



**Global Water  
Partnership**  
South Asia