

Introduction to Nexus Approaches for Sustainable Use of Environmental Resources

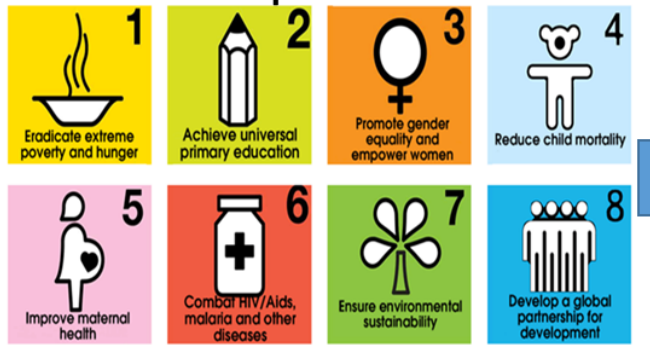
**The 12th Policy Consultation Forum of Seoul Initiative
Network on Green Growth**

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Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs)

Up to 2015



Beyond 2015



8 Goals, 18 Targets and 48 Indicators

Implementation was donor aiding dependent

monitoring, evaluation and accountability was not well addressed in MDGs

Complexity of sustainable global development was not fully represented in MDGs.

TRANSFORMING OUR WORLD:
THE 2030 AGENDA FOR
SUSTAINABLE DEVELOPMENT

A/RES/70/1



UNITED NATIONS

sustainabledevelopment.un.org

17 Goals, 169 Targets, and 230 Indicators

Applicable to every country

Importance of data revolution is well recognised for SDGs

Comprehensive set of goals has been adopted towards Sustainable development

Three shocking statistics for Asia and Pacific Region

Food



512 million undernourished live in Asia (FAO, 2014)

Water



Nearly 1.7 billion people in the Asia and Pacific region do not have access to improved drinking water (UNESCAP, 2015)

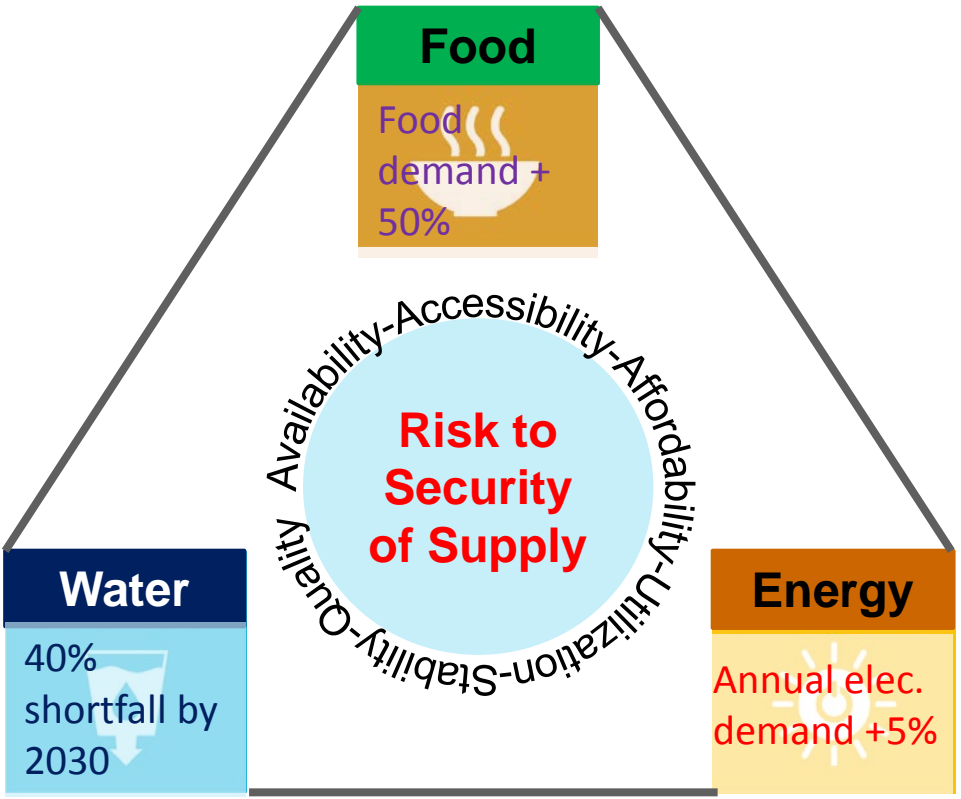
Energy



Nearly 350 million people have no access to modern form of energy (IEA, 2011)

where we are heading for?

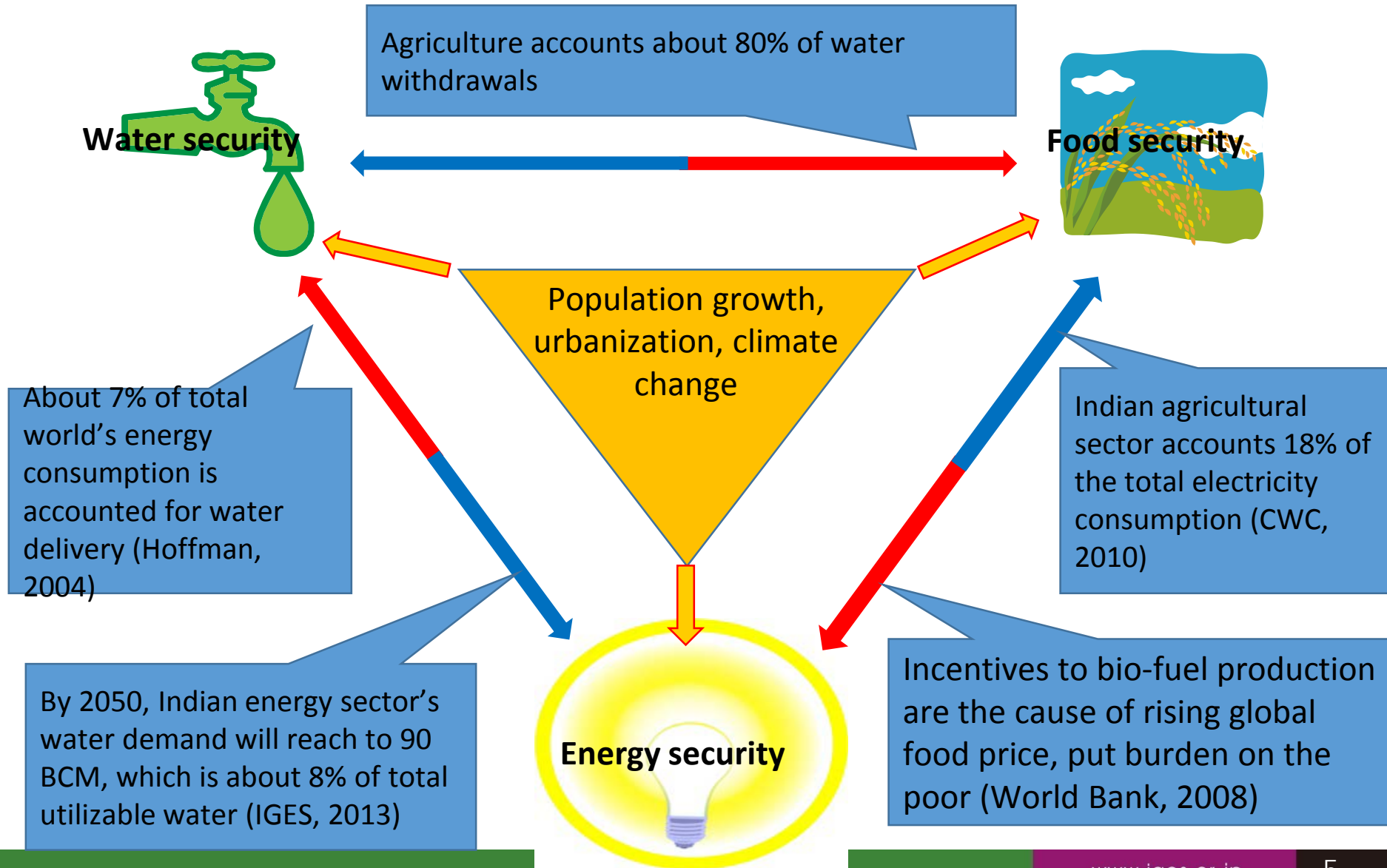
Food, water and energy security are not going to be ensured in Asia



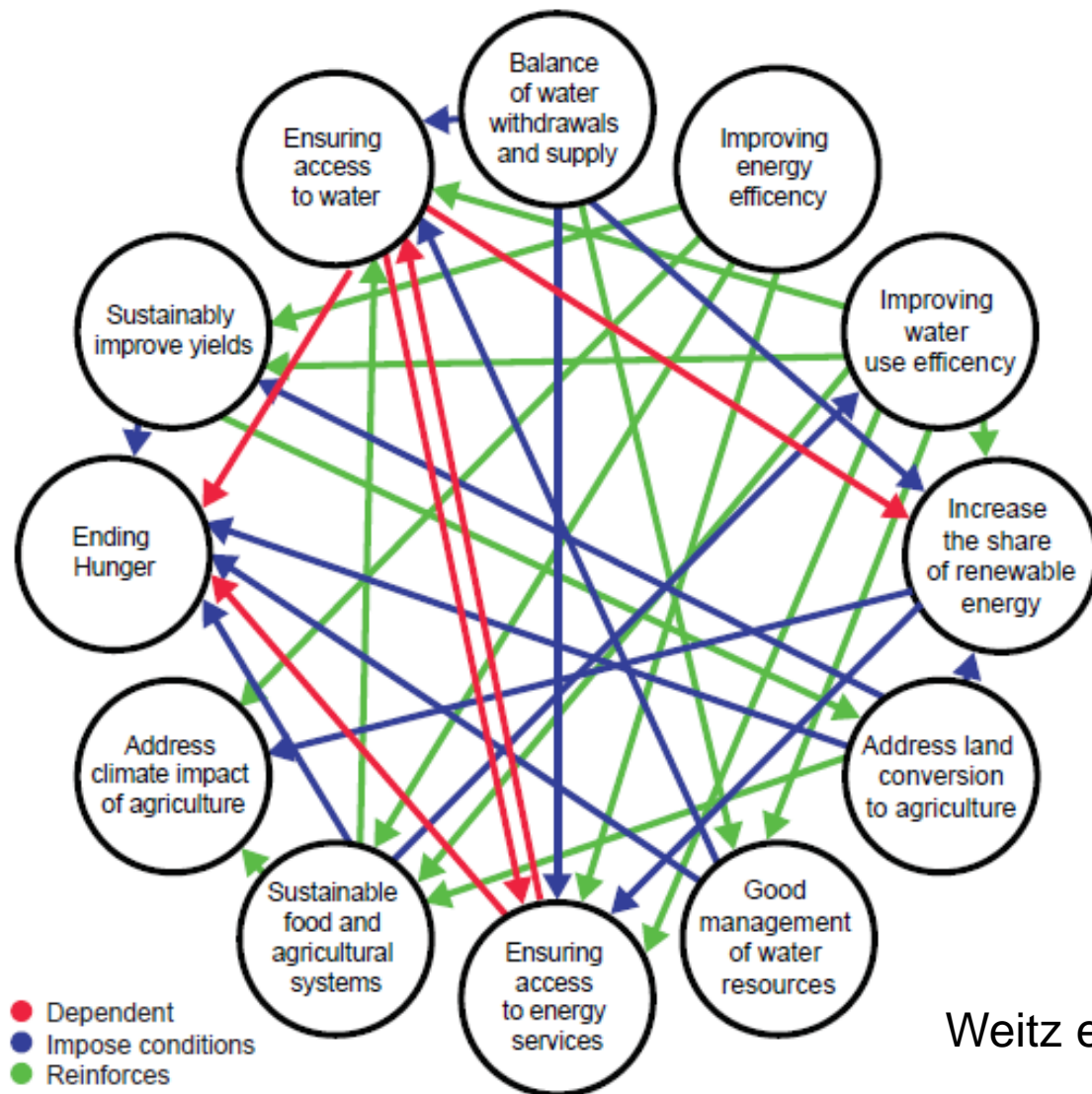
Challenges

- Population
- Economic growth
- Resource intensive lifestyle
- Resource intensive production system
- Inadequate legislation and enforcement
- Uncoordinated sectoral planning
- Finance
- Knowledge gap

Inherent interdependent nature of water energy and food security



Network of Interlinkage of FWE Targets in SDGs



Weitz et al., 2014

WEF Nexus Opportunity Areas

Increase policy
coherence

Accelerate access

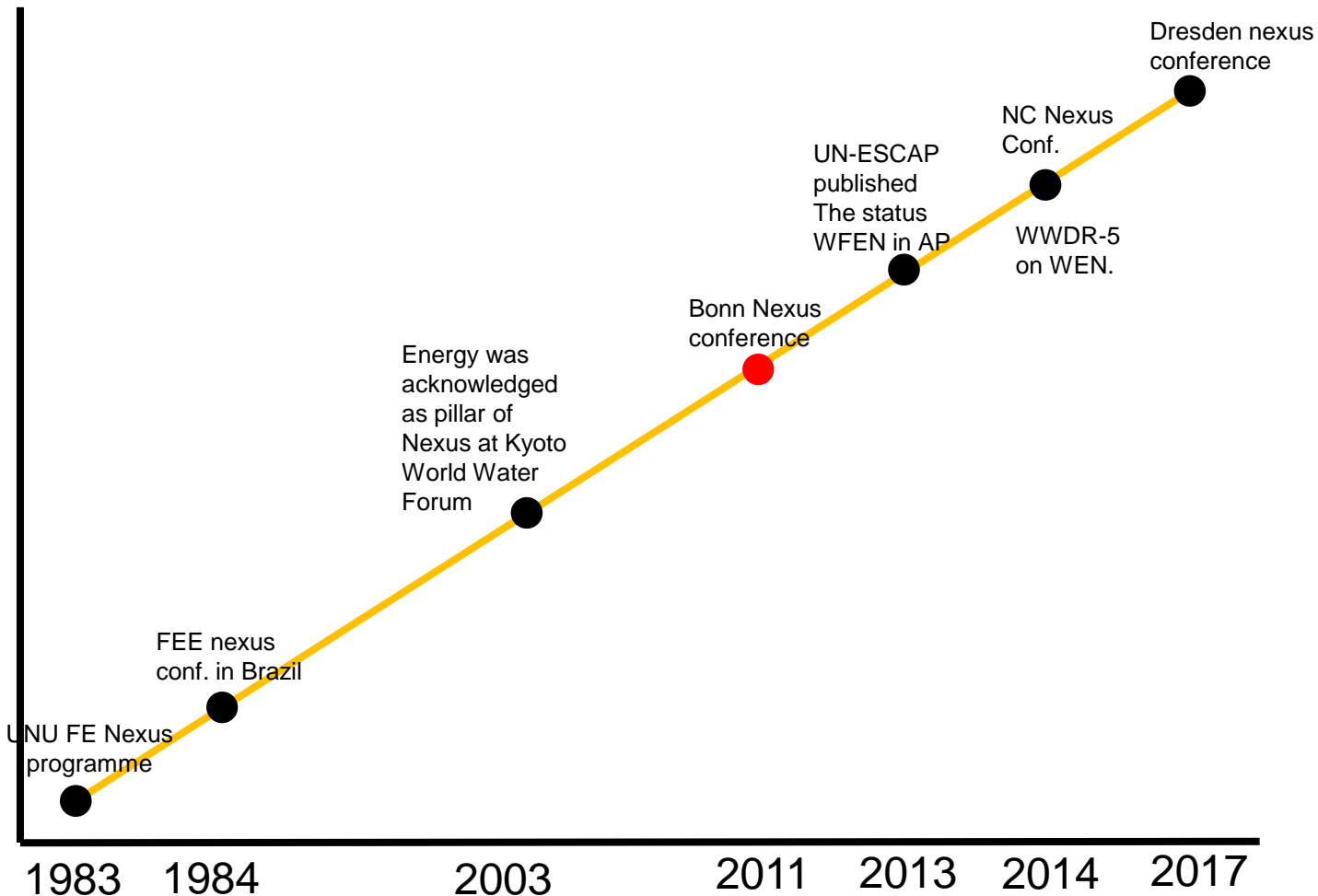
Create more with
less

End waste minimize
losses

Value natural
infrastructure

Mobilize consumer
influence

Nexus thinking and nexus debate are gaining attention in policy and academic circles



How is the nexus approach different from IWRM

| | WEF Nexus | IWRM |
|-------------------------|---|---|
| Priority | Equal priority to all sectors | Tends to prioritize a particular sector, i.e. water |
| Principle | Integrated policy solutions principle | Good governance principle |
| Participation | Promote collaboration through multi-stakeholder platform | Stakeholder involvement in decision making |
| Decision making | Environmentally and economically rational decision making | Efficient allocation and equitable access |
| Sustainable development | Resource security | Demand management |

Nexus is not explicitly reflected the major agreements, but critical for country actions

- Each country is primarily responsible to make implementation plan of sustainable development
- Current unilateral sectoral approach, causes unintended trade-offs and conflicts among relevant sectors or areas, will hindering sustainable development
- The country will be the main sufferer, if it fails to address how the efforts to attain sectoral goal and targets would effect each other

Conflict of interest over water (Case of India)

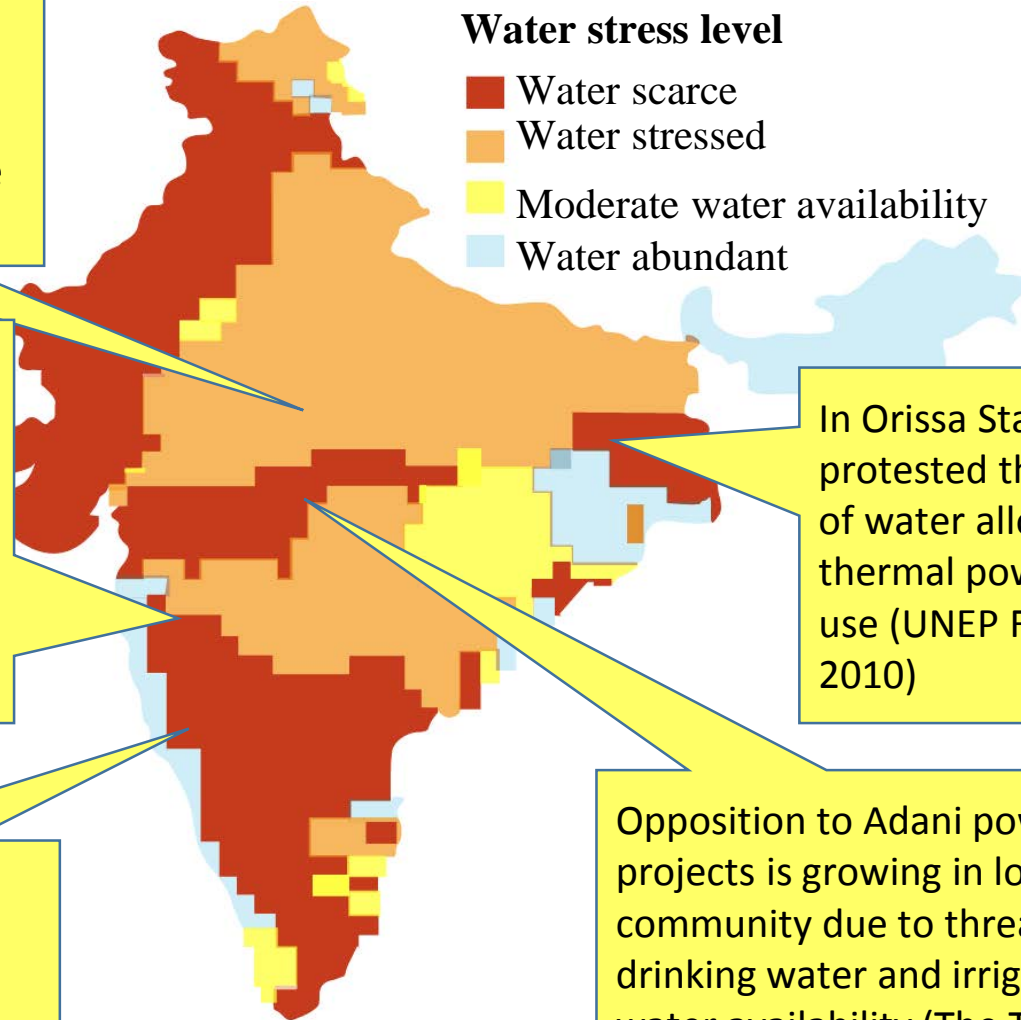
In Madhaya Pradesh, power cuts were made to alleviate the water shortage in the region in 2006 (Source: The Hindustan Times, 2006)

Parli thermal power plant in Maharashtra was shut down because of severe water shortage in the Marathwada region (NDTV, 2013)

In Kerala, power cuts were ordered to deal with water scarcity in 2008 when monsoon rainfall was 65% less than normal (Source: Thaindian News, 2008)

Water stress level

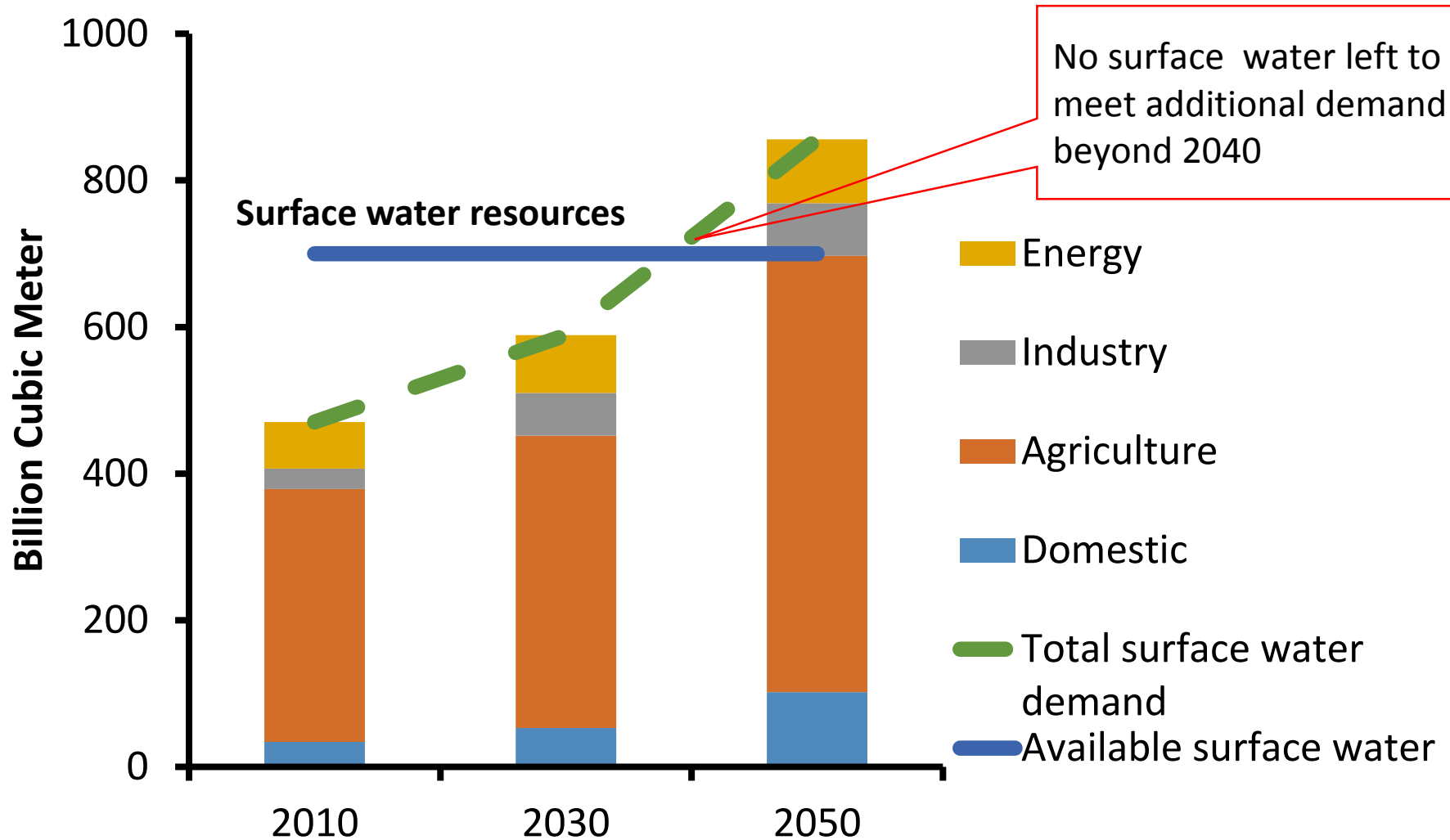
- Water scarce
- Water stressed
- Moderate water availability
- Water abundant



In Orissa State, farmers protested the increasing rate of water allocation for thermal power and industrial use (UNEP Finance Initiative, 2010)

Opposition to Adani power projects is growing in local community due to threats to drinking water and irrigation water availability (The Times of India, 2011)

Water supply-demand gap scenario- case of India

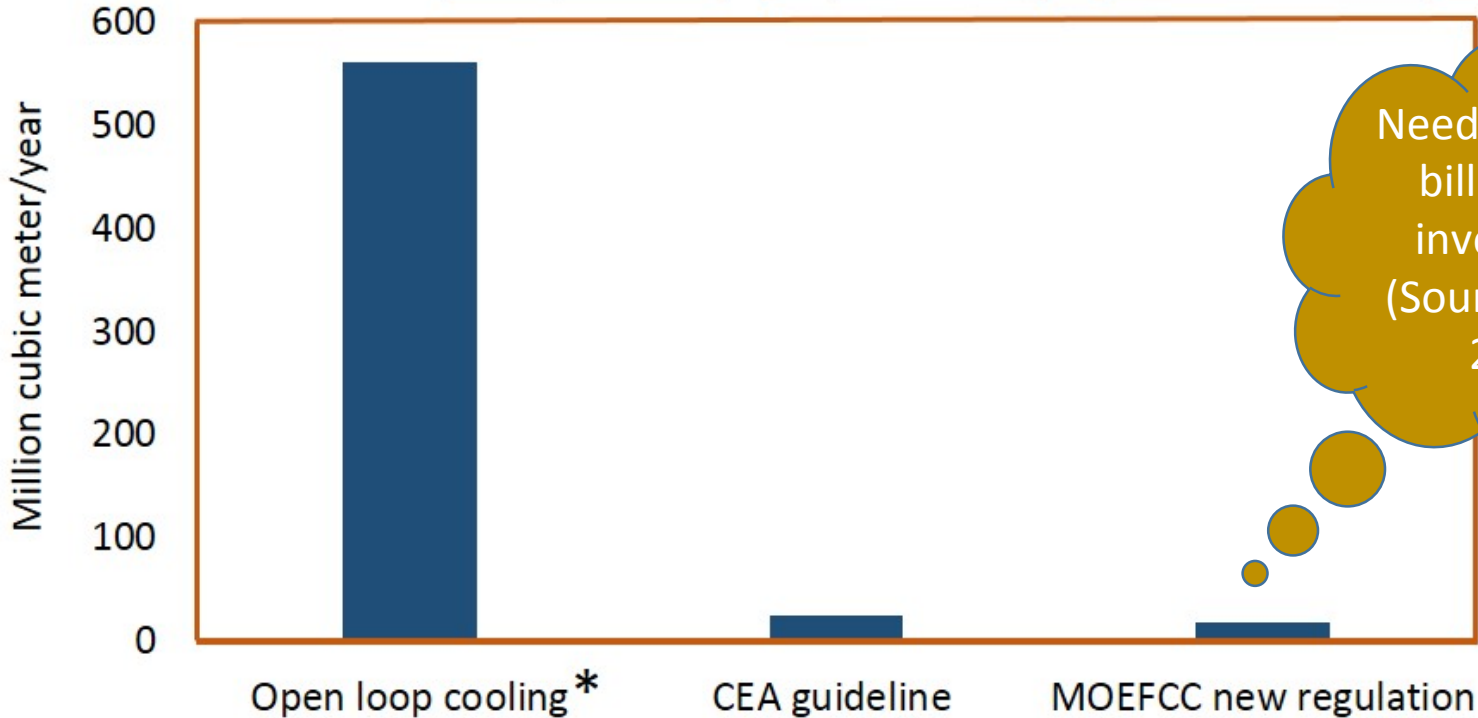


Note: Generally, Thermal power plants use surface water for its cooling

Policy intervention to restrict water use for thermal power plants-Case of India

Key policy milestones

| | | |
|---------------------------------------|---|---|
| 1999 | 2012 | 2015 |
| Put a ban on open loop cooling system | Released guideline for water use in TPP (3.6 m ³ /MWh) | New regulation to reduce water use limit to 2.5 m ³ /MWh |

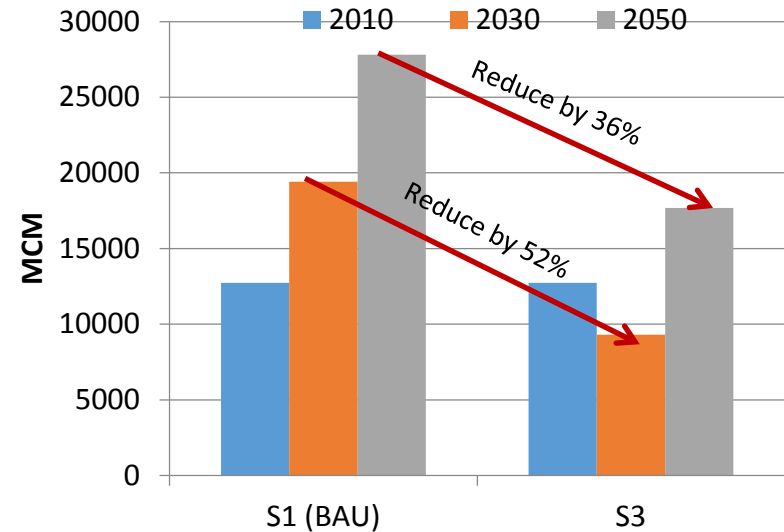
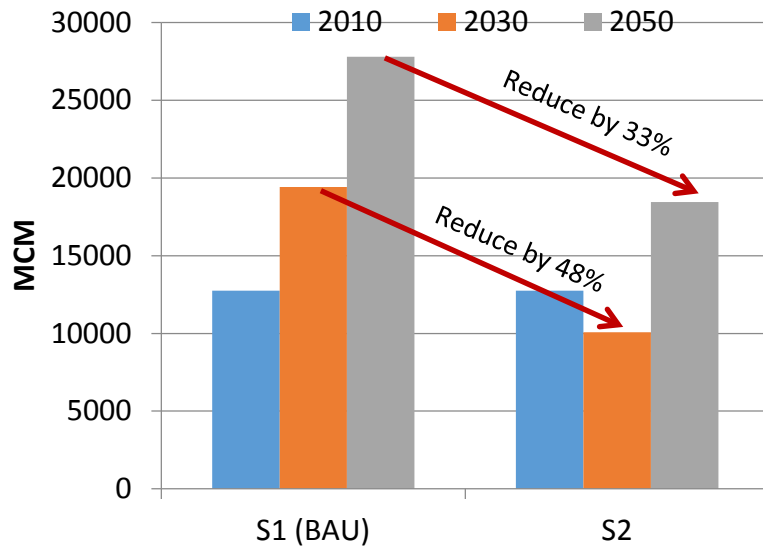


Need approx. 3 billion USD investment (Source: Bosh, 2016)

*Water use intensity in open loop cooling system 80m³/MWh

Water scarcity mitigation options in energy sector

Gradual transition to more water efficient cooling technology options

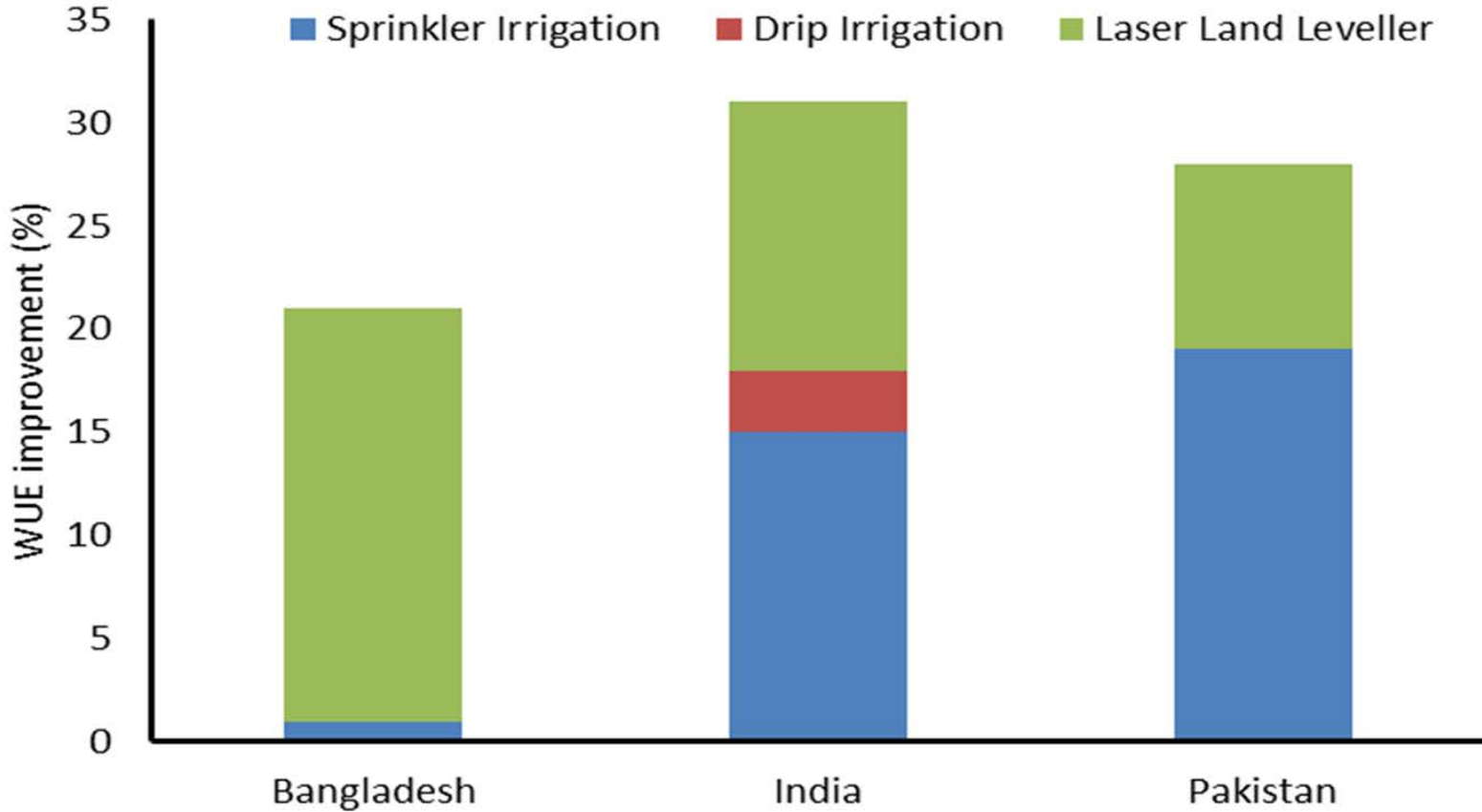


S1: 25% of the thermal power capacity will continue with open loop cooling system

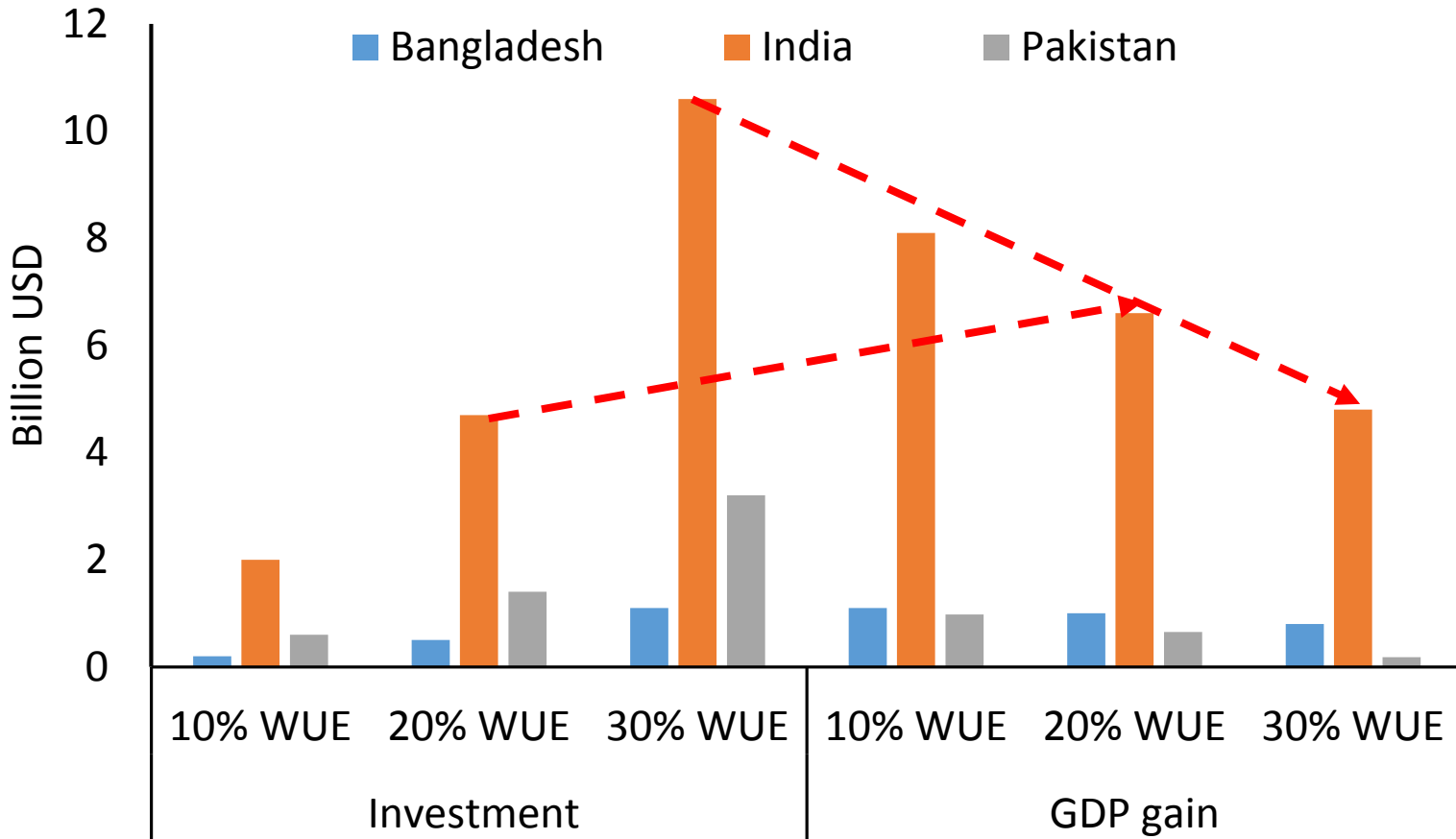
S2: All open loop system will be phase out by 2030

S3: open loop cooling system will be replaced by dry cooling system by 2030

Potential of irrigation WUE improvement in India



Economic implication of WUE improvement in South Asian countries



Source: Prepared based on Taheripuri et al. 2016

Required billions dollars investment for 20% irrigation WUE in South Asia



Save 102 BCM water



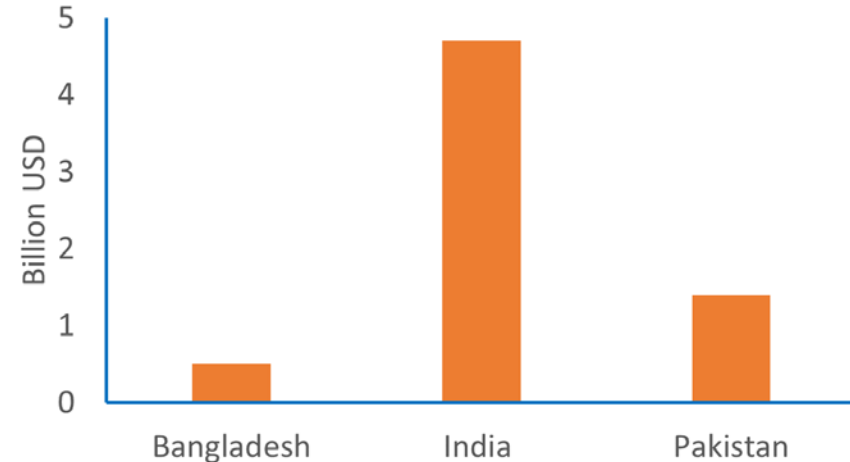
Save 82000 GWh electricity



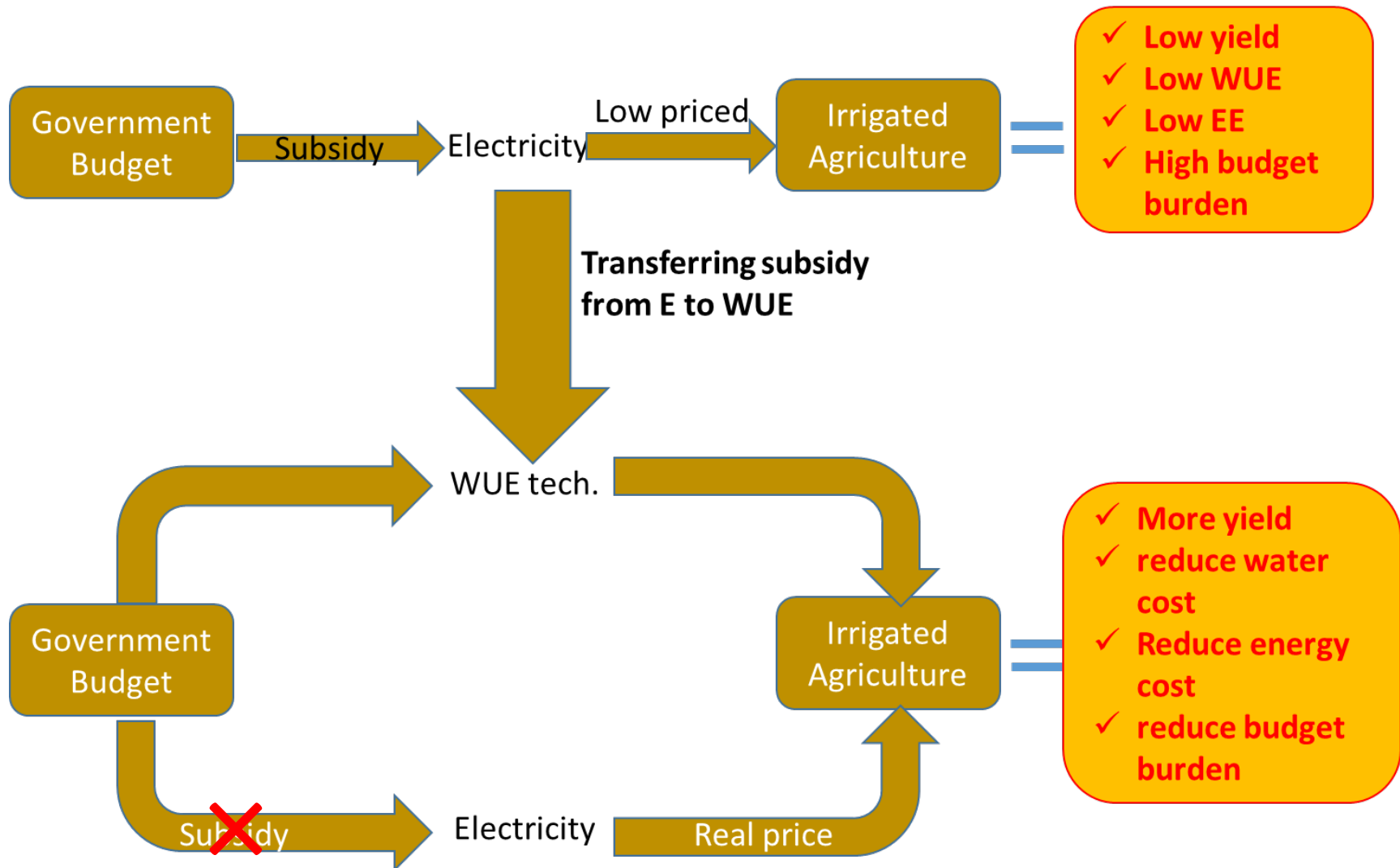
Reduce CO2 emission by 72 million tons



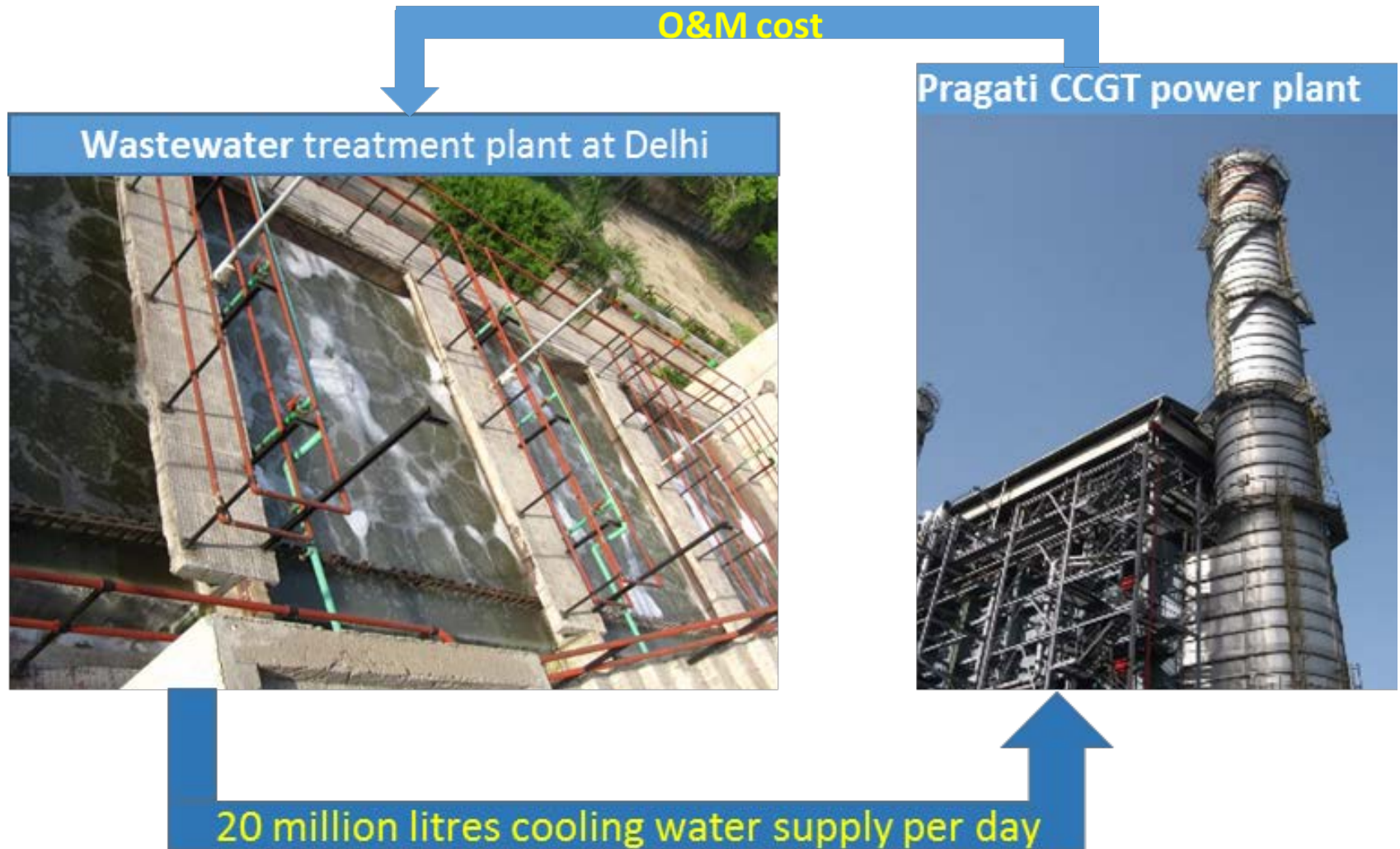
GDP gain by 6.6 billion USD



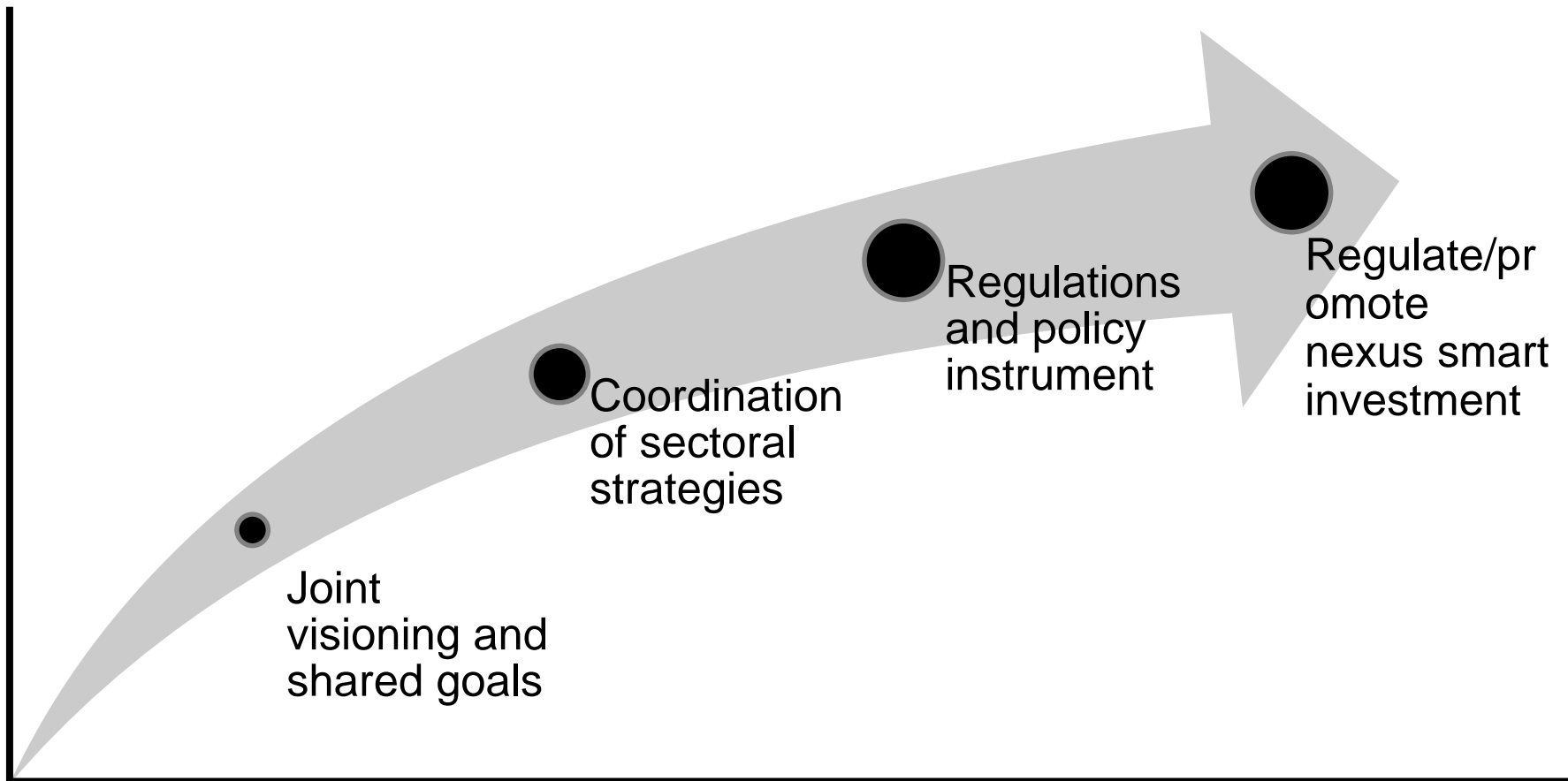
Rearrangement of agricultural subsidies can generate necessary investment cost



Build up partnership can promote positive nexus



Enabling Framework for Operationalization of “Nexus Approach”



Thank you very much



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