

# Rotary World Water Summit VIII

## Seoul, Korea

### Sustainability and Climate Change

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# The Sector and Climate Change

- **The Issues that Impact the greatest?**
- **What about the poorest?**
- **What next can we expect?**
- **What are the Implications for Groundwater?**
- **What can we do?**

# Water Concerns hit the Poorest

- Agriculture, industry and households consume vast quantities of water, with agriculture being the biggest with 70% of the total freshwater withdrawal from rivers, lakes and aquifers.
- In 2030, half of the world's population will be living in water stressed areas. Currently, 1.6 billion people live in countries with water scarcity and is expected to rise to 3 billion by 2025
- This increasing stress on water resources puts hundreds of millions of people under the risk of hunger, diseases, energy shortage and poverty.

# **Water Security is the emerging issue**

- As the demand for water rises with population growth and economic development, water resources are becoming scarcer and more polluted
- Deforestation and poor agricultural practices are degrading watersheds
- Unmanaged urban expansion paves over water recharge areas
- High percentage of surface waters are contaminated from agriculture, sewage, and industrial waste

# Water Insecurity Leads to Conflict

- Evidence supports Syria was exacerbated by the effects of climate-change induced severe drought, coupled with poor agricultural and water management policies. Large-scale rural-to-urban demographic shifts exacerbated tensions in Syrian cities.
- In nearby Yemen, before the current escalation of violence, an estimated 70%-80% of conflicts in rural areas were land and water-related, causing up to 4000 deaths a year.

# Impact on Groundwater

- In many countries, even developed groundwater use is unregulated and poorly planned and managed. India is the largest user in the world-60% agriculture and 85% drinking water.
- In several countries in North Africa and the Middle East, groundwater allocations exceed average annual recharge by a factor of three times or more.
- As stresses on surface water increase—due to both non-climatic and climatic forces—it is expected that pressure on groundwater resources will grow.

# Impact on Water Quality

According to IPCC, higher water temperatures and changes in extremes, including floods and droughts, are projected to affect water quality:

- Increased water temperatures would impact breakdown of organic wastes
- Increased precipitation intensity would increase sediment loads (erosion), nutrients, pathogens and toxins to downstream waters
- Longer periods of low flows magnify the impact of water pollution, effecting human health, ecosystems, and water supplies
- Sea level rise could increase saltwater intrusion

# Impact of Sanitation and Wastewater

- Despite recognition of the importance of wastewater treatment, every day 2 million tons of human waste are disposed of in water bodies.
- More than 80% of sewage and 70% of industrial waste in developing countries is discharged untreated, polluting rivers, lakes and coastal areas.
- Pollution from agriculture and urban areas often constitutes an even greater total pollutant load than industrial pollution.
- Recent study showed production of electricity from waste has the potential of providing up to 83 TeraWatt hours, which is about 20% of the electricity needed in Africa by 2025.

# Sector Efficiency?

- Many of the options to reduce vulnerability to climate variability are no different in a world with climate change than they are in a world without.
- These include demand management measures to increase water use efficiency and productivity, such as water-conserving irrigation technologies; wastewater recycling; economic incentives, including water pricing; and the encouragement of water markets that move water to high-valued uses.
- Some examples of measures identified are improvement of energy efficiency of water supply systems (e.g. replacing pumps), wastewater treatment technologies, etc.

# Good Practices

- Implementing “good practices” more widely (e.g., efficient irrigation technologies, water harvesting, increased sub-surface storage, etc.) would go a long way in confronting the climate change challenge.
- Mainstreaming the use of multiple water use approaches, which encompasses all local water uses (domestic, livestock, and agricultural), all local water resources, and all local water stakeholders (operators, users, government).
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- In India, the National Water Mission, with water scarcity projected to worsen as a result of climate change, set a goal of a 20% improvement in water use efficiency through pricing and other measures.

# Sector Solutions

## Example: Water Smart Agriculture

- **Managing Soils to Manage Water**
- **Benefits of soil restoration:**
  - **Reduced runoff and erosion**
  - **Improved water infiltration**
  - **Increased soil humidity**

# BlueHarvest



A Partnership Funded by the  
Howard G. Buffett  
Foundation

Promoviendo Agua Verde para una agricultura sostenible

# BlueHarvest

## Targets

- Increase productivity and incomes for more than 2000+ farmers by promoting water-smart coffee practices
- Improve access to safe water for more than 150,000 people and strengthen local systems and institutions for sustainable water stewardship

## KEY ACTIVITIES



1 Planning and Policies



Technical Assistance



Blue Harvest Fund

(ytc)

# Water

## Restoring Soils Harvesting Water

### Good Soil Management

- Reduces runoff and erosion
- Improves water infiltration
- Increases soil humidity

5% vol  
Humidity  
Increase



200 m<sup>3</sup>  
water/ ha

↑ Agricultural Productivity

↑ Drought Resistance

↑ Royya Resistance



# Thinking Differently-Technology alone is not going to cut it..

1. Do we have the right institutions to tackle the problems-does a 'siloed' approach continue to make sense?
2. Mainstreaming climate change considerations in public policy and finance agendas as part of the National Climate Change strategy.
3. The issue is water security
  - A sufficient quantity of SAFE water reliably available at the household level –an protected means we need to always consider water, environment and sanitation-together-no longer WASH-but WES.
  - If we focus on water alone and ignore wastewater and sanitation issues-this has serious implications for water security