



The Bengal Chamber of Commerce & Industry
Environment and Energy Conclave
31st August 2012
Kolkata

Resourceful Water

**From Water Management to Resource Management:
Relation Between Water, Energy & Waste**

Pavan Sukhdev

Founder & CEO, GIST Advisory
UNEP Goodwill Ambassador

Image Source: http://www.industrialroplants.com/images/water_bg.jpg

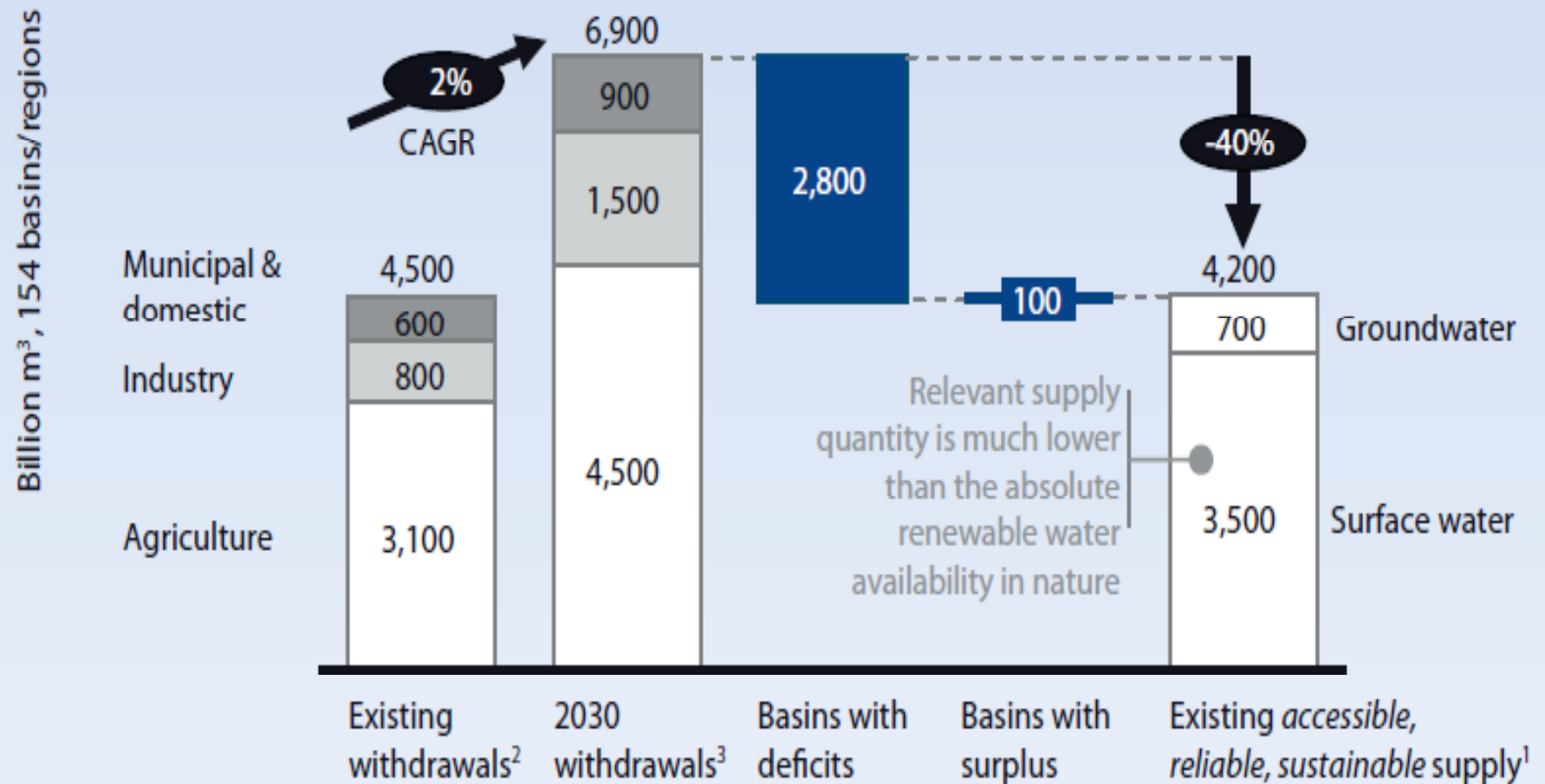
Today's Topics

- 1. Water: Key Issues**
- 2. Water, Energy & Sanitation**
- 3. Water Management in a Green Economy**
- 4. Benefits of Investing in Water**
- 5. Enabling Conditions**

Today's Topics

- 1. Water: Key Issues**
2. Water, Energy & Sanitation
3. Water Management in a Green Economy
4. Benefits of Investing in Water
5. Enabling Conditions

Global Water Use : Widening Demand-Supply Gap

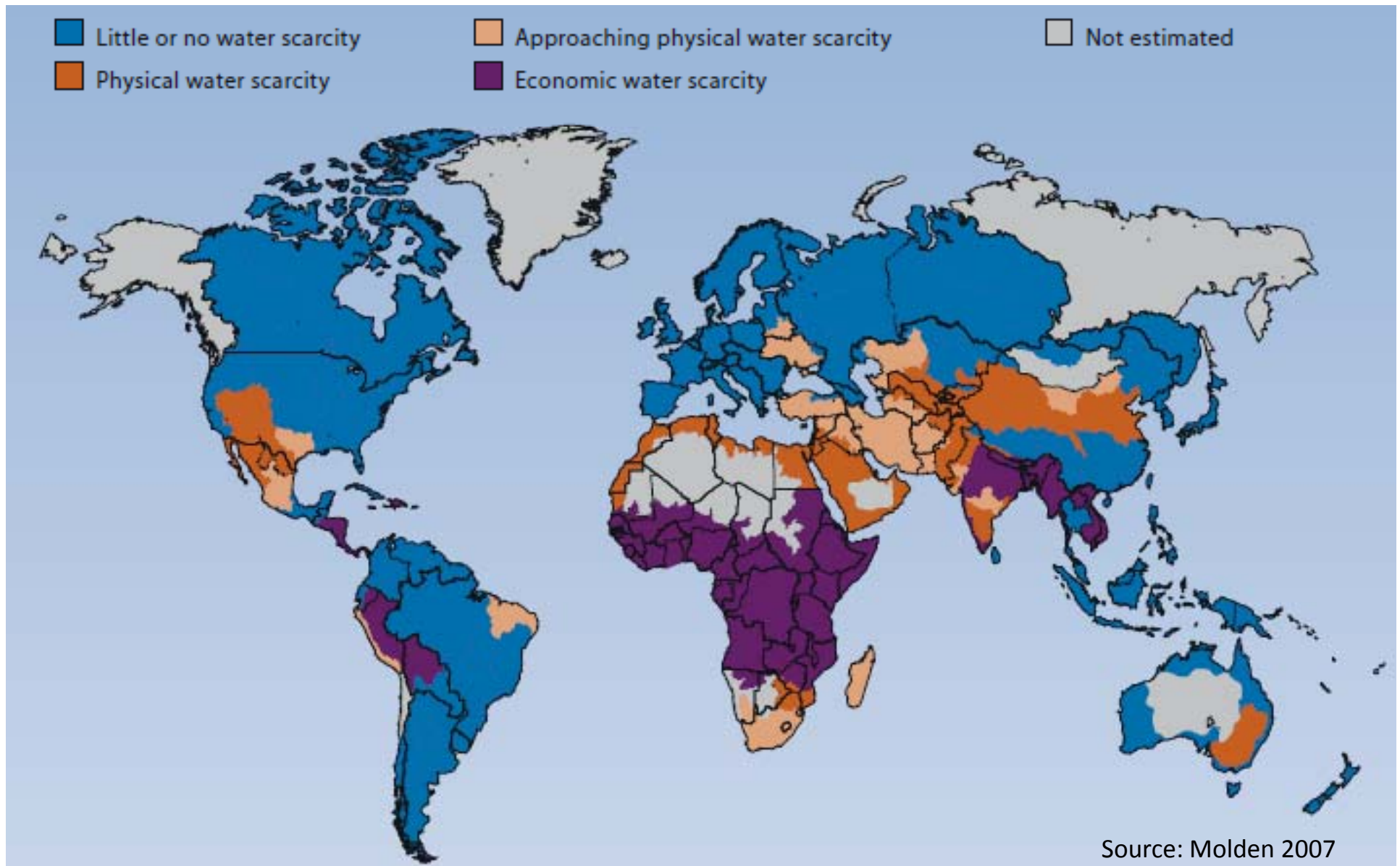


¹ Existing supply which can be provided at 90% reliability, based on historical hydrology and infrastructure investments scheduled through 2010; net of environmental requirements

² Based on 2010 agricultural production analyses from IFPRI

³ Based on GDP, population projections and agricultural production projections from IFPRI; considers no water productivity gains between 2005-2030

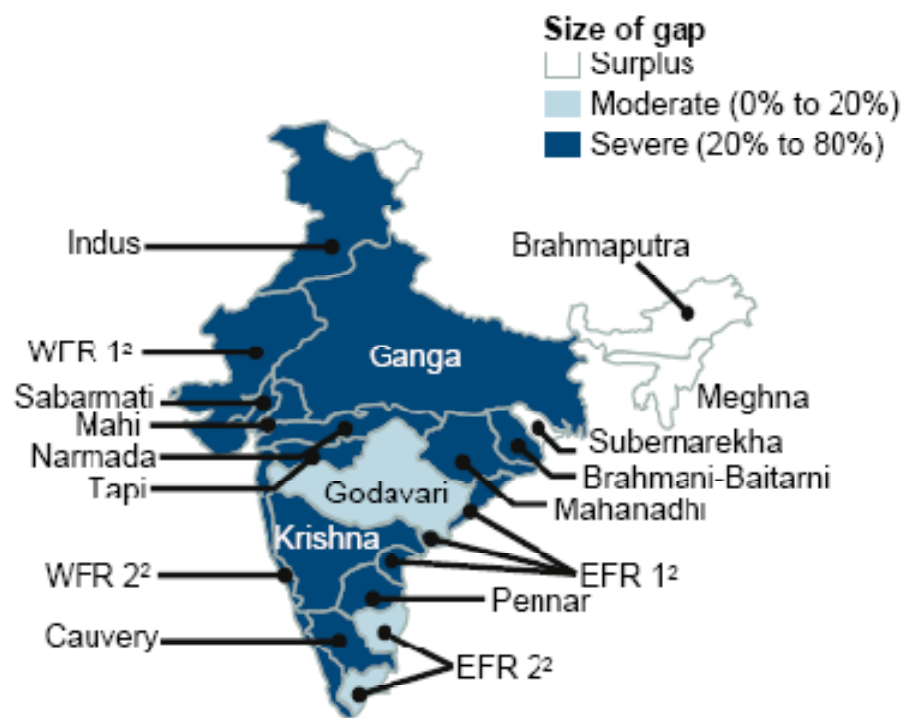
Physical Scarcity & Economic Scarcity



Forecast Demand-Supply Gap in India

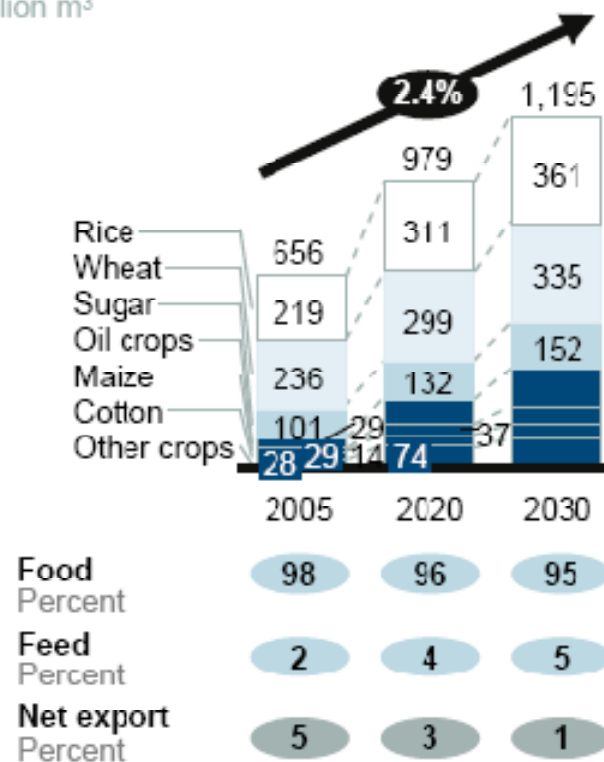
Gap between existing supply and projected¹ demand in 2030

Percent of 2030 demand



Water demand in agriculture

Billion m³



¹ The unconstrained projection of water requirements under a static policy regime and at existing levels of productivity and efficiency

² WFR = western-flowing coastal rivers; EFR = eastern-flowing coastal rivers

SOURCE: 2030 Water Resources Group

Causes of Water Scarcity

Population increase

Increased living standards

Over-exploitation of water sources

Water pollution

Ecosystem degradation

Significance of Ecosystems for Supply

Green & Blue Water Systems

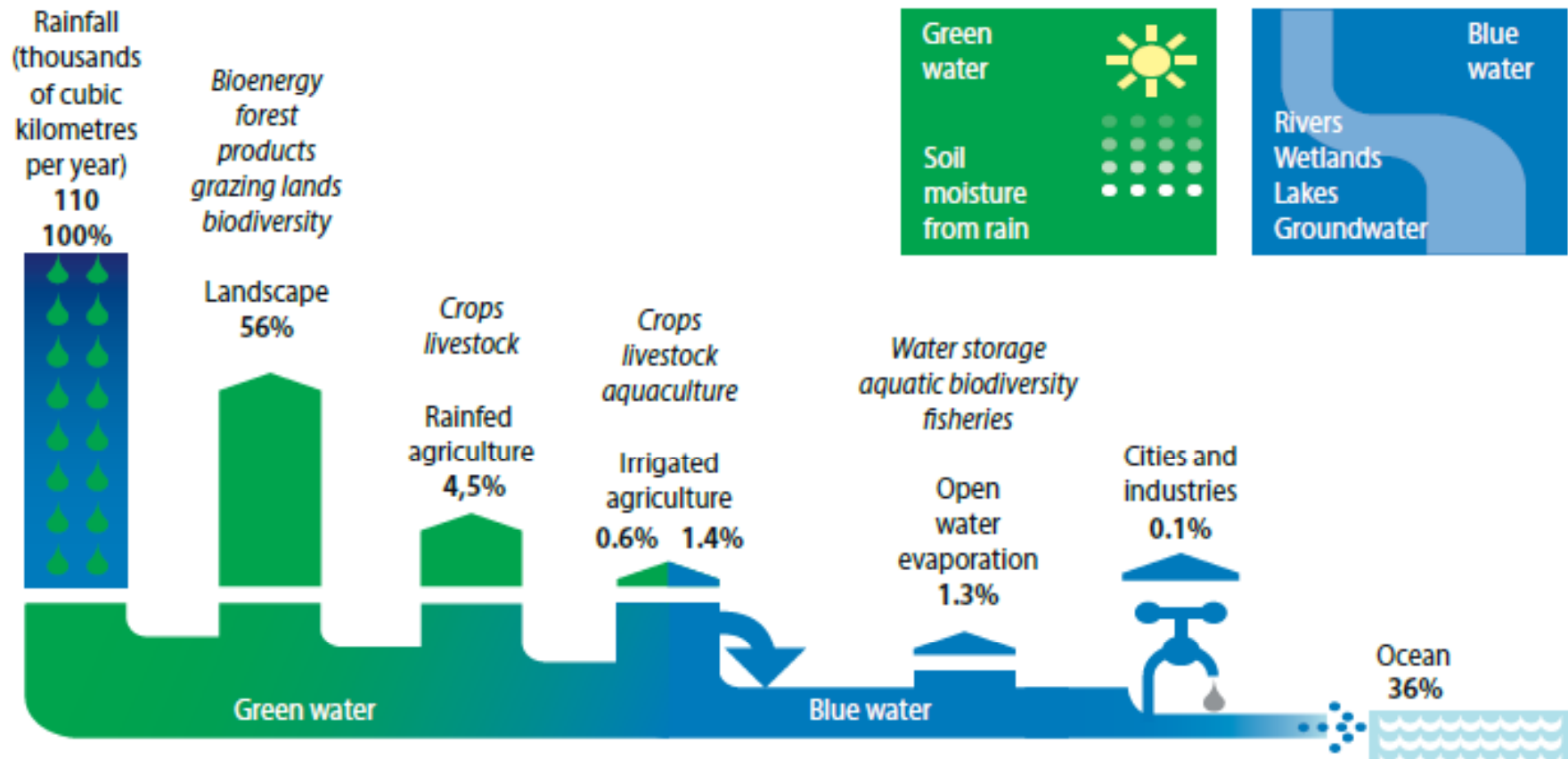


Figure 1: Green water refers to rainwater stored in the soil or on vegetation, which cannot be diverted to a different use. Blue water is surface and groundwater, which can be stored and diverted for a specific purpose

Today's Topics

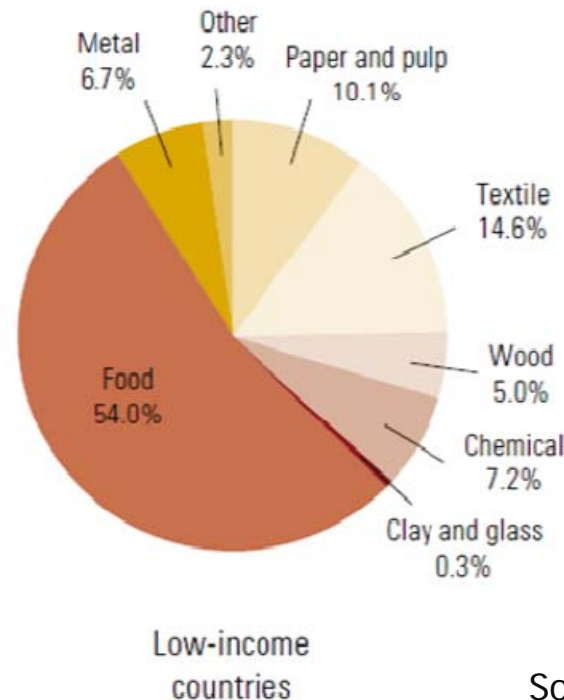
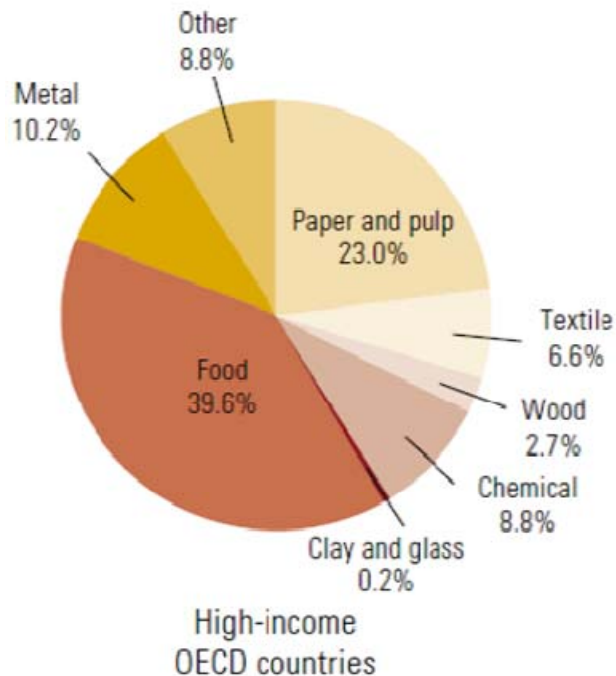
1. Water: Key Issues
- 2. Water, Energy & Sanitation**
3. Water Management in a Green Economy
4. Benefits of Investing in Water
5. Enabling Conditions

Interdependence : Water & Energy

- **Water plays an important role in energy generation**
 - **40% of industrial water in the U.S., and 31% in China (fcst 2030) used for *power station cooling***
- **Water Supply & Sanitation are high energy consumers:**
 - **California's water sector consumes 19% of its electricity and 30% of its natural gas**

Water Impacts of Industrial Waste

- Heavy metals, solvents, toxic sludge, etc, dumped in water exceed 300 million tonnes per year
- Over 70% of industrial wastes still not being treated before discharge into water bodies in developing countries
- Organic Water Pollutants contributed significantly by Food, Metals, Paper& Pulp & Textiles



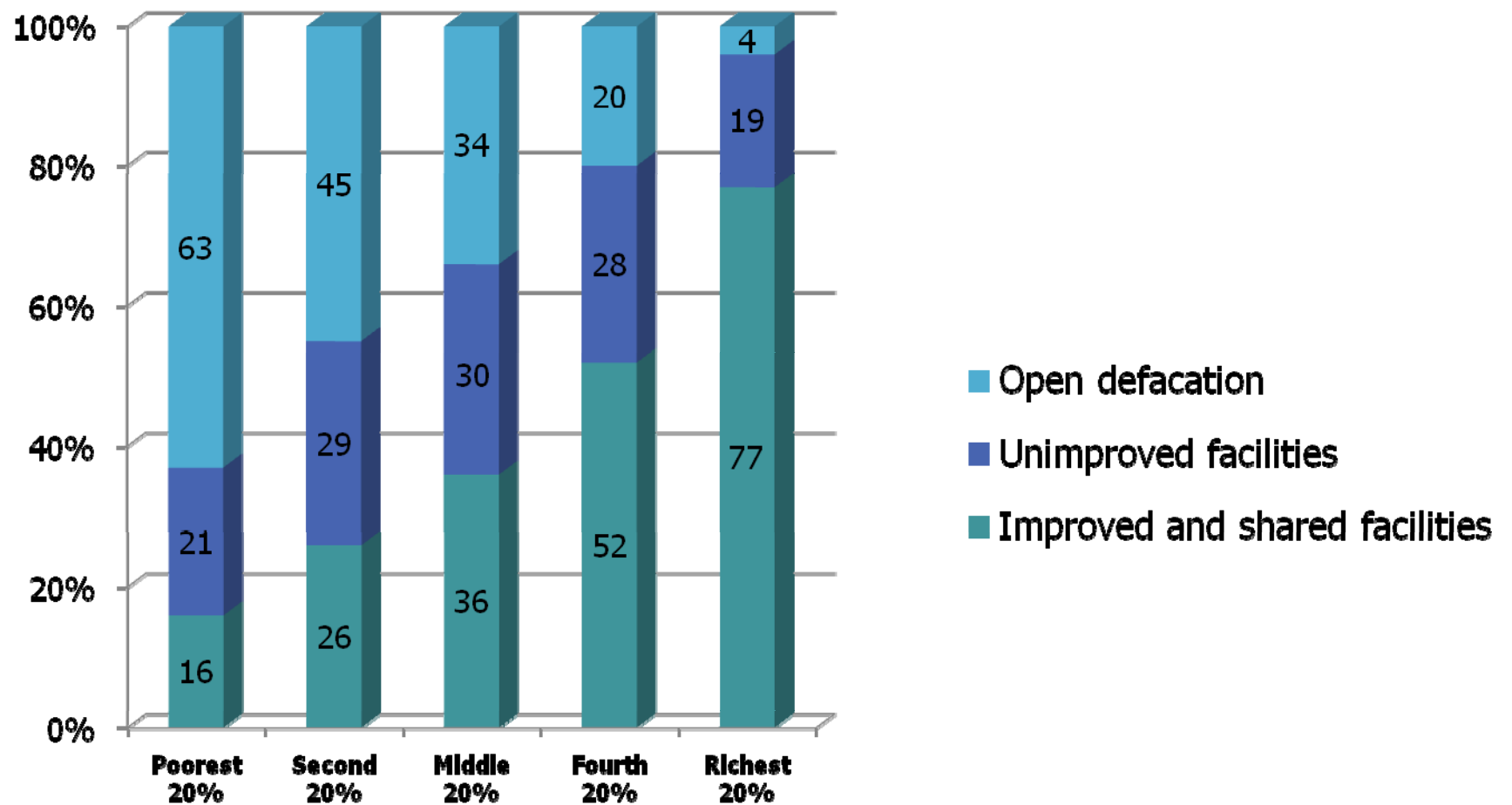
Source: UN WWAP (2003)

Interdependence : Water & Sanitation

- **Globally 2.6 billion people lack access to improved sanitation services**
- **MDGs: Halve % of people without access to improved sanitation services from 46% to 25% (1.7 billion) by 2015...**
- **Annual economic impact of inadequate sanitation is significant for countries:**
 - **US\$ 6.3 billion in Indonesia**
 - **US\$ 1.4 billion in the Philippines**

Sanitation & Poverty

Sanitation by wealth quintile, sub-Saharan Africa (2005/2008)



Source: UN MDGs Report (2010)

Today's Topics

1. Water: Key Issues
2. Water, Energy & Sanitation
- 3. Water Management in a Green Economy**
4. Benefits of Investing in Water
5. Enabling Conditions

Avenues for Water Management

Investment in *Ecological* Infrastructure

Payments for Ecosystem Services

Investment in sanitation & drinking water supply

Investment in small, local, water-supply systems

Accessing new / non-traditional water sources

Producing more food and energy with less water

Case Study (TEEB) Hiware Baazar : poverty alleviation via watershed management

- Watershed development implemented under Maharashtra State Government's *Adarsh Gaon Yojana* Program.
- Implementation of Employment Generation Scheme for ecological regeneration led to an increase in irrigated area from 70 ha (1993) to 260 ha (2003).

- Water budgeting gives priority to drinking water, after which 70% allocated to agriculture & 30% set aside for future use

Effective
Management of
Resources

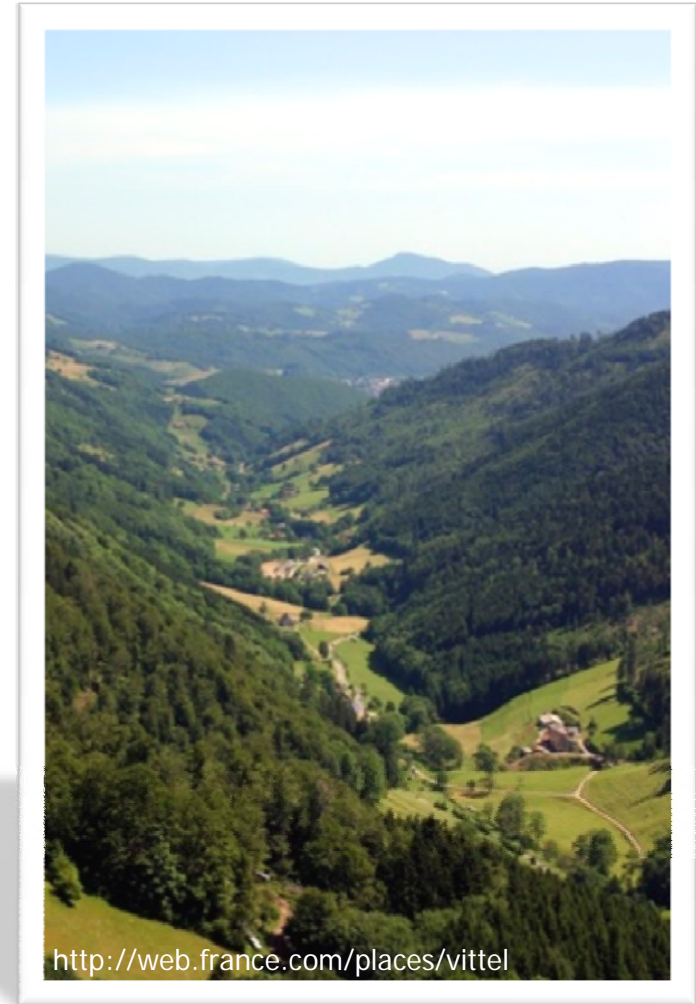
- 73% reduction in poverty, due to profits from dairy and cash crops

Poverty Alleviation

Case Study: Upstream Agricultural Water Use

Vittel Mineral Water, France

- Farmers are paid EUR 200 / ha / year, to cover 5 year transition period to reduce nutrients, soil erosion, etc. to prevent nitrate contamination



Case Study: Poverty & Water Access

Western Jakarta

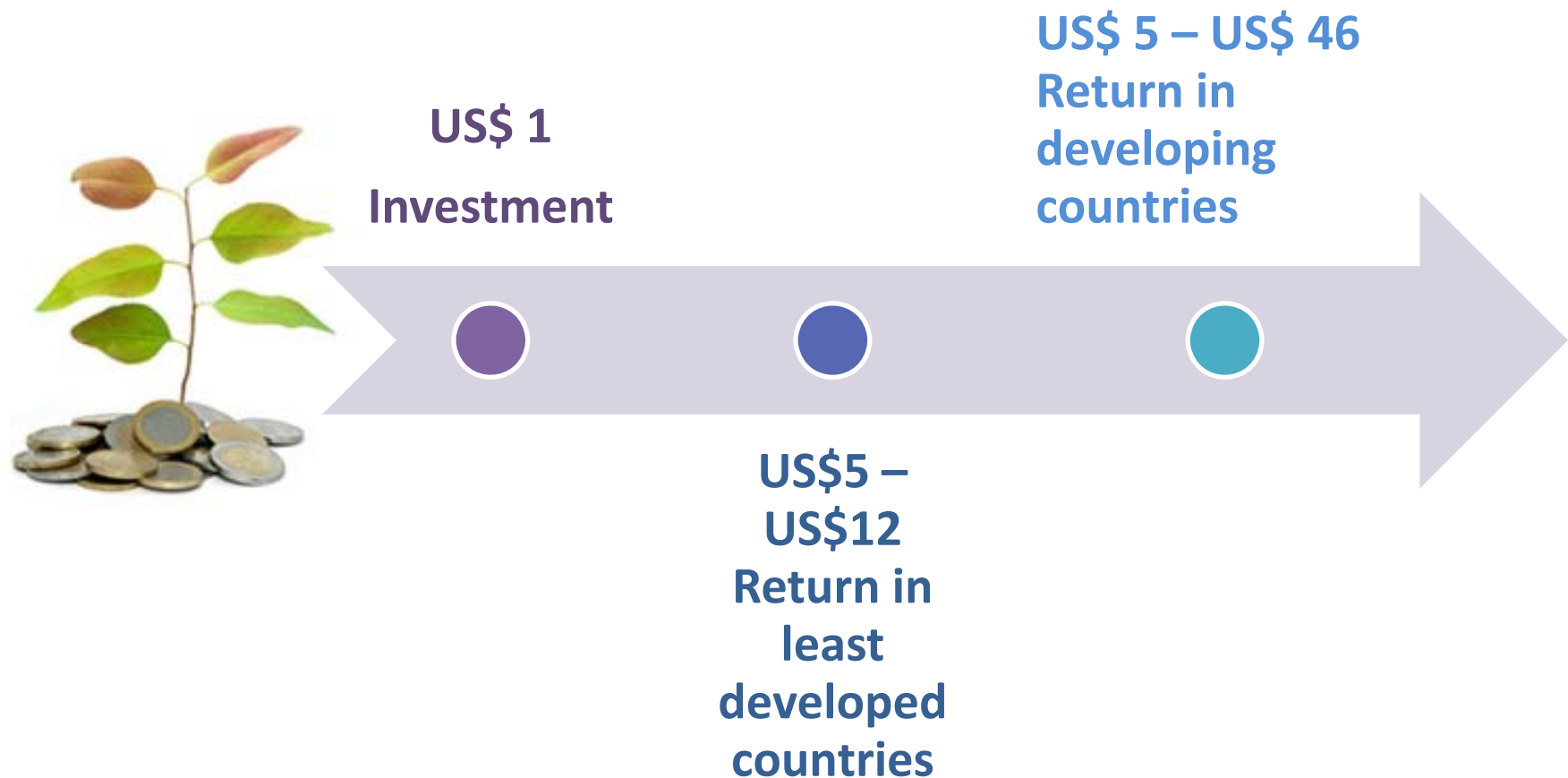
- 37% of people lack access to reliable water supply
- Poor people pay upto 50 times more than those with access to municipal water
- Solution : Set up 'Community-Managed' Water Meters for slums where the community commits to pay for supply, and collects from dwellings based on shared use



Today's Topics

1. Water: Key Issues
2. Water, Energy & Sanitation
3. Water Management in Green Economy
- 4. Benefits of Investing in Water**
5. Enabling Conditions

Economic Benefits of Investing in Water Supply & Sanitation



Socio-Economic Benefits of Water Supply & Sanitation

Increase in Drinking Water

- **1% increase in use of unprotected water sources is directly linked with 0.16% increase in child mortality**

Prevent instead of Treating

- **Health costs of water-borne disease can be prevented by spending *less* on sanitation (eg: Peru, 1991 Cholera epidemic)**

Attainment of MDGs

- **322 million extra working days/year as people would fall sick less**

Success Stories : South Africa

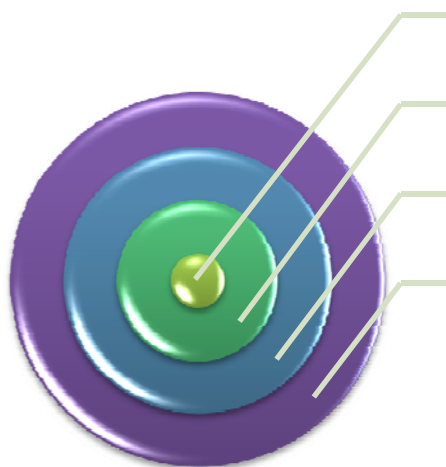
Differential Pricing for “Public Good”

In 1996, set up the policy that provides a basic amount of water to all people free of charge.

Proportion of the population without access dropped from 33% to 8%
(Muller, 2010)



Payments for Ecosystem Restoration



Profile: 300 projects all nine province/ year

Jobs/Training: Appox. 20,000 people

Equity: Recruited from most marginalised sector and 52% are women

Cost: EUR 200-700/hectare while benefits estimated 47,000/hectare



Patron in Chief:
Nelson Mandela

Today's Topics

1. Water: Key Issues
2. Water, Energy & Sanitation
3. Water Management in a Green Economy
4. Benefits of Investing in Water
5. **Enabling Conditions**

Enabling Conditions for Efficient Water Management

National institutional & financing arrangements

International trade agreements

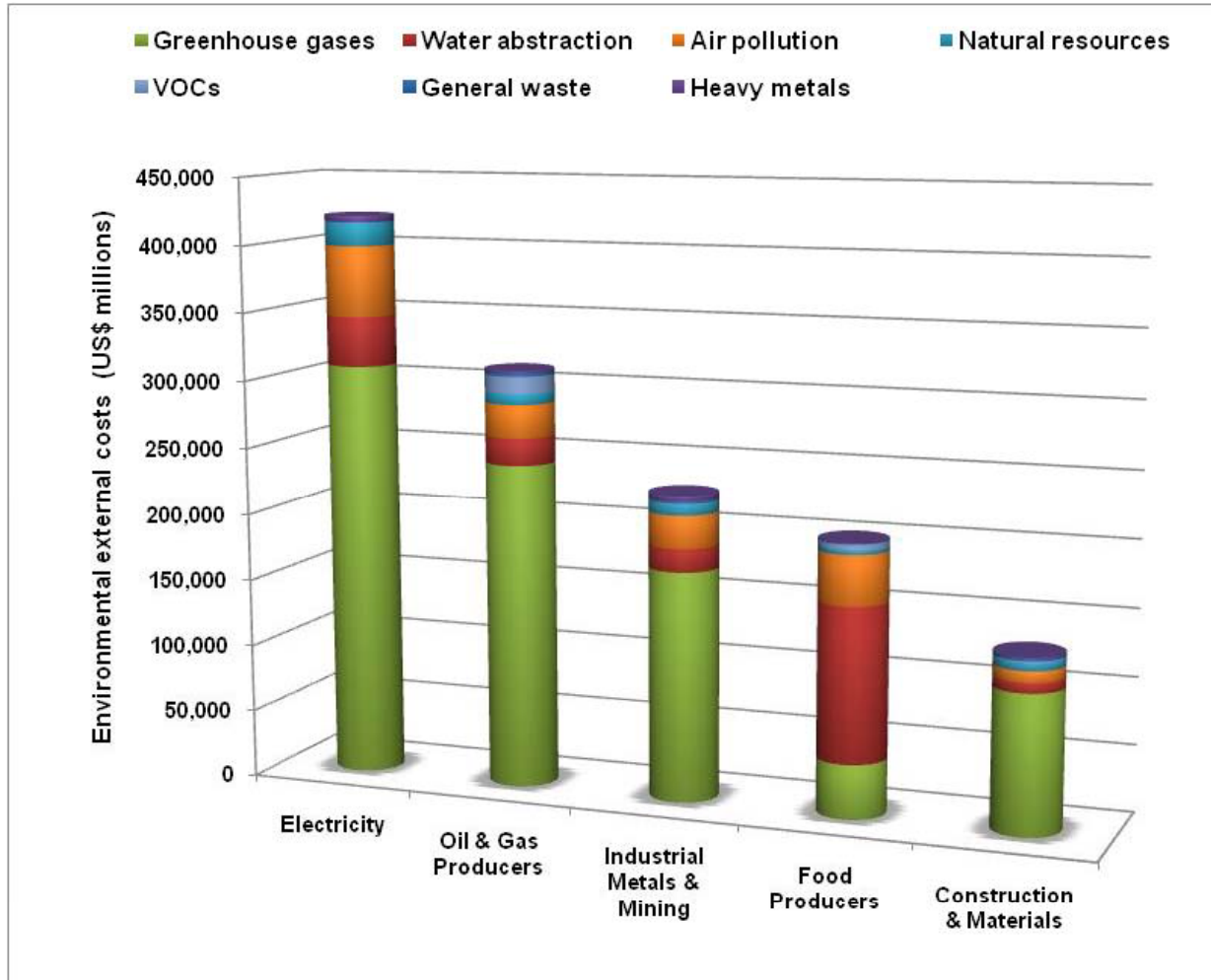
Capacity & enforceability for market-based instruments

Capacity for price tiering & allocation systems

“TMD” for subsidies & cost externalities

Appropriate Micro Policies : Impacts of Private Sector

“Negative Externalities”: Public Costs of Private Profits



- US\$ 2.15 trillion/ year (est.) global environmental costs of economic activity of top 3000 Corporations
- Five sectors account for about 60% of environmental costs

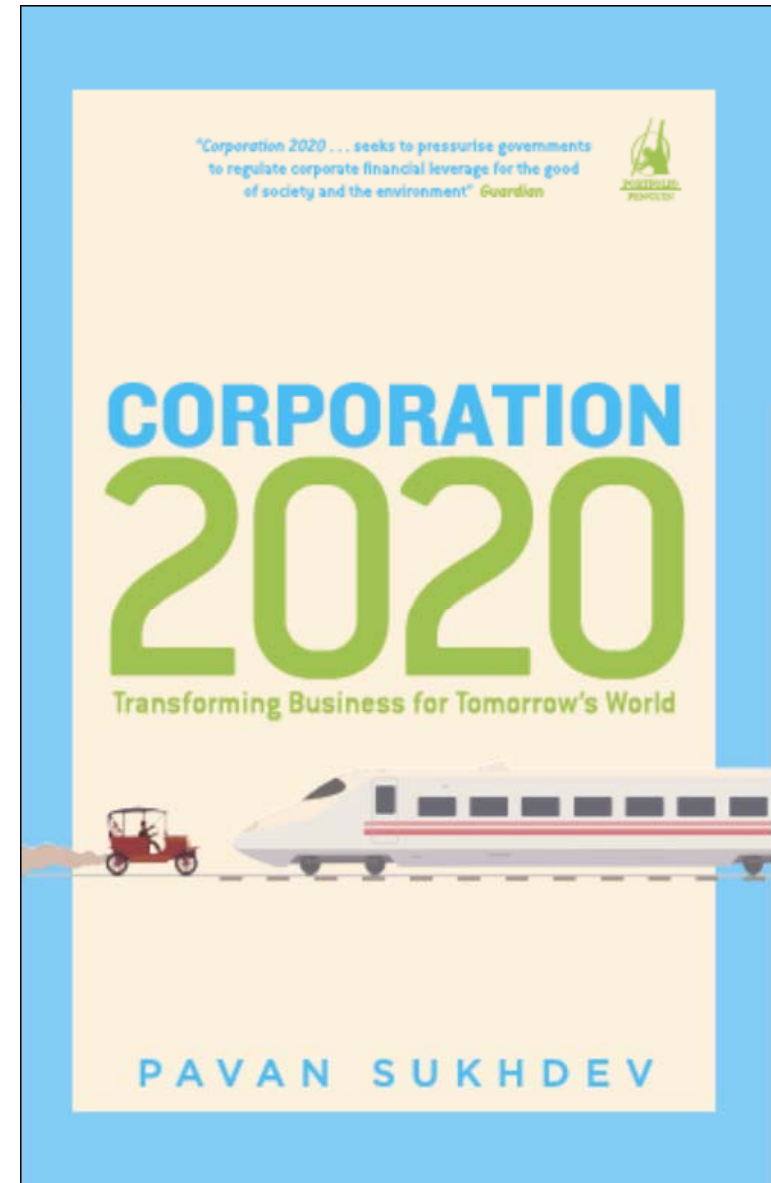
Source: Trucost for UNPRI, 2010.



Measuring & Disclosing Water Impacts

2010	Non-financial performance	Economic value € million	Economic value %
PUMA Operations			
Greenhouse Gases (ktCO ₂ e)	110.1	7.2	7.6%
Water ('000 m ³)	108.8	0.1	0.1%
Tier 1 Suppliers			
Greenhouse Gases (ktCO ₂ e)	131.4	8.6	9.1%
Water ('000 m ³)	5,319.8	0.8	0.8%
Tier 2 - 4 Suppliers			
Greenhouse Gases (ktCO ₂ e)	476.0	31.2	33.1%
Water ('000 m ³)	72,064.5	46.5	49.3%
Total			
Greenhouse Gases (ktCO ₂ e)	717.5	47.0	49.8%
Water ('000 m ³)	77,493.1	47.4	50.2%
Total Economic Value		94.4	100%

- **Transparency, Measurement, and Disclosure...**
- **Accounting for Externalities...**
- **“Corporation 2020”**



Thank You

www.corp2020.com

www.unep.org/greenconomy

