

# The United Nations World Water Development Report 2014

## WATER AND ENERGY

### Main Messages of the World Water Development Report 2014

UN-Water Seminar: Water and Energy

Engin Koncagül, United Nations World Water Assessment  
Programme

IFAT 2014, Munich, 7 April 2014

# The UN World Water Assessment Program (WWAP)

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The Commission on Sustainable Development in 1998 called for UN agencies to combine their efforts to produce a periodic World Water Development Report (WWDR), with an aim to reporting on the status of global freshwater resources.

***WWAP was created in response to this need.***

In March 2000, the Director General of UNESCO announced the launching of WWAP at the 2nd World Water Forum in The Hague.



# The UN World Water Assessment Program (WWAP)

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Housed and led by UNESCO, WWAP monitors freshwater issues in order to provide recommendations, develop case studies, enhance assessment capacity at a national level and inform the decision-making process.



# UN World Water Development Report

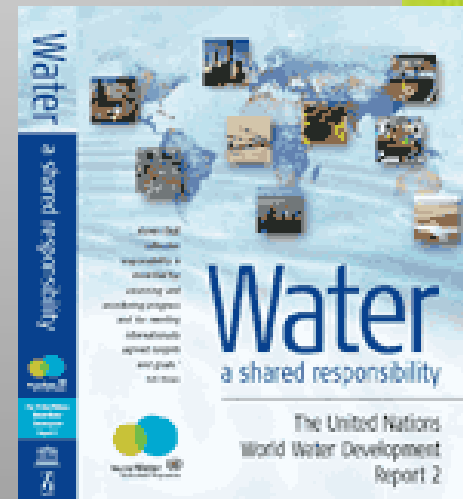
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WWAP's primary product, the **World Water Development Report (WWDR)**, is a periodic, comprehensive review providing an authoritative picture of the state of the world's freshwater resources.



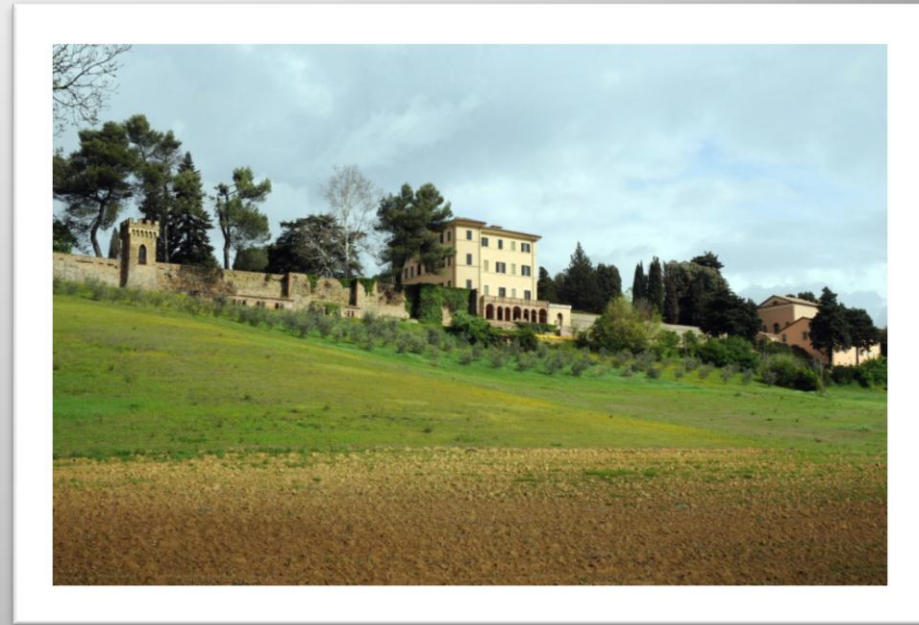
*The only report of its kind, the WWDR is the most authoritative publication on global freshwater resources.*

*- External Evaluation, Oct 2007*



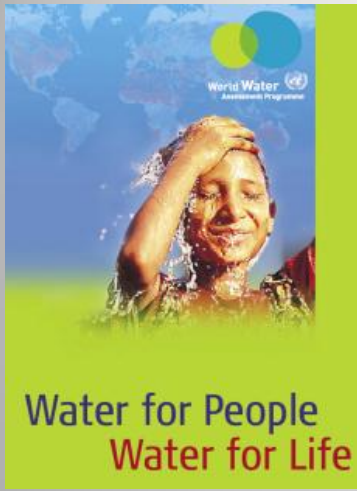
# The World Water Assessment Programme (WWAP)

- To meet requirements of international community for a wider range of policy-relevant, timely and reliable water;
- To help Member States assess the efficiency and effectiveness of their water policies;
- To prepare the WWDR series, on the global water situation and on the likely future changes;
- To develop framework for internationally comparable data and indicators for water resources;
- To assist Member States to build and improve their capacities to collect and analyze water data

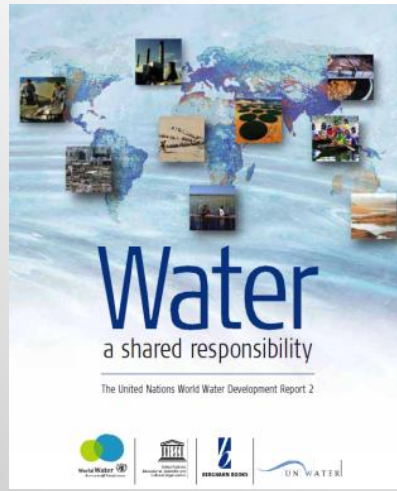


WWAP Headquarters, Villa La Colombella, Italy  
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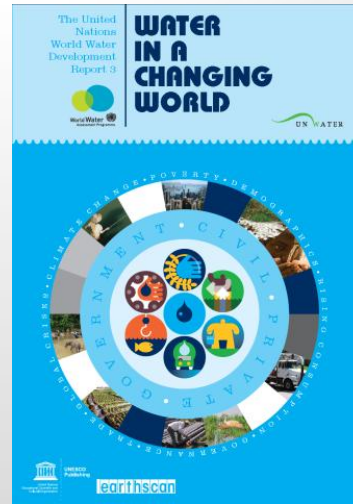




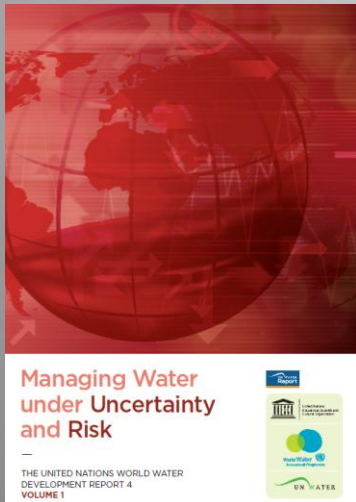
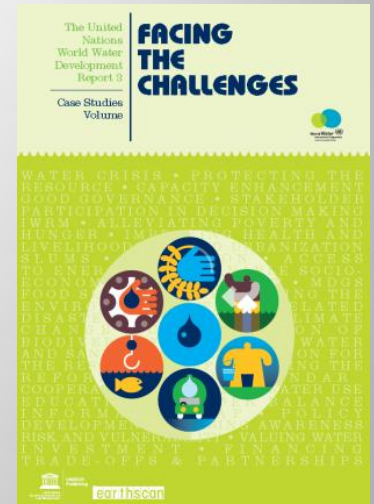
2003



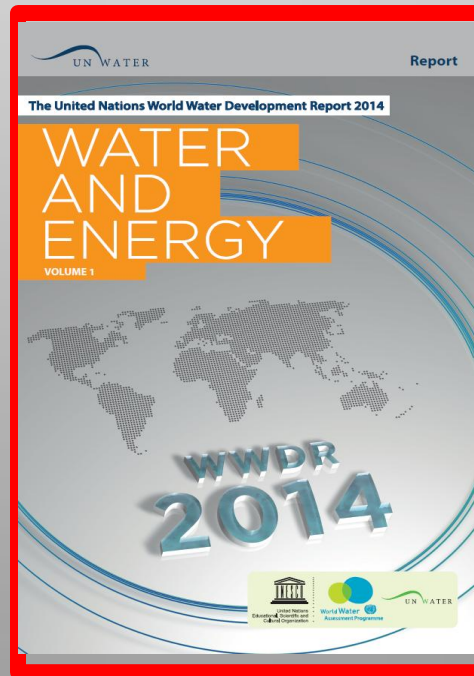
2006



2009

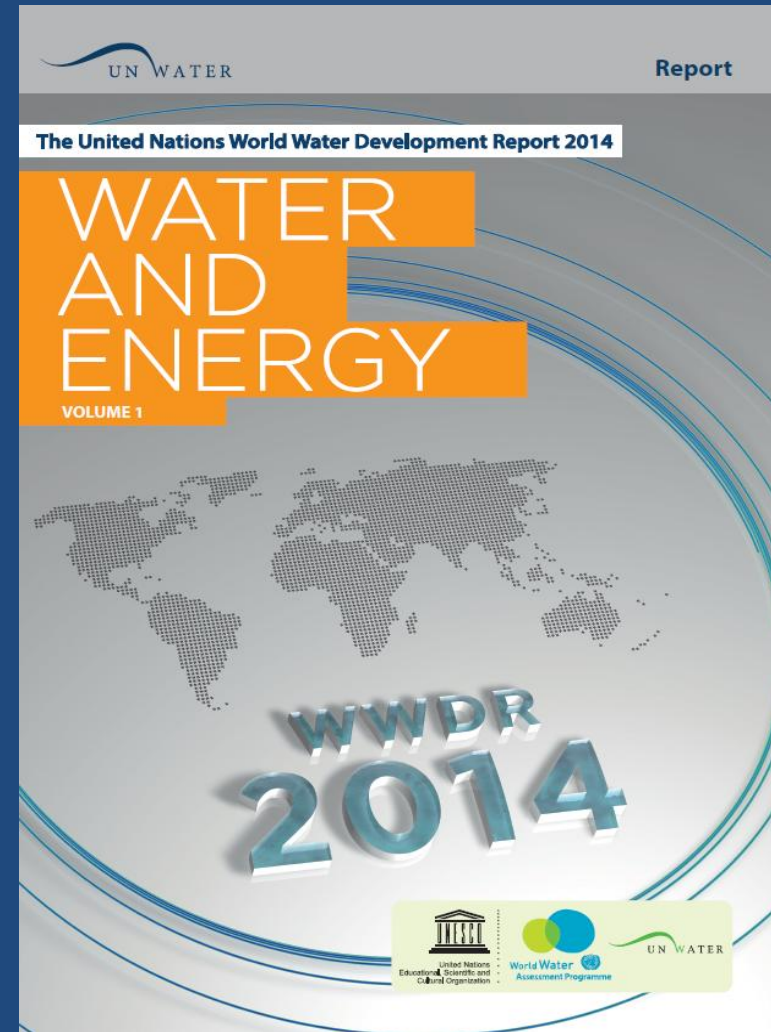


2012



# Why water and energy?

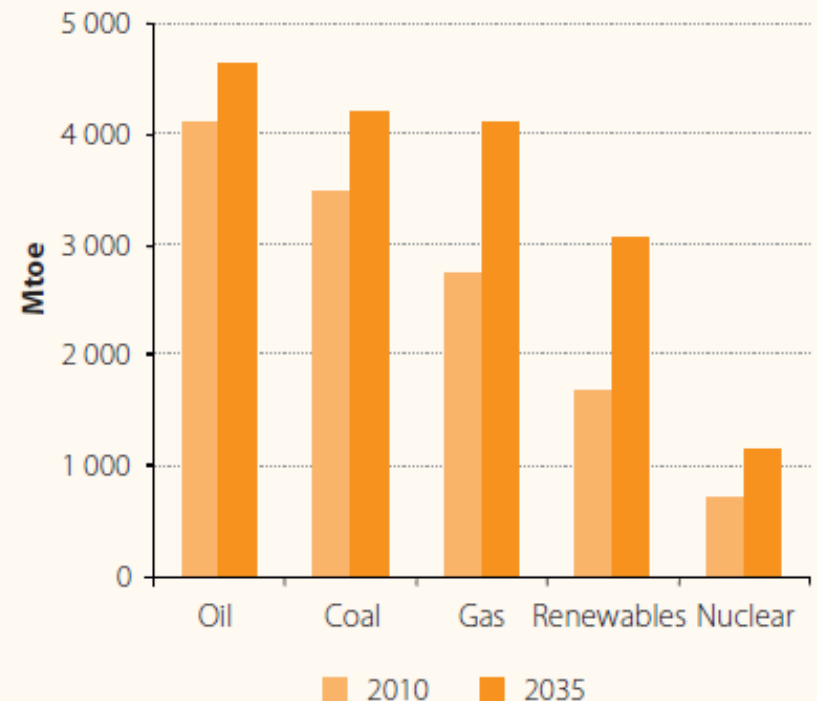
- W&E are interdependent
- In the next 20-35 years:
  - Water and energy consumption increase
- Pressure on already limited water resources, leading to increased water scarcity
  - Competition among - other water users, including agriculture, cities, industry and environment
- **Necessary: massive transition towards non water intensive forms of energy and electricity production**



## Demand for energy will increase significantly

- Energy demand projected to grow 30% until 2035, demand for electricity by 70%.
  - Over 50% in China, India and Middle East
- 90% of global power generation is water-intensive.
- This increase will present big challenges in developing and emerging economies.

World primary energy demand by fuel in the New Policies Scenario





## Demand for water will increase significantly

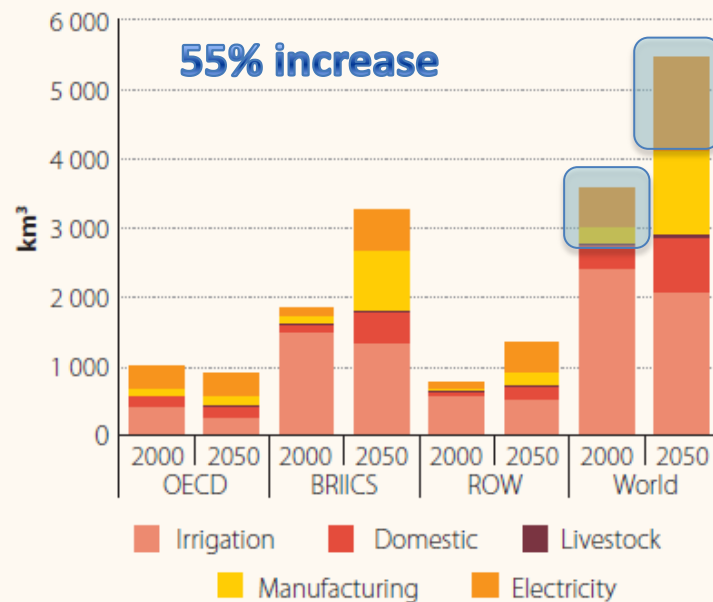
People without access to safe water (2013) 2.0 billion

People without access to sanitation (2013) 2.5 billion

People without access to electricity (2012) 1.3 billion

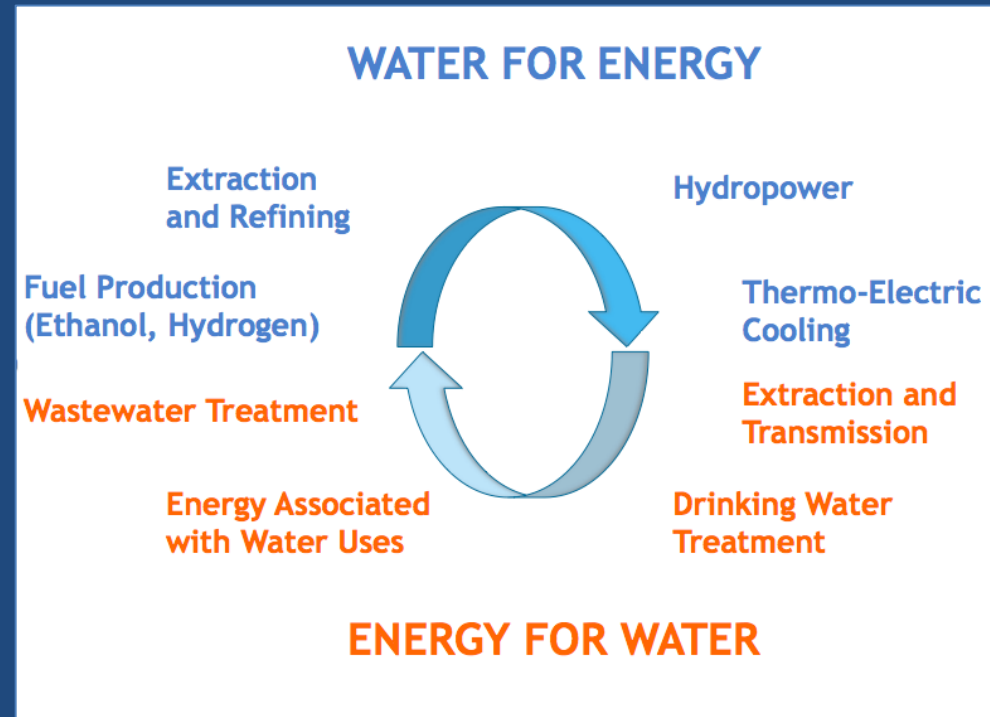
People who cook using solid fuel (2012) 2.6 billion

Global water demand (freshwater withdrawals): Baseline Scenario, 2000 and 2050



## Water and energy are interdependent

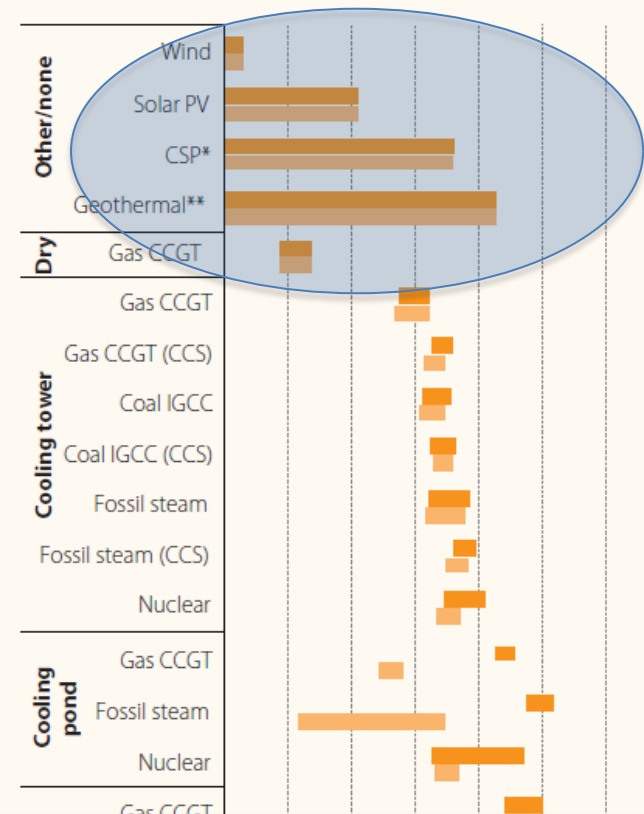
- Water is required to produce nearly all forms of energy.
- Water can be a limiting factor for energy production
- Energy is necessary to extract, treat and transport water
- Sanitation and irrigation require a stable and affordable energy supply
- Decisions concerning energy production need to take account of the limits of water resources



## Water and energy are interdependent

- The thermal power sector single largest user of water in the USA ahead of agriculture.
- Renewable energies, wind, solar PV and geothermal have very low water requirements.
- 15–18 billion m<sup>3</sup> freshwater resources contaminated by fossil fuel production per year.
- Climate change introduced by combustion of fossil fuels impacts on water availability

Water use for electricity generation by cooling technology



In Europe 43% total water withdrawals come from thermal power sector

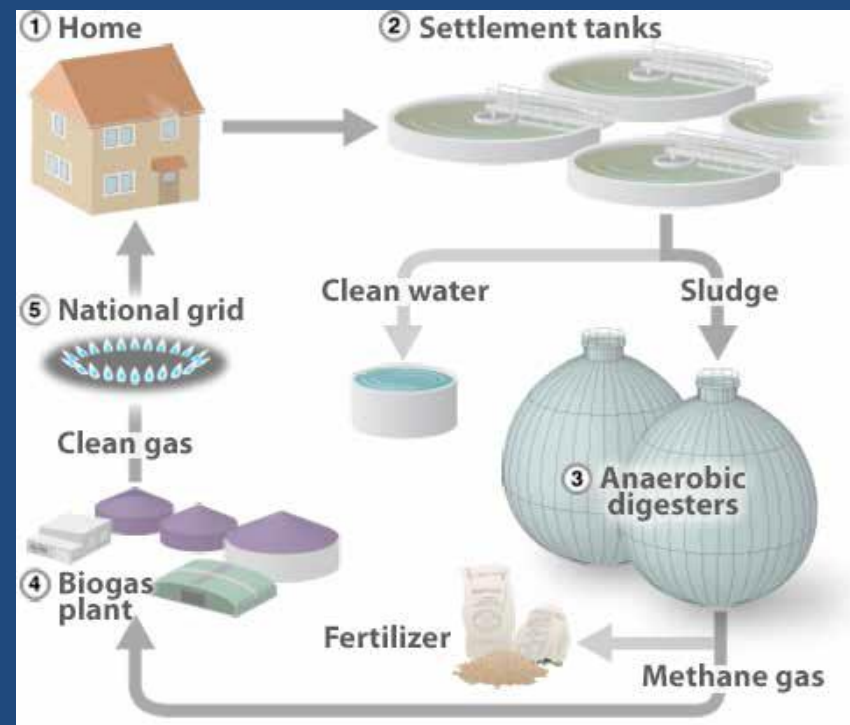
## Overcoming the barriers between water and energy

- The two domains need to be better integrated
- Increasing the level of collaboration and coordination in the development of policy responses can
  - optimize investments,
  - cut inefficiencies and,
  - better manage trade-offs.



## Overcoming the barriers between water and energy

- **Energy subsidies in India led to**
  - Construction of millions of private wells
  - Over extraction of groundwater
  - 29% of the country's groundwater resources are classified as critical
- **Combined power and desalination plants**
  - Waste heat from the power plant (steam) is used as the heat source for the desalination process.
- **Sewage water energy recovery**
  - Biogas is produced by anaerobic digestion





## Appropriately pricing and subsidies for energy and water services

- Adjusting tariff structures to
  - protect the poorest,
  - reduce some of the worst distortions and waste caused by subsidy dependency.
- Easier with Energy than Water
  - Energy is big business
  - Access to water is a human right



## Appropriately pricing energy and water services

- In Argentina, Panama and Paraguay artificially low tariffs created:
  - water consumption far above normal levels
  - over-dimensioned water production and treatment systems



## Room for private sector financing

- Increase of future consumption will require massive investment in infrastructure in developing countries
- Public sector cannot do it alone
- Creation of an enabling environment for private investment
  - Coordinating efforts by the private sector, governments and international institutions;
  - capacity-building of local institutions;
  - improving public spending and its monitoring; and reducing investment inefficiencies



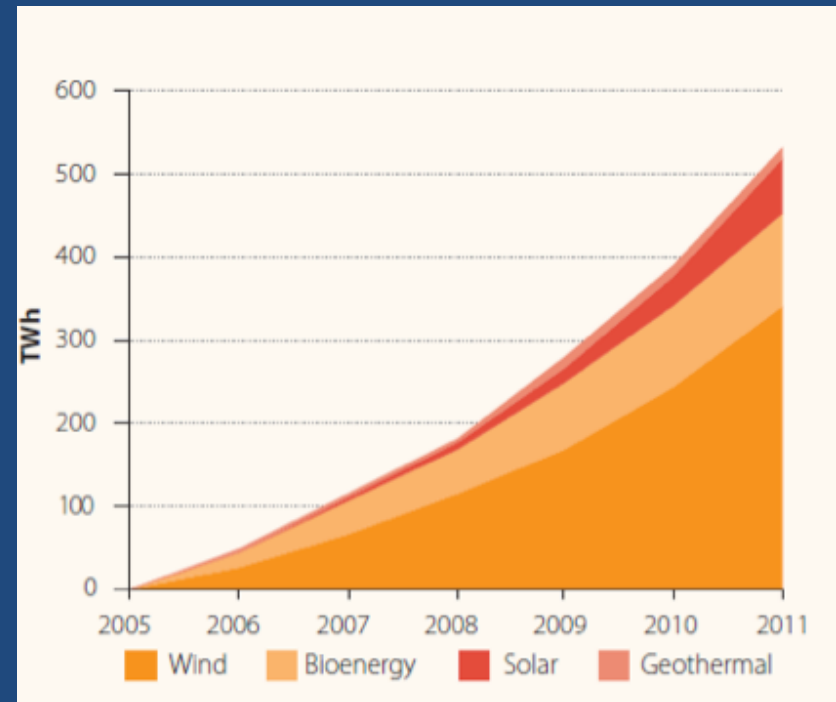
## Room for private sector financing

- Developing countries will require
  - US\$1.1 Trillion/year until 2015 for infrastructures
  - US\$103 Billion/year for water and sanitations until 2015
- US\$1 Trillion for energy infrastructures to achieve universal energy access in 2030
- Climate change adaptation will increase these figures



## Increase support for research and development

- From a water resources perspective, solar photovoltaic and wind are the most sustainable sources for power generation.
- Direct use of geothermal energy is underdeveloped and its potential is greatly underappreciated
- Increase support for research and development are crucial for developing less water intensive energy sources





## Water and energy at the heart of sustainable development

- Rio+20 *The future we want*
  - *Energy and water at the heart of sustainable development*
- For the future Goals (SDGs?) *an integrated, non-silos approach is required*



# Addressing social and gender implications

- Decisions on the distribution of water and energy have important gender implications.
- To shape meaningful policies, it is important to quantify these impacts
- Gender disaggregated data are an essential step



## Addressing social and gender implications

- In developing countries, women and girls bear most of the work burden associated with managing water and energy
- Indoor air pollution, caused by solid fuels for cooking, affects mostly women and children.
- Women in sub-Saharan Africa collectively spend about 40 billion hours a year fetching water.
- Per week, women in Guinea spend 5.7 hours to collect water, men only 2.3 hours. In Malawi women 9.1 compared to 1.1 hours for men.



Gender disaggregated data are needed to better understand impacts

Thanks!



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FOR A BETTER URBAN FUTURE

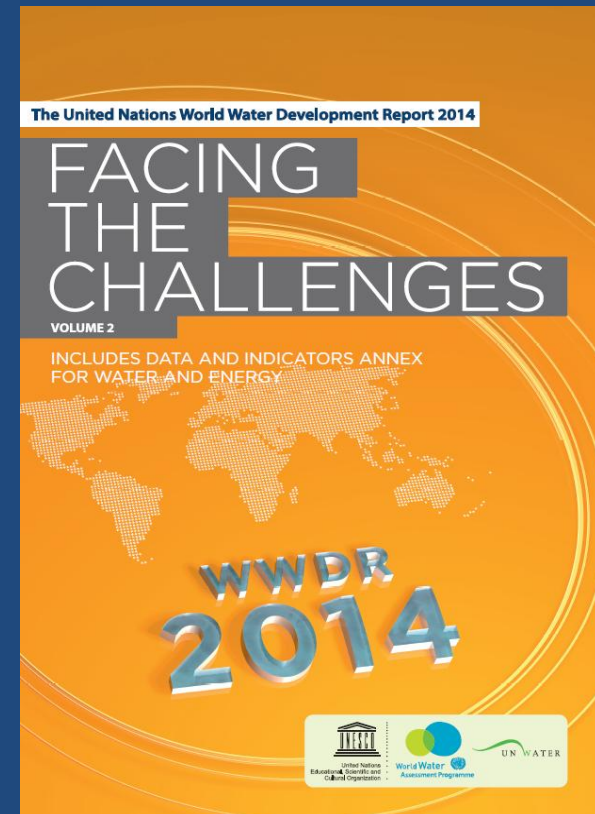
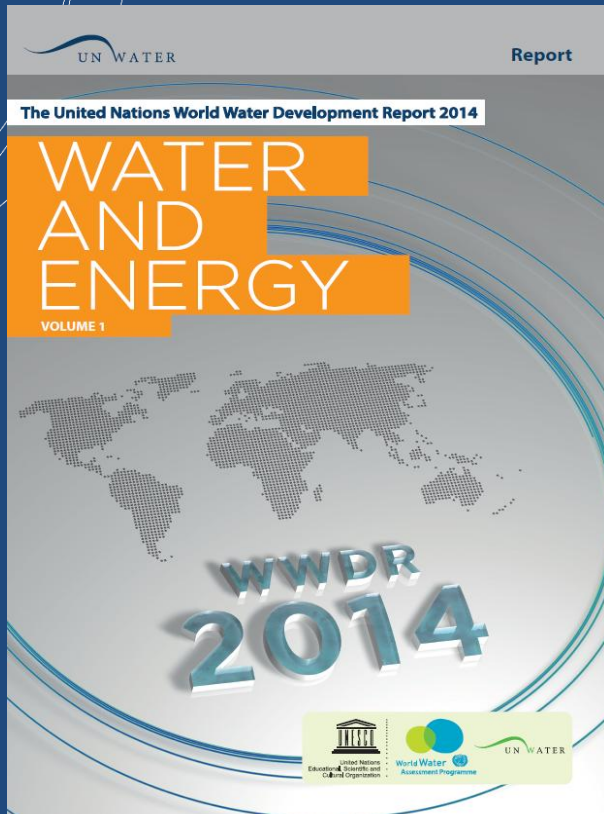


UNECA, UNECE,  
UNECLAC, UNESCAP,  
UNESCWA



Thanks!

 WWDR 2014



Download WWDR2014 here  
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