Main Messages
Two-way relationship

Water and energy are interdependent.

**WATER FOR ENERGY**
- Extraction and Refining
- Fuel Production (Ethanol, Hydrogen)
- Wastewater Treatment
- Energy Associated with Water Uses
- Hydropower
- Thermo-Electric Cooling
- Extraction and Transmission
- Drinking Water Treatment

**ENERGY FOR WATER**
Demand for energy and water is increasing worldwide.
Water where?

Water scarcity, stress and vulnerability

Total renewable water resources, 2011 (m² per capita per year)
90% of global power generation is water-intensive.
Critical limits

Groundwater under increasing stress

Water stress of aquifers important for farming
Access to water and energy

Freshwater and energy are crucial for human well-being and socio-economic development.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>People without access to improved water</td>
<td>769 million</td>
</tr>
<tr>
<td>People whose right to water is not satisfied</td>
<td>3.5 billion</td>
</tr>
<tr>
<td>People without access to improved sanitation</td>
<td>2.5 billion</td>
</tr>
<tr>
<td>People lacking access to electricity</td>
<td>1.3 billion</td>
</tr>
<tr>
<td>People using solid fuels for cooking</td>
<td>2.6 billion</td>
</tr>
</tbody>
</table>

Access to electricity in developing countries as a percentage of the population, 2011
The unserved

POPULATION USING SOLID FUELS FOR COOKING AND WITHOUT ACCESS TO ELECTRICITY, IMPROVED WATER AND SANITATION

THE CASE OF SUB-SAHARAN AFRICA
(selected representative countries):

<table>
<thead>
<tr>
<th>Using solid fuel for cooking</th>
<th>No access to electricity</th>
<th>No access to improved water</th>
<th>No access to sanitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>78%</td>
<td>66%</td>
<td>31%</td>
<td>78%</td>
</tr>
</tbody>
</table>
Meeting the challenges

Overcoming the barriers between water and energy
Appropriately pricing energy and water services
Meeting the challenges

Room for private sector financing

Needs versus actual investment in infrastructure

<table>
<thead>
<tr>
<th></th>
<th>Percent of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income countries</td>
<td>14</td>
</tr>
<tr>
<td>Lower middle income countries</td>
<td>9</td>
</tr>
<tr>
<td>Upper middle income countries</td>
<td>2</td>
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</tbody>
</table>

- Needs
- Actuals
Meeting the challenges

Increase support for research and development
Meeting the challenges

Water and energy at the heart of sustainable development
Meeting the challenges

Addressing social and gender implications
Thank You

Free download at: www.unesco.org/water/wwap

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