The Swiss mountains water reservoir, bottled water and the risks of a global water crisis

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Chairman of the Board of Directors, Nestlé SA

SMS and the Mineral Water Interest Group Session
Berne, 1 June 2010
Disclaimer

This presentation contains forward looking statements which reflect Management’s current views and estimates. The forward looking statements involve certain risks and uncertainties that could cause actual results to differ materially from those contained in the forward looking statements. Potential risks and uncertainties include such factors as general economic conditions, foreign exchange fluctuations, competitive product and pricing pressures and regulatory developments.
At the right time, in the right form, in the right place: water scarcity 2030

Water scarcity as percent of total implied demand
Projection 2030

1. 2030 projections, assuming technological innovation and infrastructure improvement investments are frozen at 2010 levels
SOURCE: 2030 Water Resources Global Supply and Demand model; based on IFPRI data
Water – at the right time, in the right *form*, in the right place: drinking water

“Drinking water shortage in Poland. Wells and water pipes contaminated.”

Warsaw, May 2010

Source: http://www.oe24.at/welt/Epidemie-Wasser-Polen-verseucht-Hochwasser-0715202.ece
Water – at the right time, in the right form, in the right place: drinking water
Water at the right **time** in the right form, in the right place: availability in monsoon regions
Functions of water: social good (human right), environmental good, economic good

As a social good: minimum requirement for survival: annual volume (2010) 60-125 km³

As an environmental good: annual volume (2010) 1,200-4,200 km³

As an economic good: annual volume (2010) 4,400 km³

Vladimir Smakhtin, Carmen Revenga and Petra Döll; Taking into Account Environmental Water Requirements in Global-scale Water Resources Assessments; IWMI 2004
Water worldwide: 154 river basins / regions; the sum of local overexploitation 2005 and 2030

Source: Water 2030 Global Water Supply and Demand model; agricultural production based on IFPRI IMPACT-WATER base case
www.2030waterresourcesgroup.com/water_summary

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### Water drawn and water consumption by sector in % of total drawn/consumed

<table>
<thead>
<tr>
<th>Sector</th>
<th>Water drawn</th>
<th>Water consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>66 %</td>
<td>93 %</td>
</tr>
<tr>
<td>Industry</td>
<td>20 %</td>
<td>4 %</td>
</tr>
<tr>
<td>Households</td>
<td>10%</td>
<td>3 %</td>
</tr>
<tr>
<td>Evaporation losses from reservoirs</td>
<td>4 %</td>
<td></td>
</tr>
</tbody>
</table>


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One of the most dire potential consequences of water shortage: food scarcity

“If present trends continue the livelihoods of one third of the world’s population will be affected by water scarcity by 2025.

We could be facing annual losses equivalent to the entire grain crops of India and the US combined.”

Frank Rijsberman, Director General
International Water Management Institute, 2003
Drinking water losses from leaking pipes

<table>
<thead>
<tr>
<th>Location and type of water use</th>
<th>Vol. drawn (litres/person/day)</th>
<th>Indirect approx. 420 l</th>
<th>Direct approx. 210 l</th>
</tr>
</thead>
<tbody>
<tr>
<td>For services (primarily energy)</td>
<td>20 – 400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing industry</td>
<td>20 - 400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Losses from leaking communal water pipes</td>
<td></td>
<td><strong>50-250 l ?</strong></td>
<td></td>
</tr>
<tr>
<td>Kitchen, bathroom and sanitary facilities</td>
<td>40 - 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other household uses</td>
<td>20 - 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking; preparing meals</td>
<td>7+</td>
<td></td>
<td></td>
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From Zehnder et al. 2003 EPFZ; based on data from UNESCO, Shiklomanov 1999; for losses UN and World Bank

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Municipal water: uncovered costs, insufficient investments (OECD report)

Investments into water treatment, distribution and disposal in 34 countries

Requirement 2007-2025
**USD 1,040 billion per year**

Actually invested now
**USD 580 billion**

**Gap: USD 460 billion (per year)**

Source: Infrastructure to 2030; OECD 2007

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Water in everyday life: the poorest pay many times the municipal water rates

![Image of people drawing water from a tanker]

**WATER - THE POOR PAY MORE**

- New York (US)
- London (UK)
- Manila (Philippines)
- Accra (Ghana)
- Barranquilla (Colombia)

<table>
<thead>
<tr>
<th>City</th>
<th>Water Price (US$ per cubic metre)</th>
</tr>
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<td>New York</td>
<td>1</td>
</tr>
<tr>
<td>London</td>
<td>2</td>
</tr>
<tr>
<td>Manila</td>
<td>3</td>
</tr>
<tr>
<td>Accra</td>
<td>4</td>
</tr>
<tr>
<td>Barranquilla</td>
<td>5</td>
</tr>
</tbody>
</table>

SOURCE: UNDP
The Alpine reservoir
The Swiss Forests Act of 1876 and 1902: for more than just beautifying the reservoir

"The forest area of Switzerland must not be diminished."
The Alpine reservoir: sustainable economic use of water resources for centuries
Private water utilisation rights: a tessel ring; buying and selling water rights possible in Saxon from Staldenried VS
Henniez

ECO-Broye project in Henniez

- Creation of a nature conservation zone partnership > 400 Ha above and beyond the legally planned conservation area!
- Preventive protection of water resources
- Collaboration with local players (agriculture, etc.)
- Sustainable development of agricultural practice
Freely accessible "buvette" in Vittel; "Pavillon de source" in Henniez
Mineral water: one of the first food items with additional benefits
# Municipal drinking water and bottled water: a comparison of quantities

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<td><strong>P.m. – of which:</strong></td>
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<td>Consumption of bottled water (all companies, worldwide)</td>
<td>0.08 l</td>
</tr>
<tr>
<td>Nestlé Group bottled water</td>
<td>0.009 l</td>
</tr>
</tbody>
</table>

From Zehnder et al. 2003 EPFZ; based on data from UNESCO, Shiklomanov 1999; for Bottled Water: Nestlé Waters

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Water scarcity, visible and invisible: Punjab

Source: Gurnam Singh & Co, Chandigarh
Solution concepts: the water-saving cost curve

India – Water availability cost curve

Cost of additional water availability in 2030

- Gap in 2030 = 755,800 million m³
- Cost to close gap = USD 5.9 billion

Specified deficit in between supply and water requirements 2030

- National river linking project (NRLP)
- Pre-harvest treatment
- Municipal dams
- Deep groundwater
- Ag. rainwater harvesting
- Aquifer recharge small
- Large infrastructure
- Shallow groundwater
- Wastewater reuse

Incremental availability
Billion m³

- Desalination (thermal)
- Desalination (reverse osmosis)
- On-farm canal lining
- Post-harvest treatment
- Rainwater harvesting
- Municipal leakage

SOURCE: 2030 Water Resources Group
The Swiss water reservoir in the mountains, bottled water and the risks of a global water crisis
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Good Food, Good Life