The DESERTEC Concept

Energy and Climate Security for a World of 10 Billion People

REvision 2012, New Renewable Direction for Japan

Tokyo, March 10, 2012

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DESERTEC Foundation
Challenges of the 21st Century

POPULATION OF THE EARTH
Number of people living worldwide since 1700 in billions

- 1700: 1 bln
- 1804: 1 bln
- 1927: 2 bln
- 1960: 3 bln
- 1974: 4 bln
- 1987: 5 bln
- 1999: 6 bln
- 2012: 7 bln
- 2024: 8 bln
- 2048: 9 bln

Sources: Allianz Insurance • United Nations World Population Prospects • Deutsche Stiftung Weltbevölkerung
Challenges of the 21. Century
Challenges of the 21. Century

Source: faz.net
Challenges of the 21. Century
Challenges of the 21. Century
Challenges of the 21th Century

- Energy security
- Supply with drinking water and food
- Migration
- War for resources
- Climate change
  - Extreme weather conditions
  - Rise of sea level
  - Floods
  - Droughts
  - ...

Are we able and willing to find solutions?
How can we create sustainable living conditions...

...in view of a world population of ~ 10 billion people in the year 2050?
How can we create sustainable living conditions...

...in view of a world population of ~ 10 billion people in the year 2050?
The necessary technologies are available
**Solar Energy is highly abundant**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Known Reserves</th>
<th>Calculated Sunweeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>gas</td>
<td>2 weeks sun</td>
<td>2 weeks sun</td>
</tr>
<tr>
<td>oil</td>
<td>2 weeks sun</td>
<td>2 weeks sun</td>
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<tr>
<td>uran</td>
<td>2 weeks sun</td>
<td>2 weeks sun</td>
</tr>
<tr>
<td>coal</td>
<td>22 weeks sun</td>
<td>22 weeks sun</td>
</tr>
<tr>
<td>All known reserves</td>
<td></td>
<td>2 weeks sun</td>
</tr>
<tr>
<td>All known and to be expected reserves</td>
<td></td>
<td>40 weeks sun</td>
</tr>
</tbody>
</table>

Solar energy in the red square = World Energy Consumption
The DESERTEC concept unifies different clean energy technologies
Day and night operation with heat storage

Source: Solar Millennium
DESERTEC is a Global Solution Concept

- **DESERTEC** is a holistic concept for energy and climate security, to secure the supply with energy and water, to support socioeconomic development, political security and peace.

- The concept has been developed by people from all over the EUMENA region and combines all available renewables.

- **DESERTEC Foundation** was founded and is driven by civil society and Club of Rome.

- DESERTEC Foundation is independent in every respect and talks to civil society, politics, industry and scientific community in order to promote and implement the DESERTEC concept.

- **Industrial and scientific initiatives**: Dii GmbH and DESERTEC University Network have been founded in 2009 and 2010.
Renewable Energy in Morocco

- Competency in wind and solar
- Grid capacity
- Functionality of the new established institutions
- Experts and technical personnel
- Need of an appropriate campaign to increase the awareness of the population for RE and EE
- Model projects in rural areas

» A cooperation between Morocco and the German federal state Schleswig-Holstein
DESERTEC Principles for CSP project evaluation

**Principle 1**
Secure provision and distribution of electricity

- Dispatchability
- Minimized down-time
- Local and national benefit
- Interconnectivity and grid stability

**Principle 2**
Social responsibility and economic sustainability

- Profound consideration of socio-economic impacts
- Participation
- Maximized involvement of local / regional economy

**Principle 3**
Environmental responsibility

- Profound consideration of environmental impacts
- Conservation of rare, threatened or endangered species and habitats
- Minimized waste production
- Maximized use of renewable energy
- Minimized use of water / optimum neutral water balance
Evaluation of Potential Projects: TuNur
DESERTEC is a global concept

With a strategic focus on two regions:
- EU-MENA
- East Asia
DESERTEC - Become part of the solution!