Royal Scientific Society
Water and Environment in GCC: New Imperatives

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April, 2012
Amman- Jordan
Outline

1. Context
2. State
3. Pressure
4. Response
5. Water-Environment and culture
6. Key messages
1. Context
Global Challenges: must be addressed for reaching a sustainable future

People & Values
- Shifting demographics
- Poverty & inequity

Governance
- Interdependent world
- Inadequate policy framework

Economy
- Valuing social & environmental impacts
- Material-based consumption

Resources, Energy & Environment
- Resource scarcity
- Energy security
- Environmental degradation
- Climate change

WBCSD Vision 2050
Natural Capital

Our Global Impact

Fig. 1: LIVING PLANET INDEX, 1970–2003

Fig. 2: HUMANITY'S ECOLOGICAL FOOTPRINT, 1961–2003
The Great Acceleration

Source: Steffen et al. (see note 20)
ENERGY
World CO² Emissions From Fossil Fuels 1750-1997

Earth's capacity to absorb CO2

million tonnes per year

1750 1800 1850 1900 1950 2000
What About the Ethics?
Per Capita Available Water Share in the GCC, 1950-2005

- **Water Poverty**
- **Absolute Water Poverty**


Population, million

Per Capita m³

0 5 10 15 20 25 30 35 40

500 750 1000 1250 1500 1750 2000 2250 2500 2750 3000 3250 3500 3750 4000
Increase in Areas under Irrigation in the GCC, 1965-2002

FAOSTAT, 2004
Development of Desalination Capacity in GCC, 1980-2005

Billion cubic meters

Year


0 1 2 3 4
Trends in per capita total water consumption (agricultural, municipal, and industrial) in the GCC countries (1980-2005)
3. Pressure
Ecological footprints....

Global average: 1.8 ha/person

UAE: 11.9 ha/person

Kuwait: 7.6 ha/person

KSA: 4.6 ha/person
The Cost of Environmental Degradation in the MNA countries

Environmental Category: Percentage of GDP

Source: Sarraf, METAP reports 2001-2006
Oil Tanker Routes 1997 (millions of tonnes)
Biomass of table fish in 1999

75% of world fisheries face commercial extinction

Biomass of table fish in 1999

(map: V. Christensen, SAUP)
Extinction crisis and the blind spot.
Impact of oil on organisms

• Marine turtles
  – Disturbance to nesting habitat

• Special habitats
  – coral reefs
  – mangrove forests
3. Response

• New Deal
• Green Economy
• New Community of Water and Energy
• Defining Regional Commons (3 shared public goods)
10 IMPERATIVES
“Capitalism may collapse because it does not allow the economy to tell the ecologic truth...” Lester Brown

- Thinking beyond GNP
- Considering SDI and HDI
- Distinction between Growth & Development
High numbers correspond to greater levels of environmental sustainability.
IT'S TOO HEAVY

IT CAN'T FLY!

THE ECONOMY
Imperative # 2: Redefining Sustainable Development

Green growth is about attaining the balance in all capitals: (Tayebah Development)

- ENVIRONMENT (natural capital)
- SOCIETY (social capital)
- TECHNOLOGY (manufactured capital)
- ECONOMICS (financial capital)
Imperative #3: R&D and STI

- R&D in clean and nano-technology
- Hydro-informatics and modeling
- Energy and water conservation
- Disaster management and protection of nature
- Measuring our ecological footprints
- Civic activism and access to information
- e-Learning and communication
- Bio-mimcry
- KISR. KAUST, KACST, Qatar Foundation, MASDAR
Technical Metabolism

Biological Metabolism

Source: Michael Braungart, Cradle to Cradle Design
Imperative #4: Investment in Green Economy...

Cost of Gulf war

Lost opportunities in STI
Imperative # 5: Valuing Ecosystems
### Why?

- Income
- Nutrition
- Health
- Livelihoods
- Water supply
- Disaster risk mgt
- Jobs
- Economic growth

#### CONSTITUENTS OF WELL-BEING

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<thead>
<tr>
<th>Security</th>
<th>Freedom of choice and action</th>
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<td>PERSONAL SAFETY</td>
<td>OPPORTUNITY TO BE ABLE TO ACHIEVE WHAT AN INDIVIDUAL VALUES DOING AND BEING</td>
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<td>SECURE RESOURCE ACCESS</td>
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<td>SECURITY FROM DISASTERS</td>
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<th>Basic material for good life</th>
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<td>ADEQUATE LIVELHOODS</td>
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<td>SUFFICIENT NUTRITIOUS FOOD</td>
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<td>ACCESS TO GOODS</td>
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<td>STRENGTH</td>
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<td>FEELING WELL</td>
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<td>ACCESS TO CLEAN AIR AND WATER</td>
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<td>SOCIAL COHESION</td>
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<td>MUTUAL RESPECT</td>
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<td>ABILITY TO HELP OTHERS</td>
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#### ECOSYSTEM SERVICES

- **Supporting**
  - NUTRIENT CYCLING
  - SOIL FORMATION
  - PRIMARY PRODUCTION
  - ...

- **Provisioning**
  - FOOD
  - FRESH WATER
  - WOOD AND FIBER
  - FUEL
  - ...

- **Regulating**
  - CLIMATE REGULATION
  - FLOOD REGULATION
  - DISEASE REGULATION
  - WATER PURIFICATION
  - ...

- **Cultural**
  - AESTHETIC
  - SPIRITUAL
  - EDUCATIONAL
  - RECREATIONAL
  - ...

**LIFE ON EARTH - BIODIVERSITY**

Source: Millennium Ecosystem Assessment
Imperative # 6: The region as a unit of analysis

- Graduate program in regional science
- Regional infrastructures (water, oil, gas, train).
- Beyond GCC
- Community of water and energy
- Green Investment for Regional Commons
Imperative # 7: Climate change response

2.4 % contribution of GCC to climate change

Opportunities to benefit from Carbon Credit- CDM (UAE and Qatar)

Direct Natural Exposure: 1800 kw/ hr/ square meter

Oil prices do not consider the external cost of climate change
Water & Climate Change

- Make the complex manageable
  - implement ‘resilience in practice’

Bahrain may lose 15 km of coast line due to climate change
Imperative # 8: Local knowledge

- What constitutes a good life (*Hayat Tayebah*)?
- How can we contribute to construction of Universe (*Emaratu Al Kawn*)?
- How can we promote living lightly on Earth (*Zohd*)?
Imperative # 9: The Energy Imperative

 Demand-led related diversification

 Demand-led innovation

 Green buildings and energy savings

 Green jobs and eco-innovations

 R&D in green technology
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R&D in green technology
The World is not just “Flat,” it is “Hot and Crowded,” too!

If total energy is conserved, why are we worried about energy shortages?
Imperative # 10: The Food Imperative

Moving people to Water versus moving people to water……

Moving food to people or moving water to people
Key messages
Rio + 20......what is our role...

- New policies and institutions that protect our natural capital (*hima; Trade and Environment; IP, subsidies, access to markets*)
  - People-centred Development
  - New Deal

- Responsible development (*tayebah*)
  - Well-being Society

- Change consumption patterns (*zohd*)
  - Ecological Restoration

- Civil society and firms will help restore the planet (*ijtihad*)
Thank you