

A satellite-style map of the Middle East region, showing the Mediterranean Sea to the west, the Red Sea to the southwest, and the Persian Gulf to the south. The landmasses are outlined in black, and the terrain is shown in shades of brown and tan, with some green areas indicating vegetation. The text is overlaid on the map.

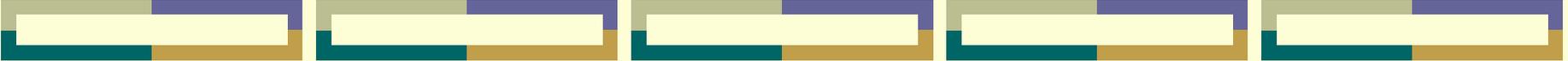
Hans Guenter Brauch, FU Berlin & AFES-PRESS

**Environment and  
Development  
in the Middle East  
(Part 2)**

Seminar at the Sheraton Amman Al Nabil Hotel &  
Towers, Amman, Jordan, 18 December 2003

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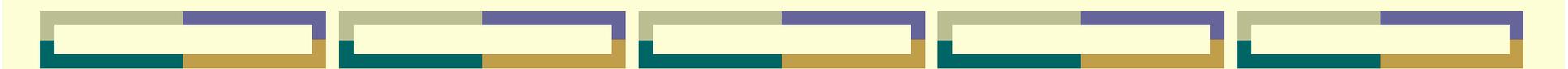
## **Environment and Development in the Middle East (Part 2)**

### **Development Opportunities:**

**Addressing Non-Military Environmental  
Challenges by Functional Cooperation for  
Sustainability: Water, Soil, Food and Energy**

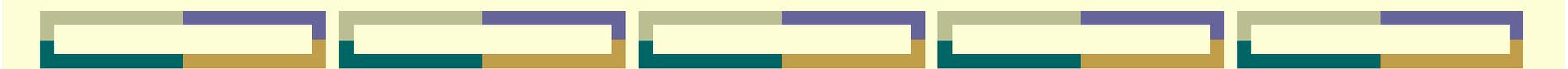
**Proposals for regional cooperation on water, energy  
and food for Gaza, the West Bank & Aqaba**





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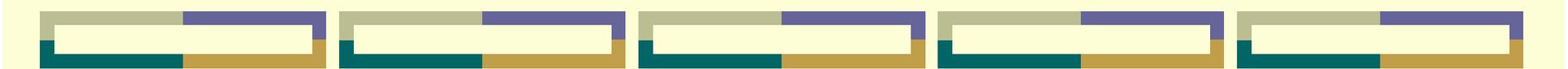
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## **Part 2: Development Opportunities:**

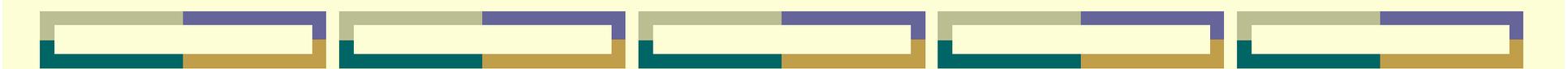
# **Addressing these Local Challenges by Functional Cooperation for Sustainability: Water, Food, Energy**

- 1. Goal: Sustainable Peace & Development**
  - 2. Need for a Shift in Security Concept and Security Perceptions**
  - 3. Functionalist Perspective towards Sustainable Development**
  - 4. Coping with Six Non-military Challenges of the Survival Hexagon**
  - 5. Regional Focus: Six Hydropolitical Geostrategic Contexts**
  - 6. Response to Water Scarcity: Renewable Solar Desalination**
  - 7. Functional Arab Cooperation: Solar Desalination for Egypt & Gaza**
  - 8. Functional Arab-Israeli Cooperation on Water for the West Bank: Solar Desalination in the Gulf of Aqaba**
  - 9. Conceptual Proposal for Functional Cooperation: Gulf of Aqaba**
  - 10. Peacebuilding by Functional Environmental Cooperation - Addressing Regional Impacts of Global Environmental Change**
- 



# 1. Goal: Sustainable Peace & Development

- **Four basic concepts: Conceptual Quartet (SPED)**
    - ✓ **Security: from national to human & environmental security**
    - ✓ **Peace: achieve end of violence to address common chall.**
    - ✓ **Environment: from destruction (war) to protection (peace)**
    - ✓ **Development: move to goals of sustainability and equity**
  - **This requires a gradual shift in linkage concepts:**
    - **Security dilemma: from thinking in action-reaction patterns**
    - **Survival dilemma: to address common challenges of GEC.**
  - **Two conceptual strategic policy goals:**
    - ❖ **Sustainable development: optimising resource efficiency**
    - ❖ **Sustainable peace: human & societal security & political peace with prosperity based on respect and equity! Utopia**
- 



## 2. Need for a Shift in the Security Concept and in the Perception of Security Challenges

What you see depends on your worldview & mindset!

### Learning from the End of World War I and II

- **Versailles:** Mixture of **Hobbesian** punishment with **Wilsonian** vision and rhetoric
- **G. Marshall & J. Monnet:** two **pragmatic functionalist** visions for cooperation among former enemies: **conditionalised support for countries and people**
- **Shift for Germany:** **objective security:** joint enemy and integration in NATO/EU; **subjective security:** Avoidance of perception of humiliation

### Learning from the End of the Cold War (1989-1990):

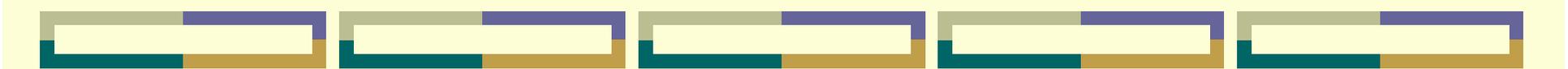
- **Hobbesian:** Anderson: Victory: US Military and economic superiority (power)
- **Grotian:** Gorbachev: Breaking out of arms race by conceptual learning

In ME: exclusive focus on hard security as a zero sum game & power

- **Asymmetric conflict:** between a powerful **state** vs. powerless **non-state** actors
- **Spiral of violence:** cycle of human misery producing hatred on both sides

Need fundamental shift in thinking on security in and on ME region:

- ❖ From **national military** and **political security:** referent: **nation state** to
  - ❖ **Human-centred environmental security:** focus on **joint challenges of survival**
- 



## 2.1. Perception Requires a Shift in Security Concept and of Perceptions in the Middle East

- ❖ **Lessons learned from end of WW II:** In Germany: from a perception of **humiliation** to experience of **integration** in an emerging **postnational** constellation (J. Habermas).
  - ❖ **Lessons learned from 1989:** Peaceful change is possible. Combination: loss of fear of people, readiness for change
  - ❖ **Major Obstacle:** Adherence to a **narrow hard national military security** concept in Israel and in most Arab countries incl. Palestine
    - **Objective security:** Absence of threats to acquired values: **This does presently not exist in the Middle East.** Remains task of a peace agreement.
    - **Subjective Security:** Absence of fear that such values will be attacked: **This does not exist in the Middle East.** Requires satisfying basic human needs & overcoming the perception of humiliation & respect for the dignity of the other.
  - Only from a wider „**human security**“ perspective **environmental security challenges and risks to humans** matter. This requires a wider security concept that recognises new soft “security” challenges & an understanding that they can be solved only by functional cooperation.
  - Thus, strategies must build on existing forms of cooperation.
- 



## 2.2. Readiness of Israelis and Palestinians for Functional Cooperation?

### Public Poll of World Economic Forum (21.6.2003): Key findings

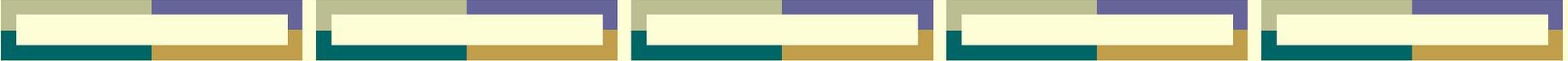
- About 6 of 10 of both Israelis (66%) and Palestinians (56%) are in favour of the current renewal of negotiations between Israel & the Palestinians on basis of roadmap.
  - **Israelis (75%) & Palestinians (68%) believe: both have right to live in peace and security.**
  - **51% of Israelis & 50% of the Palest.: there will be a Palest. state within 5 years**
  - Both sides see the USA as the most influential actor in bringing peace to the region.
  - Both Israelis and Palestinians support an open market and joint economic projects.
  - **66% of Israelis & 57% of Palestinians agree: mutual cooperation & joint projects between all nations of the region, in areas such as water, health, environment, tourism, etc., should start as soon as possible, even now before final peace agreements are reached.**
  - 72% of Israelis & 69% of Palestinians agree that *there can be no real econ. growth & prosperity for Palestinians and Israelis without a peace settlement between them.*
  - **For 77% of Palestinians free movement of workers between the two sides is of key importance for cooperation, for Israelis, figure is 57%.**
  - **Both sides agree to move forward on other areas of possible cooperation, such as water desalination & restoration, environmental issues, regional health projects & agriculture.**
- 

## 2.3. From Readiness to Action

The following are possible areas of co-operation between Israel and the Palestinian Authority. Please tell us whether you are in favour or against cooperation between the two entities in each area:

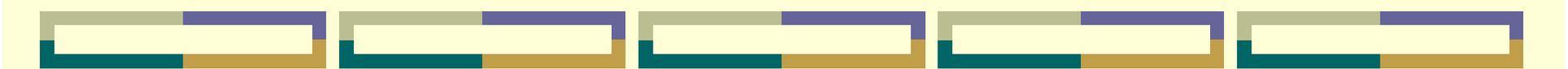
|                                     | % in favour |              |
|-------------------------------------|-------------|--------------|
|                                     | Israelis    | Palestinians |
| <b>Water desalination</b>           | <b>78</b>   | <b>77</b>    |
| Regional health                     | <b>79</b>   | <b>73</b>    |
| <b>Environm. issues</b>             | <b>82</b>   | <b>68</b>    |
| <b>Agricultural issues</b>          | <b>79</b>   | <b>72</b>    |
| Regional tourism                    | <b>76</b>   | <b>55</b>    |
| Reg. trade relations                | <b>76</b>   | <b>64</b>    |
| IT and hi-tech                      | <b>67</b>   | <b>68</b>    |
| Culture & sports                    | <b>72</b>   | <b>51</b>    |
| Free movement of workers in between | <b>56</b>   | <b>77</b>    |

- **Readiness of both Israelis & Palestinians for functional cooperation.**
- **Implementation of this will of peoples requires a shift in concepts from national to human & environmental security.**
- **The visions of Mitrany & Monnet & policies of G. Marshall & M. Gorbachev may contribute to such a mutual learning process.**



### 3. Functionalist Perspective towards a Mutual Sustainable Development

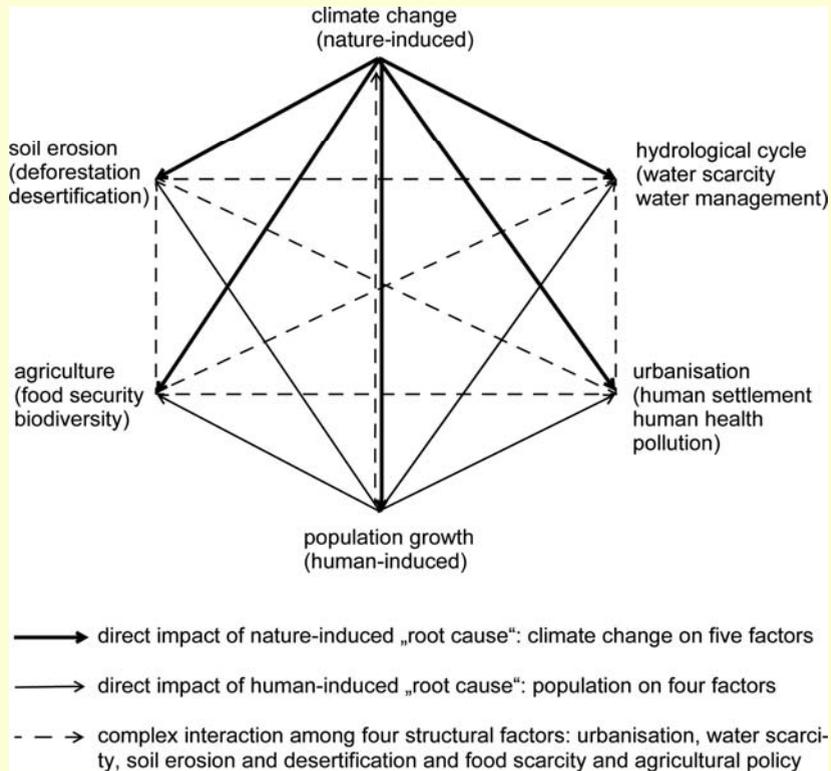
- Major task of overcoming the Hobbesian thinking in zero-sum games.
  - No environmental challenge can be solved with Hobbesian logic.
  - Major obstacle: lack of trust due to daily experience of violence.
  - East-West Conflict: Lack of trust: resulted in search for confidence & partnership building measures to prepare cooperation during conflict.
  - First step: **Agenda setting** (my goal) and **problem recognition** (UNEP Desk Study, our book on *Security and Environment in Mediterranean*):
  - Near & Middle East: Need for environmental partnership building measures to build mutual trust by addressing these urgent joint environmental challenges by functional cooperation on freshwater, wastewater, solid & hazardous waste, conservation and biodiversity.
  - Second Step: **Gradually building mutual trust by functional cooperation** addressing the challenges to survival on water, soil and food specialists between Israel, Palestine and in the region.
  - Third Step: **Anticipatory Learning**: Mitigate the horrible projections!
- 



## 3.1. Visionaries: Mitrany, Marshall, Monnet, Gorbachev

- **David Mitrany: Working Peace System (1944):**
    - Cooperation among **functionalist** specialists (ILO): political spill-over: creating trust among former adversaries.
    - Cooperation of water specialists in Israel & OPT continues!
  - **George Marshall: Marshall Plan (1947):** by a realistic U.S. business elite: P. Hoffman (CED, 1944)
    - **Conditionals support** for winners and losers of WWII: cooperation among recipients with Germany
    - **Facilitator:** common enemy during the early Cold War
  - **Jean Monnet: proposed a EC for Coal & Steel (1950)**
    - **Context** (Korean war, 1950); alternative to German rearmament
    - **Result:** „**integration**“ as a **federalist working peace system!**
  - **Michail Gorbachev: New Thinking & Learning on Security**
    - **Context:** 2<sup>nd</sup> Cold War: 50.000 nuclear weapons; major US rearmament
    - **Strategy:** reduce costs, new thinking: disarmament & new mil. doctrine
    - **Result:** **End of division of world, Europe, Germany, EU enlargement**
- 

## 4. Mutual Preparation for Coping with Six Non-military Challenges of the Survival Hexagon



**Climate Change:** will affect water, soil and contribute to disasters

**Population Growth:** will increase the demand for water & food

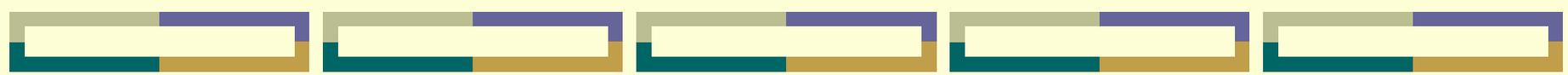
**Urbanisation:** will contribute to

**Desertification:** affects agriculture

**Water:** will decline for drinking & agriculture: conservation

**Food:** low yields & higher demand, more imports: „virtual water“

**Thesis: Joint policy response to common challenge of survival of individual, next generations on both sides of conflict.**



## 4.1 Coping with Non-military Challenges in Near East

### 1) Climate Change: Implementing Kyoto and Beyond

- ⇒ COP 9 in Milan: Quartet divided (US opposed, Russia postponed)
- ⇒ Kyoto Mechanisms: Clean Development Mechanisms, GEF etc.
- ⇒ Technology transfer & capacity building in P-P partnership
- ⇒ Special Climate Change Fund & Least Developed Countries Fund, support technology transfer, adaptation projects & other activities, EU, Canada, Iceland, New Zealand, Norway & Switzerland pledged **410 million \$/year**

### 2) Population Growth: Reproductive Health

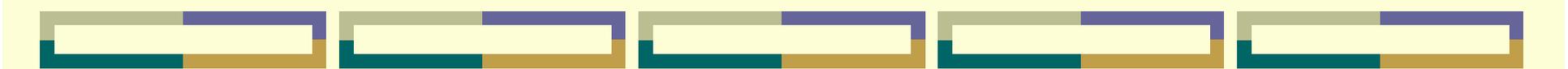
Support for **UNPF** activities in cooperation with respective governments, due respect to **cultures & religions**. This is a major health security but also education & gender issue (women);

**Financial cuts due to ideological battle, ignorance, resource scarcity.** This is a major issue to be addressed solely by the future Palestinian state

### 3) Urbanisation: Livable rural and urban spaces.

- ⇒ for Palestine: agricultural constraints lack of water and soil erosion
- ⇒ social security challenge: high unemployment rate among the young
- ⇒ economic security issues: employment: crafts, industry and services.





## 4.2 Coping with Water, Soil and Food Challenges

- **Water: Water Harvesting, Management, Desalination**

- ⇒ Near and Middle East high water stress, will rise
- ⇒ joint aquifers: continued cooperation during conflict of water managers, specialists on conservation & distribution
- ⇒ Cooperation on re-use of wastewater for irrigation, watering of parks
- ⇒ Cooperation on desalination: coping common challenges

- **Desertification: Strategies to Combat Soil Erosion, Degrad.**

- ⇒ Region has traditional knowledge for combating desertification
- ⇒ Sharing of experience, new technologies in combating desertification

- **Food Scarcity: Satisfying Food Needs**

- ⇒ Exchange of knowledge on farming in arid/semiarid areas
- ⇒ Cooperation in research, training and capacity building

- **Three Pillars for needed regional functional cooperation!**





## 4.3. Policy Goals for Water, Food, Energy Security

### **Water Security relying on desalination**

- **Israel, Jordan & Palestinian Authority need desalination to meet water needs: desalination plants are being planned & built.**
  - ⇒ **Israel: by 2004: 250 MCM, necessary: 375 MCM**
  - ⇒ **OPT & Palestinian state by 2010: 47 MCM, by 2020: 57 MCM**
  - ⇒ **Jordan deficit by 2000: 297 MCM, 2010: 251 MCM; 2020: 408 MCM**
- **Cooperation in research, development & construction of des. plants?**
- **Research & development on solar desalinat. in Israel, OPT, Jordan?**

### **Food Security by relying on virtual water**

- **With population food demand grows, water supply & crop yield drop due to climate change > Cereal import demand grows (SSR drops)**
- **Competitiveness of irrigated agriculture with desalinated water?**

### **Energy Security by exploiting the virtual sun**

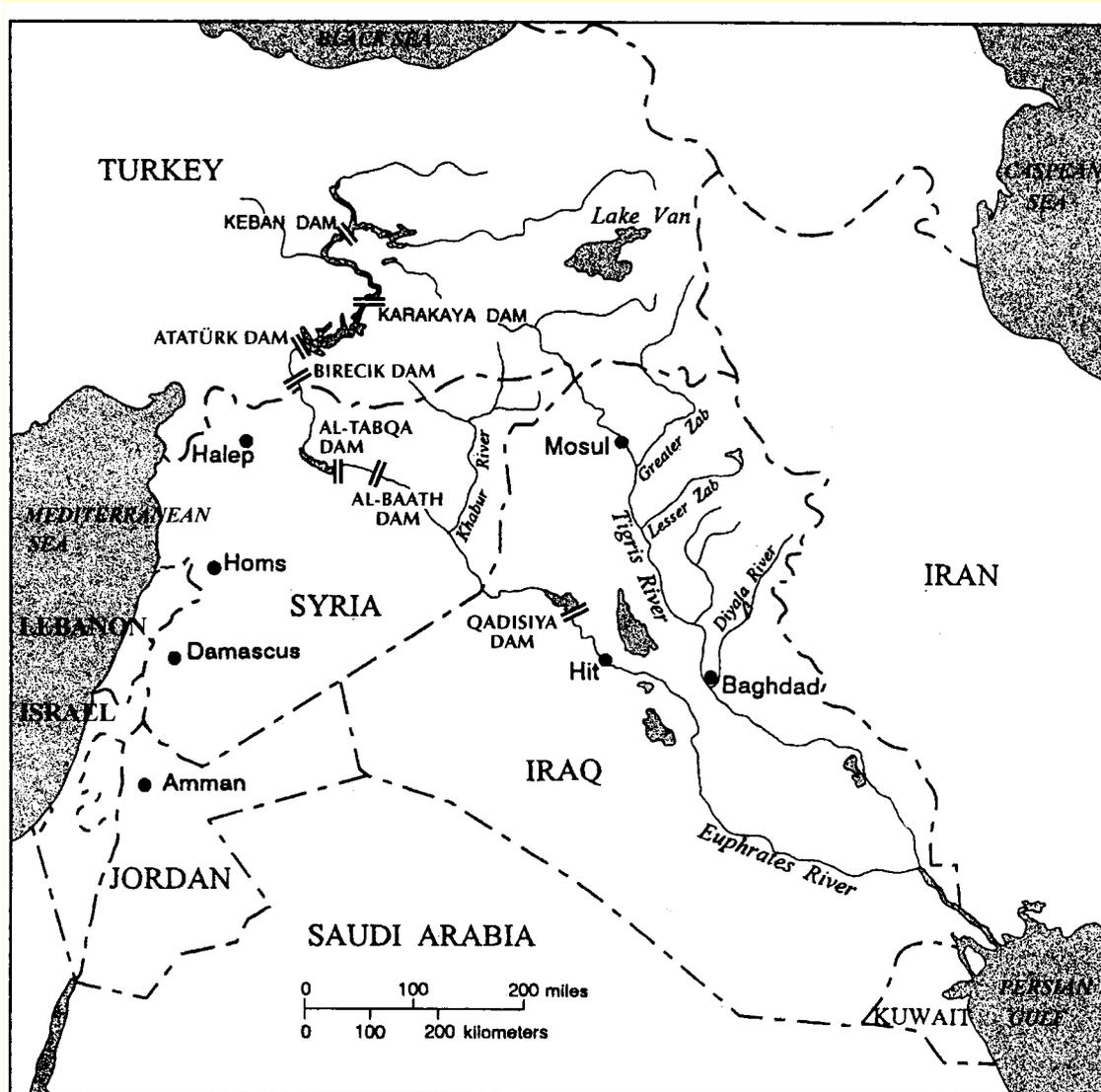
- **Research & Development on use of renewable energy sources I,P,J?**
  - **Cooperation among experts on jointly developing new survival industries?**
- 

# 5.Focus: Hydropolitical Geostrategic Context



- **Focus 1: Euphrates/Tigris**  
Turkey, Syria, Iraq, Iran
  - **Focus 2: Nile River Basin:**  
Egypt & 9 African countries
  - **Focus 3: Golan Heights**  
Israel, Lebanon, Syria, OPT
  - **Focus 4: Jordan River**  
Israel, Jordan, OPT, Syria
- These three will be discussed**
- **Focus 5: Sinai and Gaza**  
Egypt, Israel, Palestine
  - **Focus 6: Gulf of Aqaba**  
Egypt, Israel, Jordan & Saudi Arabia & Palestine

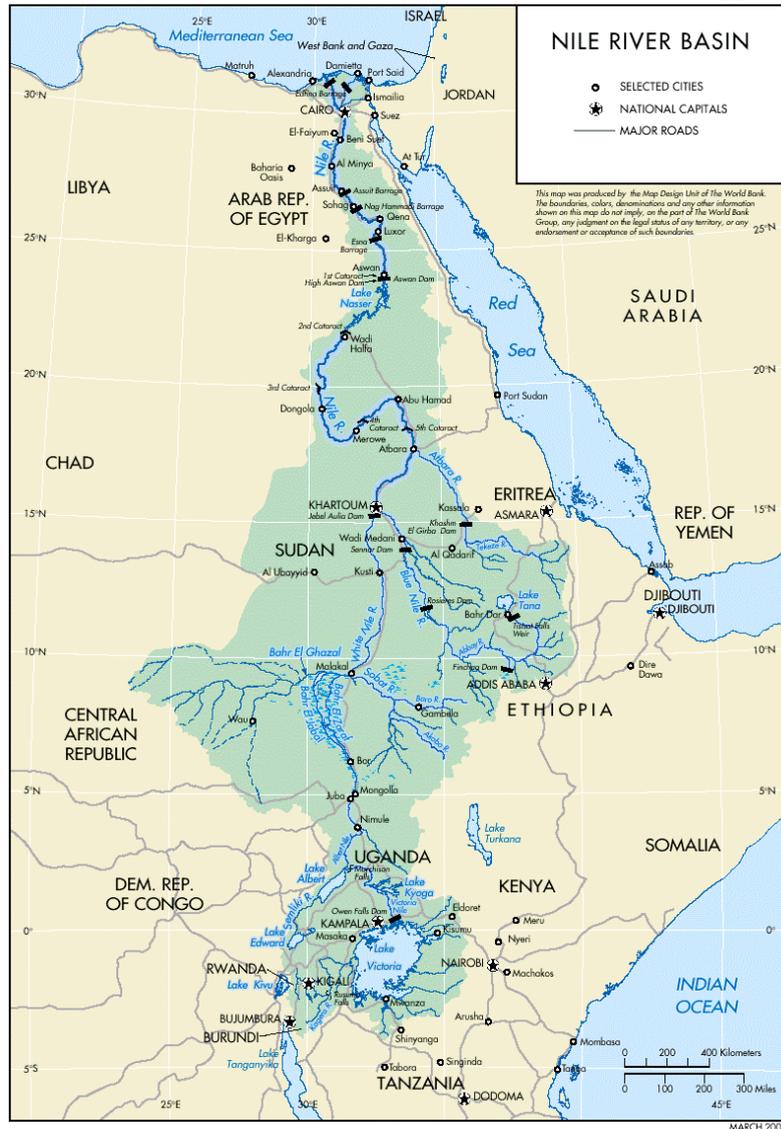
# 5.1. Euphrates/Tigris: Turkey, Syria, Iraq, Iran



- **Impact of Turkish Southeast Anatolian Project (GAP)**
  - **Division of water with Syria & Iraq: key issue.**
  - **Implications for EU membership: implementation of EU Water Directive**
  - **Water pipeline: Turkey to Israel & Palestine:**
    - ✓ **a) In the Mediterranean**
    - ✓ **b) Through Syria**
  - **Water pipeline Turkey > Syria > Israel > Palestine highly unlikely option.**

# 5.2. Water from the Nile to Sinai and Gaza Strip

IBRD 30785



**Egypt depends for 95% of its water & agriculture on the Nile**

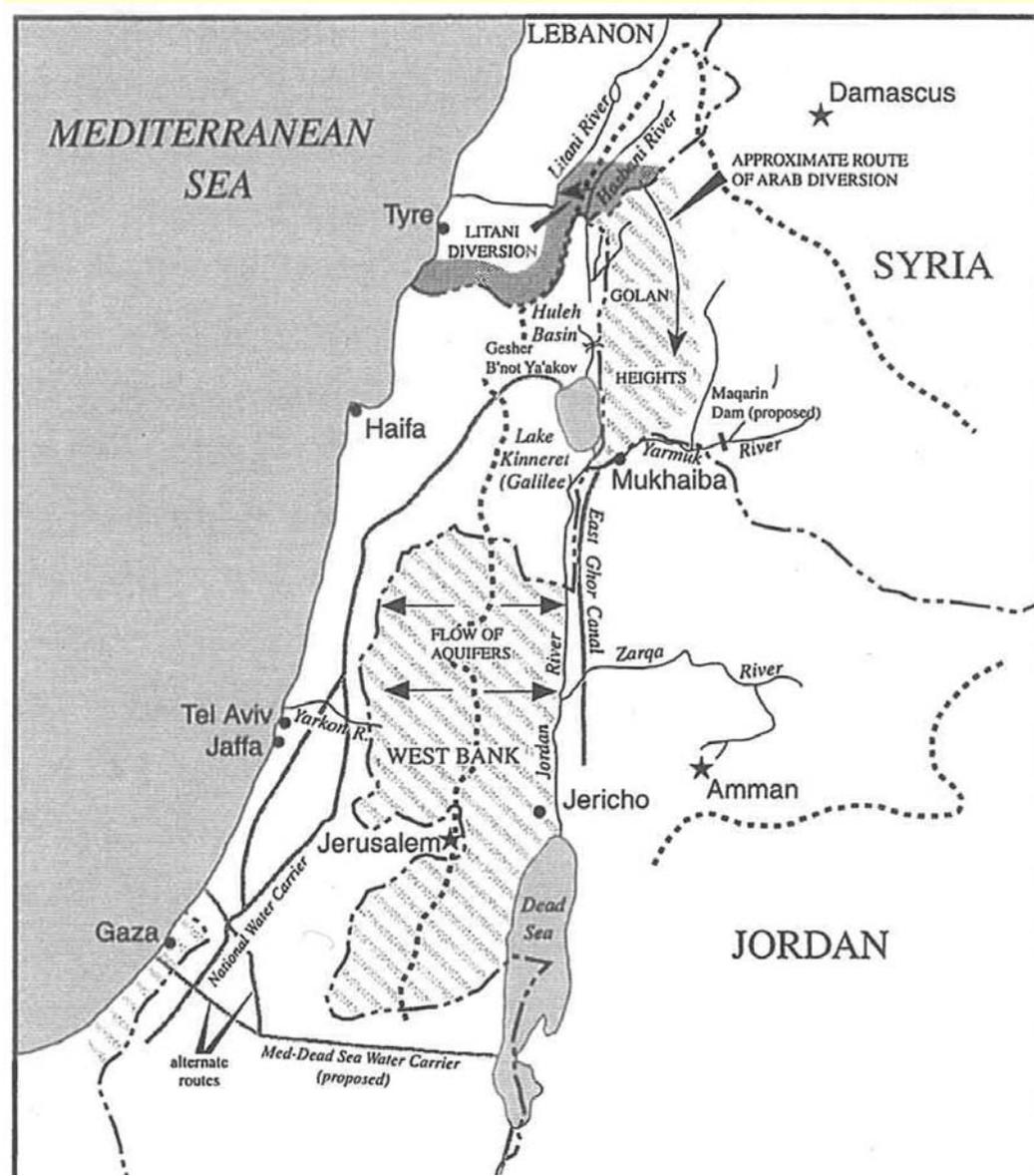
**Nile Basin Countries: drought, famine. major recipients of food aid.**

**Long-term indicator population growth: UN projected pop. growth until 2050: 575 million people in 9 Nile countries.**

**Nile water for Gaza is a highly unlikely**

|                  | 1950 | 2000  | 2050  | 2000-50 |
|------------------|------|-------|-------|---------|
| <b>Sudan</b>     | 9,2  | 31,1  | 63,5  | 32,435  |
| <b>Ethiopia</b>  | 18,4 | 62,9  | 186,5 | 123,544 |
| <b>Ruanda</b>    | 2,1  | 7,6   | 18,5  | 10,914  |
| <b>Burundi</b>   | 2,5  | 6,4   | 20,2  | 13,862  |
| <b>Sum (1-4)</b> | 32,2 | 108,0 | 288,7 | 180,755 |
| <b>Sum (1-9)</b> | 86,7 | 280,8 | 855,8 | 574,967 |

## 5.3. Golan Heights: Israel, Lebanon, Syria, Jordan

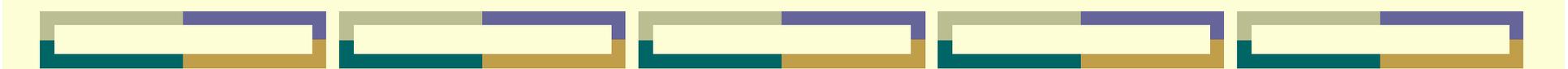


- A source of water for Lake Tiberias/Kinneret
- Major National Water Carrier from Lake Tiberias/Kinneret to Negev
- Requires a political settlement and water agreement between Israel, Syria & Lebanon
- Major desalination plants in Israel a precondition for peace settlement & for a water agreement with Syria.

## 5.4. Jordan River Treaties: Israel, Jordan, OPT

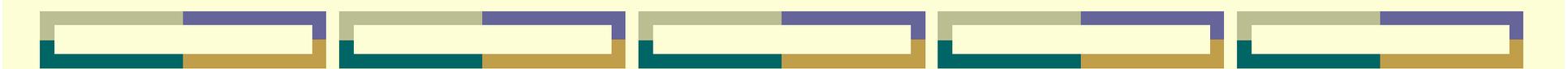


- Water was a major topic of Middle East Peace Process
- Jordan-Syria on Yarmuk R.
- Israeli-Jordanian Water Agree
- Israeli-Palestinian Interim Water Agreement, 28.9.1995, no final agreement reached
- Trilateral Declaration of Principles in the frame-work of the multilateral water group
- So far only partly implemented, confirmed status quo.
- Resources will not be sufficient for all parties due to demand growth in 21<sup>st</sup> cent.



## **6. Solar Desalination with Renewables: Response to Water Scarcity in Middle East?**

- **Desalination – A costly solution for Palestinians & others?**
  - **Large hydrocarbon reserves in Saudi Arabia, Syria; limited reserves in Egypt, imports in Israel, OPT & Jordan**
  - **Energy Needs: From fossil (Arab Gulf, Libya) to renewables**
  - **Renewable potential: solar, wind, city & agricultural waste**
  - **Renewable solar thermal desalination: Sinai, Negev and deserts in Jordan as a source of energy generation**
  - **Water desalination for Gaza using renewable energy from the Sinai (Egypt)**
  - **Water desalination for Israel: Greening the Negev (without water from L. Tiberias)**
  - **Water desalination for the West Bank in the Gulf of Aqaba (Egypt, Israel, Jordan, Palestine: West Bank).**
- 



## 6.1. Energy Potentials of Renewables

- **Israel, Palestine & Jordan depend on fossil energy imports for electricity generation, transportation & desalination**
  - **High demand fossil energy prices will increase in 21st cent.**
  - **Renewable Energy Sources:**
    - **Hydropower, biomass, geothermal: virtually not existent**
    - **Wind power: some potential, offshore and in mountains??**
    - **Solar potential: very high solar potential**
      - a) **solar thermal i) heating/cooling; ii) electricity; iii) desalination, iv) hydrogen**
      - b) **solar photovoltaic: i) electricity**
  - **Constraint: higher cost (no economy of scale), exc. wind**
  - **Mid & longer-term alternative for Middle East countries**
  - **Potential area for research & technology co-development**
  - **Geo-strategic advantages of solar energy for 3 countries:**
    - ❖ **High national technical and economic potential, energy independence**
    - ❖ **Renewable source and unlimited supply.**
- 

## 6.2. Solar Thermal Technologies

- **Concentrating Solar Power Technologies:**
  - ❖ „use solar radiation to achieve high temperatures and to generate steam or air with high energy density, which can then be used for electricity generation and other purposes“. (Trieb et. al. 2002)
  - ❖ alternatives: a) Fresnel concentrators, b) parabolic trough (400-600 °C), c) solar tower concept with surrounding heliostat field (1200 °C, up to 50 MW), d) solar dish (for small applications up to 50 kW).
  - ❖ Economic lifetime: at least 25 years; energy payback time of a solar plant: ca. 0.5 years (Trieb et. al. 2002)

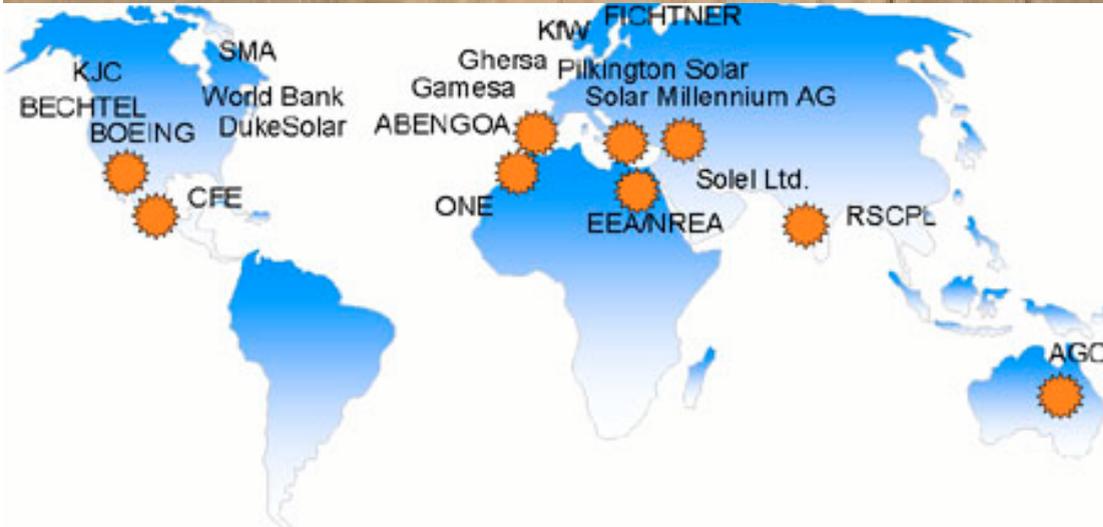


## 6.3. Solar Thermal Technologies (2)

### Parabolic Trough & Solar Dish (for small applications)



## 6.4. Solar Thermal Electricity Activities



- **Luz (now Solel) built 9 solar stations in Mojave desert in 1984, ca. 354 MW (30 to 80 MW each), price: 12 c/kWh, new: 10-5C/kWh**
- **Only commerc. installation**
- **CIEMAT (Spain) & DLR (Germany) at PSA Almeria developed technology**
- **Israel, Ministry of National Infrastructure approved plan to build a 100 MW station in the Negev to expand to 500 MW**
- **Spain: in planning stage**
- **GEF: projects in Mexico, Morocco, Egypt, India**



## 6.5. Desalination: Technologies & Use

- **Combined solar power & desalination plants with proven technology:**
    - a) **steam turbine co-generation system** and
    - b) **thermal seawater desalination.**
  - **Trieb/Nitsch/Kronshage/Schillings et. al. (2002):**

“a **200-MW plant** of this type with 7.500 full load operating hours/yr under conditions of Dubai would deliver approximately **1.5 bn. kWh/yr of electricity** and 60 million m<sup>3</sup> of freshwater at approximately **4.3 €-cents/kWh** and **1.30 €/m<sup>3</sup> of water**, **water for 50.000** and **electricity for 250.000 people**, costs: **800 M€.**
  - **A. Cohen: Haaretz, 11.12.2003: Giza Financ. Consult.; 10 cents/kWh, cost of desalination decreased within a decade from 1 \$ to 50 cents.**
  - **Middle East Desalination Research Centre, Muscat, Oman:**

**20 experts, budget US\$ 1,000,000, desalination R& D in these areas:**

    - a) thermal processes, b) membrane processes, c) **desalination & renewable energy system integration**, d) **hybrid desalination processes**, e) non-traditional or alternative desalination processes, f) common technical processes, g) environmental issues, h) capacity building, i) data banks & ref. material
- 

## 6.6. Middle East Desalination Research Center (MEDRC) in Muscat, Oman

• **Middle East Desalination Research Cent.(MEDRC), Muscat, Oman developed a MENA Univers. & Research Institution Outreach Program:**

- Al-Azhar University
- Ben-Gurion University of the Negev
- Jordan University of Science and Technology
- Hashemite University
- Hydraulic Research Institute
- King Abdulaziz City for Science and Technology
- King Fahd University of Petroleum and Minerals
- Kuwait University
- Kuwait Institute for Scientific Research
- Royal Scientific Society
- Sultan Qaboos University
- The University of Qatar
- University of Sfax
- Technion-Israel Institute of Technology
- University IBN Tofail
- Water and Environment Research and Study Center (WE

**King Abdulaziz City for  
Science & Technology**



## 6.7. Solel: Model of a Solar Desalination Process



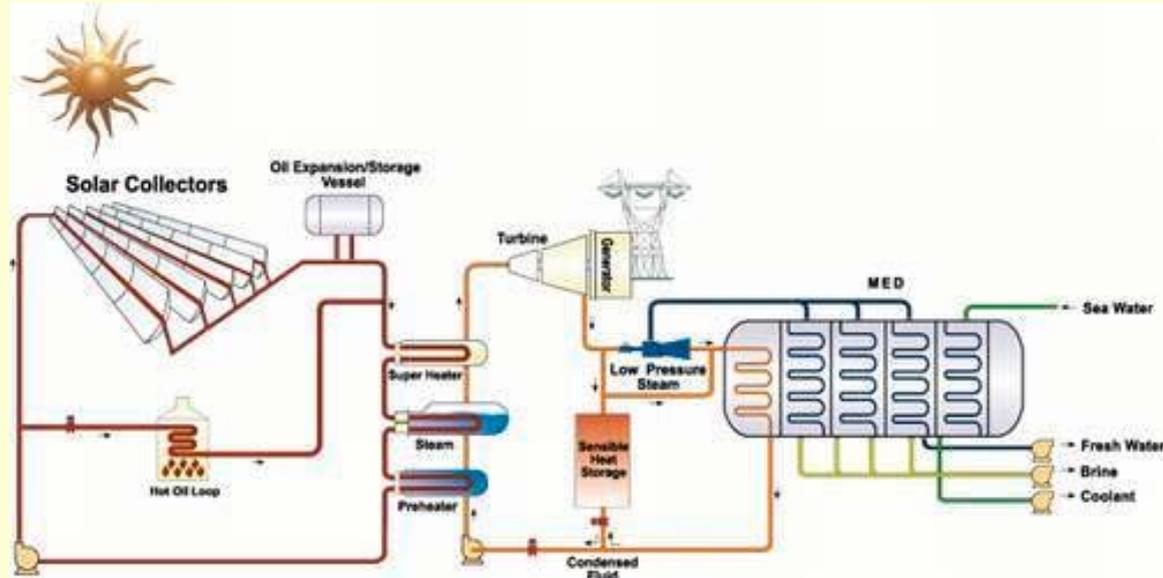
- **Desalination** separates water from salt by evaporating and re-condensing water. Solar thermal desalination is effective: high efficiency of **solar collectors provide energy** (heat) for first evaporation. A desalination unit evaporates & condenses water using familiar & well tested **M.E.D. (Multi Effect Distillation)** plant **IDE Technologies Ltd.** adapted to solar desalination.
- **Solar thermal desalination system** operates as a **hybrid plant** 24 hours a day, with sunshine during daylight hours and a backup fuel at night. Optional heat storage system can extend operation beyond sunny hours. The most economically viable system incorporates **solar collectors driving a steam turbine for power generation & waste heat is used to drive the MED.**

**Most effective with direct radiation & when the cost of electrical power is more than 7 cents kWh, for resort, recreation sites & remote locations requiring autonomous power & desalination (Solel).**

## 6.8. Solel: Model of a Solar Desalination Process

• Components of combined Solar Power & desalination system include:

- Solar Field
- Steam Generator
- Power Block
- Backup Storage System
- Heat Storage Unit (Optional)
- MED Multi Effect Distill. plant



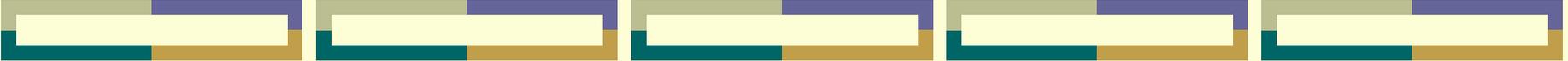
Performance & cost effective

- ✓ Thermal efficiency of collec.
- ✓ Size of the field
- ✓ Steam pressure & temperat. at steam turbine inlet effects evaporation & condensation
- ✓ Time duration of operation
- ✓ Level of direct solar radiation at the site: at least 850 W/m<sup>2</sup>

Source: Solel website

### Key Features

- Technology available tested and proven
- Suited to remote locations
- Economic. viable: plants of 5,000-10,000 m<sup>3</sup>/day
- Produces high quality water for potable & industry
- Cost effective co-generation of power & steam
- Reduces electricity consumption
- Operates 24 hours a day seven days a week.
- Solar energy during day, heat storage at night.



## 6.9. From Fossil to Renewable Desalination

- **Seawater desalination: 2002: 23 MCM/day** most from oil in Arabian Gulf & Libya, 0.02% use renewable energy sources (**46.000 CM/day**):

Source: Jenny Lindblom: Solar Thermal Techn., State of the Art, (Sweden, 2003)

- **Solar Thermal Desalination: A Future Solution?**

- Free energy, insignificant operation costs, low environm. Impact
- Energy independence & water insurance

**Solar thermal energy generation: 3 techn.options: dish, trough, tower**

**Desalination: a) Multi-Effect, b) Multi-Stage Flash, c) Reverse Osmosis**

- **Direct Solar Desalination: Small production: less 200 m<sup>3</sup>/day**

- **Indirect Solar Desalination:**

**a) Multi-Effect (ME), Arabian Gulf: plant: parabolic trough coll.: 6000 M<sup>3</sup>/day**

**b) Multi-Stage Flash (MSF): produces globally 10 mill. ton of fresh water daily**

**c) Reverse Osmosis (RO): possible combination with solar energy for cost-effective solutions.**

**Both technologies need development & economy of scale.**



# 7. Functional Cooperation: Solar Desalination for Egypt & Gaza



- **Step 1: Bilat. cooperation between Egypt & PNA on fossil & renewable desalination**
- **Assessment of water needs & technological and economic feasibility study**
- **Goal: Research & development in Sinai on solar thermal desalination infrastructure for Sinai and Gaza**
- **CDM: as a tool for attracting foreign investments in the framework of the Kyoto mechanisms (Egypt to sign the Kyoto Protocol)**
- **Pilot Project: Capacity Building: Euro-Mediterranean R & D Facility for hybrid desalination with gas and solar thermal energy**
- **GEF and international donor community, incl. Arab Development Funds: Pilot projects**
- **Goal: Establishment of a major desalination plant in Sinai at the Egyptian border to Rafah.**
- **Contribute to Water & Health Security in Gaza**

## 7.1 Functional Arab-Israeli Cooperation: Solar Desalination for Egypt, Gaza & the Negev



- **Step 2: Cooperation with Middle East Des. Res.Cent. (MEDRC) of Arab & Israeli Institutes on Desalination Technologies**
- **Feasibility Studies on the Development of trilateral gas & solar thermal electricity & desalination plants for water needs of Sinai, Gaza & Negev.**
- **Sponsors: GEF, EU, USAID, WB, IMF, EIB, Japan, Arab Gulf countries etc.**
- **Reduce reliance on water from Lake Tiberias/Kinneret for greening the Negev.**
- **Goal: Trilateral functional community for developing a joint integrated infrastructure for peace, with vital components in Sinai, Gaza and in the Negev to enhance water and food security.**

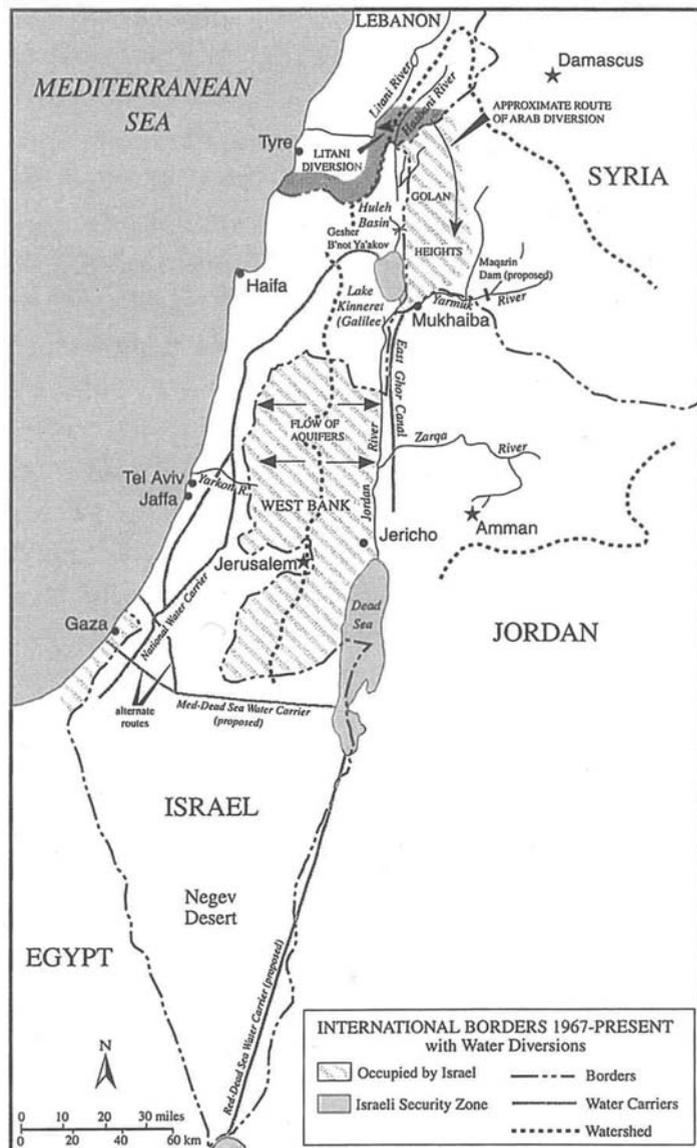
## 8. Functional Arab- Israeli Cooperation:

### Water for the Jordan Basin: Solar Desalination in the Gulf of Aqaba for Egypt, Jordan, Palestine & Israel



- **Step 3: Address the global environmental challenges affecting all countries**
- **Assessing water needs & technological potentials: Economic feasibility study**
- **Desalination infrastructure in Jordan for the West Bank in the Gulf of Aqaba and water pipelines on Jordanian territory**
- **GEF: Pilot projects**
- **CDM with EU countries: foreign investments in framework of Kyoto Prot.**

# 8.1. Functional Cooperation in the Gulf of Aqaba

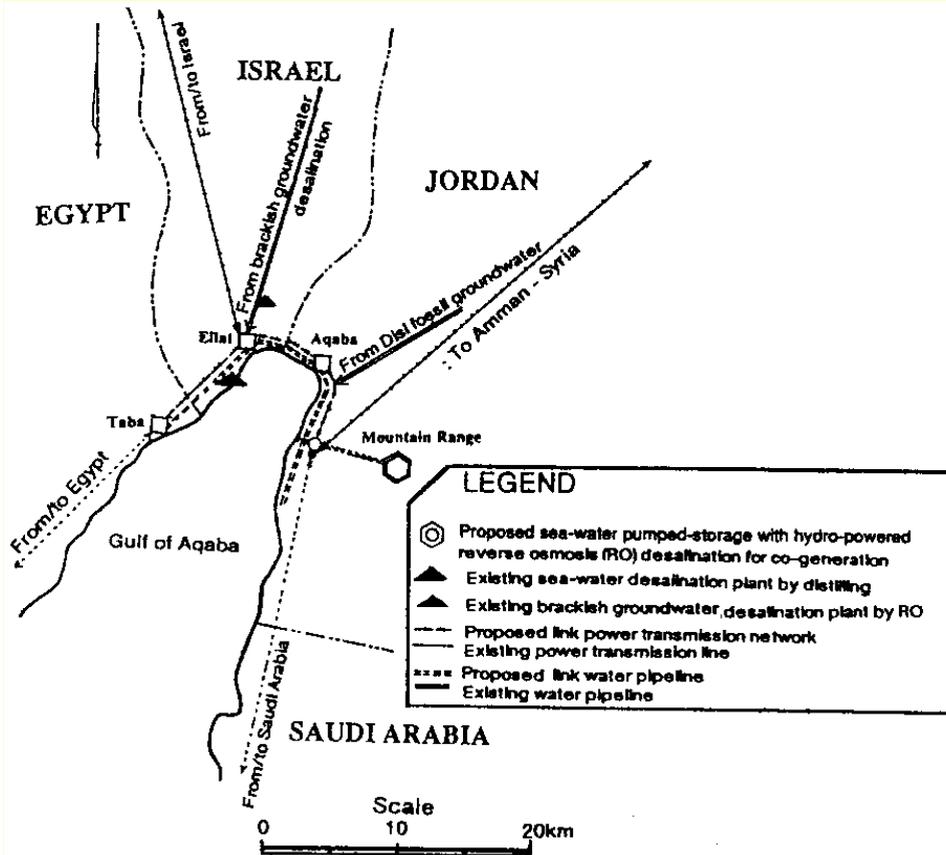


## Existing project proposals for desalination in the Aqaba Region

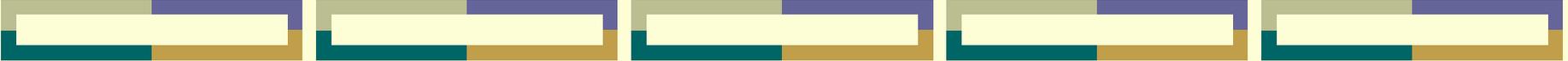
- ❖ **G. Fishelson (1995) Water Desalination** a) the Red Sea-Dead Sea Canal; b) Mediterranean–Dead Sea (North Route)
- ❖ **M. Murakami (1995: 167):** Hydro-powered reverse-osmosis desalination in water-resources planning in Jordan (Aqaba-Disi)
- ❖ **M. Murakami (1995: 202):** Solar-hydro power & pumped-storage co-generation in hydro-powered reverse osmosis desalination in inter-state development of Jordan River basin
- ❖ **Jordan Times (17.4.2002):** Ministry of Water & Irrigation is studying a plan for a first sea-water desalination plant in Aqaba for the Aqaba Special Economic Zone (ASEZ).

## 8.2. Proposals for Water Desalination in Gulf of Aqaba

Water Ministry studies possibility of desalination plant in Aqaba (17.4.02)



- **Desalination plant in Aqaba** was discussed since peace treaty with Israel in 1994. **The proposed plant is one of 4 water projects to solve water supply in the Aqaba zone.**
- **Ministry & USAID develops Aqaba's wastewater treatment plant (\$30-35 million)** to irrigate parks & for industrial purposes.
- **Fourth project** to convey water from the Disi aquifer at a 4 million m<sup>3</sup>/ p.a. will provide Aqaba with drinking water, and meet the water demands of the industrial and tourism sectors in ASEZ for the next five years.
- **Total investment cost of proposed hydro-powered seawater reverse osmosis desalination plant in Aqaba was estimated at US\$389.4 m.**



## 8.3. Plans for Water Desalination in Gulf of Aqaba

### Global Water Intelligence - July 2002: Jordan water investment plans

- Proposal to improve **water and wastewater services in Aqaba** in line with the financial and economic requirements of **Aqaba Special Economic Zone (ASEZ)**.
  - **ASEZ is a multi-sector investment zone** dependent on adequate water services. The **current population of 74,000 is expected to increase to 250,000 by 2025** with an allied increment in water demand from 15 M m<sup>3</sup> /year to 50 M m<sup>3</sup> /year.
  - The **Aqaba region** is likely to need a **desalination plant** with capacity of **10 Mm<sup>3</sup>/yr**, as water from the nearby **Disi aquifer** will supplement **supply in Amman**.
  - A study by the **World Bank's Public-Private Infrastructure Advisory Facility (PPIAF)** to assess options for regulatory reform in Jordan's water and sewage sector. Support from **EU, EIB, German governm.** for similar projects elsewhere is possible.
  - **Ministry of Water** is reviewing draft RFP for **Disi-Amman water conveyor**. Five groups have pre-qualified for project to be co-financed by the Jordanian government.
  - **28 July 2002: Agreement on desalination plant: Jordan & USAID (154 Mio.\$)** in **Kurba al-Samraa**; costs: **Jordan (6%), USAID (43%), US/French comp. (51%)**
  - **Desalination plants in Southern Sinai**: e.g. by Egyptian government (**Sharm El-Sheik & Taba**) & by hotels along the coast between **Sharm El-Sheik to Taba**
- 

## 8.4. Joint Red Sea-Dead Sea Pipeline/Canal Project



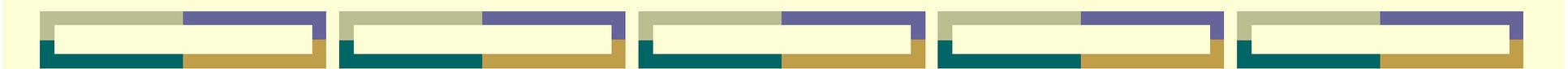
### Dead Sea: Jordan & Israel Cooperate to Save Water Basin, *Water & Sanitation News*, 13.8.02

- Jordan is revived a project with Israel to boost the water level of Dead Sea, on the border of two countries and is shared with Palestinians.
- Stalled by Arab-Israeli conflict & lack of finances, EUR 2 billion project to build a canal along the Jordanian-Israeli border from **Red Sea to Dead Sea** was discussed since 1994.
- The canal would send saltwater from **Gulf of Aqaba** down a 400-meter incline to **Dead Sea** in a desalination process that would relieve parched Jordan with fresh water.
- **Negotiations on the project have focused on technical matters**, with Israel favouring a pipeline to cut costs and Jordan calling for a canal to boost both countries' shore areas.
- **A compromise is still in reach, with a canal at the start of the water tract on the Red Sea connected to a pipeline in the desert.**

# 9. Functional Cooperation in Gulf of Aqaba

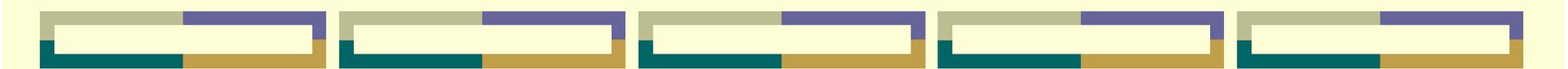


- **Three Partners** entered into peace treaties: Egypt – Israel – Jordan; plus Saudi Arabia and Palestine.
- **Building on existing foundations:** cooperation of water & food specialists
- **Model:** Creating **regional interdependence** that requires daily cooperation
- **Comp. 1: Research** on common challenges for the region: Possible tasks for a new **UNU centre** funded by the EU in **Taba, Elat and Aqaba**
- **Comp. 2:** Creating **renewable energy**
- **Comp. 3:** Schemes for **desalination**
- **Comp. 4:** **Sustainable food** production
- **Comp. 5:** **Sustainable tourism**
- **Comp. 6:** **New urban environments** for jobs and living.



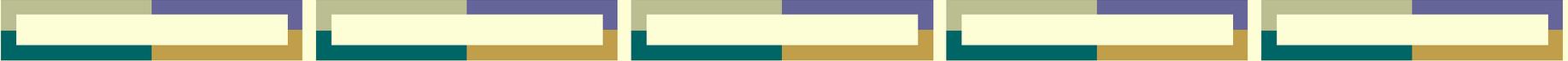
## 9.1. Creating a Knowledge Infrastructure for Functional Cooperation in the Gulf of Aqaba

- **Initial Countries:** Jordan (**Aqaba**), Egypt (**Taba**), Israel (**Elat**)
  - **Partners:** Saudi Arabia and Palestinian Authority
  - **Sponsors:** EU, USA & Japan, WB, IMF, EIB; **Facilitator:** UN
  - **1st Step:** Problem Recognition & Creation of Awareness: UNU Centre on Regional Impact of Global Environmental Change to Mitigate Environmental & Human Security Risks
  - **2nd Step:** Creating the Knowledge Basis for Mitigation: International Technical University of the Gulf of Aqaba with international departments and faculty in **Taba, Elat, Aqaba**
  - **3rd Step:** Setting up a tri-national integrated infrastructure
    - **Taba:** Centre and Laboratory on Renewable Energy: solar & wind (EU)
    - **Elat:** Centre on Agriculture in Arid Regions in cooperation with with DRI (Egypt) & Blaustein Institute on Desert Research (Israel) (US)
    - **Aqaba:** Centre for Hydrology and Desalination (Japan)
- 



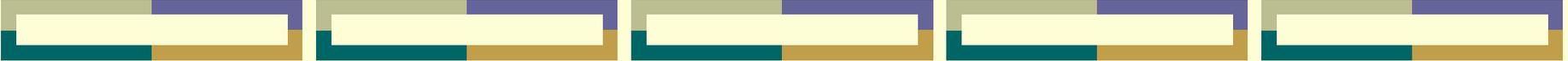
## 9.2. Coping with Water & Food Scarcity: Framework Instruments for Long-term Conflict Avoidance

- **4th Step: Supplying Fossil & Renewable Energy**
    - **Fossil Energy:** Natural gas from Egypt and oil from Saudi Arabia
    - **Renewables:** Exploit solar thermal and photovoltaic energy, wind power
    - **Long-term:** Create a joint infrastructure for a **local hydrogen economy**
  - **5th Step: Cooperative Mitigation of Water Scarcity**
    - **Joint training institution** for water experts on water efficiency
    - Build **joint water desalination plants** to serve all three countries
  - **6th Step: Creating New Jobs & Supplying Food**
    - **Joint research and training institution** for agriculture, irrigation, and desertification specialists for arid regions (e.g. in cooperation ICARDA)
    - Centres for IT, computer, software industry
  - **7th Step: Build New Sustainable Cities & Tourist Centres**
    - Develop **sustainable tourist centres** based on renewable desalination
    - Develop **sustainable cities with a low emission transport system.** solar cooling and energy generation, waste based electricity generation
  - **8th Step: Create a Pride in Joint Achievements & a Culture of Tolerance**
- 



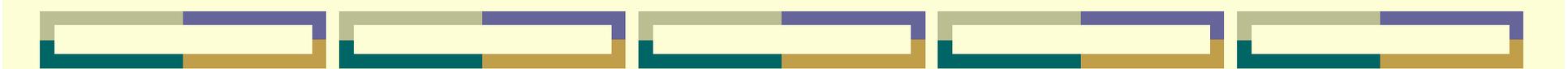
# 10. Peacebuilding by Functional Environmental Cooperation - Addressing Regional Impacts of Global Environmental Change

- **Multilateral frameworks for post-conflict environmental reconstruction**
  - **Functionalist credo: form follows function: start with functional cooperation in areas population supports: water, environment, health, food**
  - **Shift focus from narrow military to a wider human security concept**
  - **Recognise the mutual challenges to survival (Awareness creation)**
  - **Start with collaborative research that address these joint challenges.**
  - **Establish joint scientific and technological capacities in the region**
  - **Use energy potential of deserts for its greening & change of climate**
  - **Develop scientific, environm. & econ. partnership building measures**
  - **Potential spill-over from functional cooperation to conflict resolution.**
  - **Develop confidence-building measures for political and military realm .**
- 



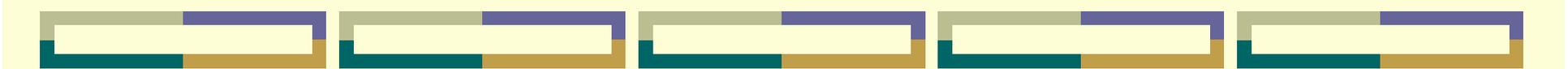
# 10.1. Beyond the Hobbesian Security Dilemma

- **Middle East Conflict: a Permanent Conflict?**
    - ❖ Answer depends on your worldview and mindset and preferred means
    - ❖ Continued asymmetric cycle of violence will not produce peace but hatred
  - **Learning the Lessons from Successful Peacebuilding**
    - Study and learn from Mitrany, Marshall, Monnet and Gorbachev
    - Overcome the traditional Hobbesian worldview and popular mindset
  - **Maintain, create and develop regional functional networks**
    - ✓ Of water managers in Israel & Palestine on joint groundwater aquifers
    - ✓ Of energy and food specialists as well as sustainable urbanisation experts
  - **Build common institutions**
    - Gulf of Aqaba: regional laboratory for a joint regional development
    - Start with education and expand to the economic sector, political spill-over.
  - **Look for common strategies for „human survival“**
    - ❖ Overcome state centred security concepts based on power (military means).
    - ❖ Civilian Society: to contribute to a gradual awareness for the common environmental security challenges with the goal of a stable human security
  - **Problem solution requires a „new thinking“ and new security concepts**
- 



## 10.2. Conclusions: Window of Opportunity

- **Preconditions for Consideration of these Conceptual Ideas**
    - Implementation of the Roadmap for the Middle East of the Quartet
    - Return to the Multilateral Peace Process with the Working Groups: **Regional Economic WG**: EU; **Water WG**: USA; **Environmental WG**: Japan or to a new structure.
    - Plans should be developed within the Quartet with clear division of labour.
  - **Conditionalised Support by the Donor Community**
    - The Marshall Plan aid was conditional on the cooperation among recipients!
    - Strong unified strategy of all donors and equal treatment of all recipients.
    - Grant and credits would be conditional on the development of multilateral regional functional infrastructures with a premium for cooperation and sanctions for violation that would hurt the violator with the suspension of assistance.
  - **Preparation during Conflict: Step-by-Step Implementation**
    - The conceptual ideas for multilateral functional projects should be developed by joint functional teams of scientists from the three countries & Palestine
    - The multinational NGO planning process should be supported by the EU in the Framework of the Euro-Mediterranean partnership or its new foundation.
    - Other functional projects may be developed with the support of foundations in North America (e.g. Carnegie, Ford), and in Japan (Sasakawa or Nippon Fd.).
- 



## 10.3. Legal Preconditions of Middle East Peace Process

- Full conformity with the norms of international law and the UN Charter;
  - **Peace Treaties between Israel with both Egypt (1979) and Jordan (1994)**
  - Within the framework of the **Middle East peace process** initiated in Madrid in October 1991, the Declaration of Principles of September 13, 1993, the subsequent agreements including the **Interim Agreement of September 1995**, the **Wye River Memorandum** of October 1998, the **Sharm El-Sheikh Memorandum** of September 4, 1999, the permanent status negotiations including the **Camp David Summit** of July 2000, the Clinton Ideas of December 2000, and the **Taba Negotiations** of January 2001;
  - Within **United Nations Security Council Resolutions 242, 338 and 1397** to contribute to the settlement of the Israeli-Palestinian conflict in all aspects;
  - **Agreement with the Quartet's Roadmap process on the Middle East;**
  - **„Geneva Accord“ of Israeli and Palestinian Civil Society (Oct. 2003)**
  - This Agreement marks the historic reconciliation between the Palestinians & Israelis, and paves the way to reconciliation between the Arab World and Israel and the establishment of normal, peaceful relations between the Arab states and Israel in accordance with the relevant clauses of the Beirut Arab League Resolution of March 28, 2002.
- 

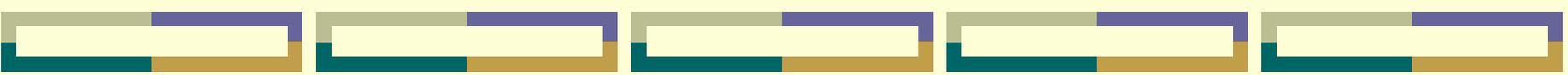


## 10.4. Tolerance: A Precondition of Cooperation

H.R.H. Prince El Hassan Bin Talal, ended his speech at the Third UNEP Magdeburg Environmental Forum on 17.11.2003 quoting the words of **Ibn Arabi**, a zahirite who lived in **Spain between 1165 and 1240** who said:

*"My heart is open to all the winds:  
It is a pasture for gazelles  
And a home for Christian monks,  
A temple for idols,  
The Black Stone of the Mecca pilgrim,  
The table of the Torah,  
And the book of the Koran.  
Mine is the religion of love.  
Wherever God's caravans turn,  
The religion of love  
Shall be my religion  
And my faith."*





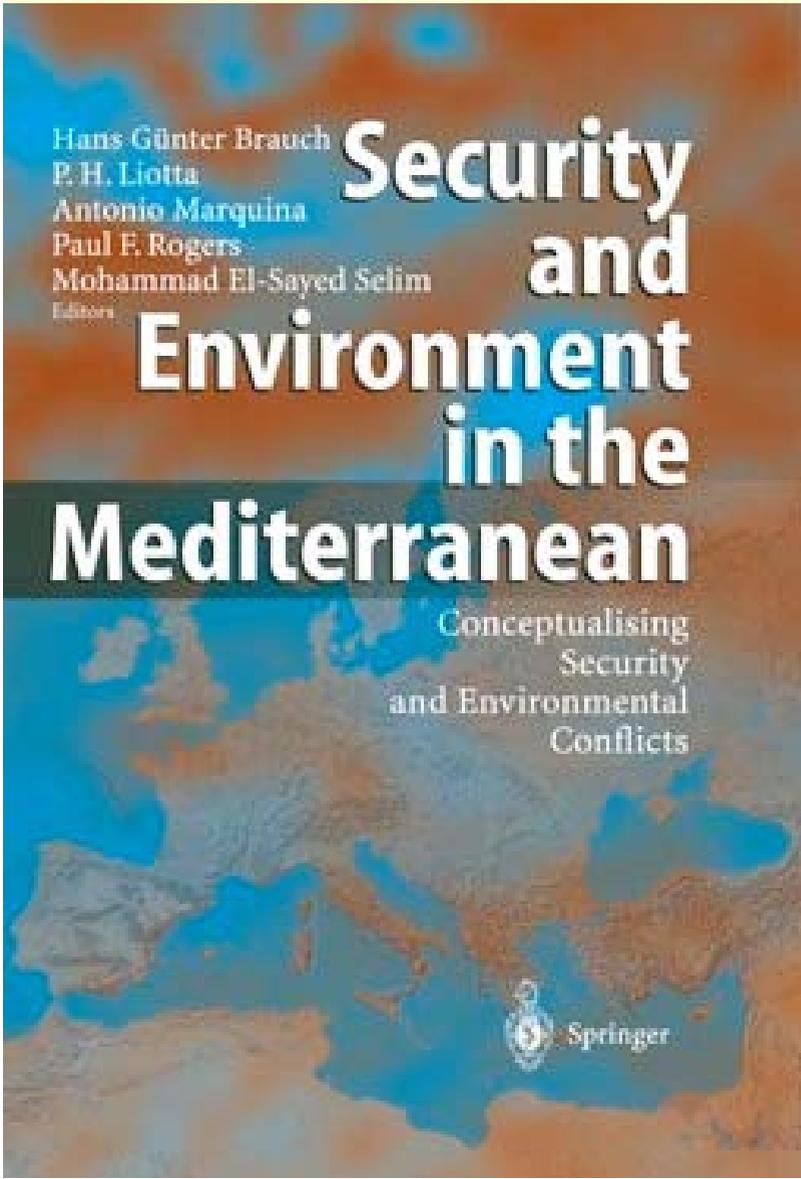
**Thank you**  
**for inviting me and giving me an opportunity**  
**to share with you these very preliminary and**  
**emerging conceptual ideas.**

**Thank you**  
**for your attention and patience.**

**Send your comments to:**  
**[Brauch@onlinehome.de](mailto:Brauch@onlinehome.de)**



# Major Sources

The image shows the cover of the book 'Security and Environment in the Mediterranean'. The cover features a map of the Mediterranean region in shades of blue and brown. The title is written in large, bold, white letters. Below the title, the subtitle 'Conceptualising Security and Environmental Conflicts' is written in smaller white text. The Springer logo is visible at the bottom right of the cover.

Hans Günter Brauch  
P.H. Liotta  
Antonio Marquina  
Paul F. Rogers  
Mohammad El-Sayed Selim  
Editors

## Security and Environment in the Mediterranean

Conceptualising Security and Environmental Conflicts

Springer

- P. Rogers, P. Lyden (Eds.): *Water in the Arab World* (Harvard UP 1994)
- T. Allan: *The Middle East Water Question* (I.B. Tauris 2001).
- Feitelson, Hadded (Eds.): *Management of Groundwater Resources* (Kluwer 2001)
- Brauch: *Climate Change and Conflicts* (BMU 2002) ([http://www.bmu.de/en/800/js/download/b\\_climges/](http://www.bmu.de/en/800/js/download/b_climges/))
- Brauch-Liotta-Marquina-Rogers-Selim (Eds.): *Security and Environment in the Mediterranean* (Springer 2003) ([http://www.afes-press.de/html/bk\\_book\\_of\\_year.html](http://www.afes-press.de/html/bk_book_of_year.html))
- Download talk on desertification 2.12.03 at: (<http://www.nato.int/science/news/2003/docu/031211c-desertification.pdf>)
- Download of previous talks by Brauch: ([http://www.afes-press.de/html/download\\_hgb.html](http://www.afes-press.de/html/download_hgb.html))