



**Water & Energy in the Middle East:  
Conflicting Interests and Cooperative Approaches**

*12-14 July 2006  
Prague*

**Workshop Report**

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## *Introduction*

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The sustainable usage of water and energy in the Middle East pose some unique challenges. The “Water & Energy in the Middle East: Conflicting Interests and Cooperative Approaches” workshop explored some of these challenges with contributions from key academics and experts in the transboundary natural resource management arena.

The objectives of the workshop were to:

- Explore some of the deep-rooted conflicts at the core of Middle East water-related problems.
- Examine the potential of politics aimed at regional integration in the planning and management of Middle Eastern water and energy resources.
- Become acquainted with the concepts of ‘virtual water’ and ‘liquid assets’, and consider their potential policy value in the Middle East.
- Examine interrelationships between regional water and energy usage, in order to identify economic, political and environmental linkages that might promote more sustainable utilisation.
- Brainstorm in order to (a) identify knowledge gaps & produce ideas about steps to be taken, and (b) offer suggestions for the EWE project’s programme in 2006-2008 and formulate recommendations for the Forum 2000 Foundation’s EWaP project and its forthcoming events.

Among the many issues and ideas that emerged during the various sessions, two project proposals received strong support. Firstly, to endorse Professor Franklin Fisher’s Multi-Year Water Allocation System (MYWAS) model, with a view to supporting its research needs, seeking sponsorship for the model’s use from relevant public and private sector actors, and identifying operational applications for it in the European Union – Middle East and North Africa (EU-MENA) region. Secondly, to commence a feasibility project for a 100 MW solar power plant that will be located in Egypt (Sinai) or Jordan (Arava). It was suggested that the private sector finance the project and that the EU countries act as a market guarantor for buying the electricity generated. For both projects it was recommended that the employment of relevant technology and expertise would involve the collaboration of EU-MENA states.

The event was organised jointly by the Forum 2000 Foundation ([www.forum2000.cz](http://www.forum2000.cz)) as part of the “Exploring Water Patterns in the Middle East” Project (EwaP) and by the Community of Energy, Water and Environment (EWE) study group ([www.lse.ac.uk/collections/ewe](http://www.lse.ac.uk/collections/ewe)). It continued and developed discussions that took place at an initial workshop sponsored by Forum 2000 – The Prague 2005 Panel on “Water in the Middle East: Ways Ahead” ([www.forum2000.cz/projects/water-middle-east.php](http://www.forum2000.cz/projects/water-middle-east.php)).

What follows is a summary of the three days of meetings that included public lectures, small group presentations, discussions and brainstorming sessions. Some full text versions and power point presentations of the lectures can be found at this web address: ([add here link to the related webpage](#)).

## *Participants & Acknowledgments*

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### **List of Participants (alphabetical order)**

1. Allan Tony – Kings College / School of Oriental and African Studies, London (UK)
2. Amjad Urooj – London School of Economics and Political Science, London (UK)
3. El-Shuraydeh Khaled – Higher Council for Science and Technology, Amman (JO)
4. Feitelson Eran – Hebrew University, Jerusalem (IL)
5. Fisher Franklin – Massachusetts Institute of Technology, Cambridge (US)
6. Karlas Jan – Institute of International Relations, Prague (CR)
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All organizers and participants of the workshop

## *Session 1*

### **Managing Water and Energy in the Middle East: Engaging Science Fundamentals with Socially Determined Policy: Can the Discourses Converge?**

Tony Allan

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Oldrich Cerny for the Forum 2000 and Pavel Seifter for the EWE Project opened the Prague Workshop with their introductory remarks.

Oldrich Cerny stated the Forum's long-term interest in water issues in the context of its Middle East programmes. Pavel Seifter stressed the intended aim of the EWE project, which is a) to link the water, energy and environmental circles of thought b) to explore the value of the Community integration concept in the Middle East.

#### **Points from lecture:**

- Prof. Allan's main idea was about engaging fundamentals with socially determined policy. The lecture first addressed the question 'What are the driving forces that shape how water and energy are perceived, depleted, and sustained?'

Driving forces of water and energy from the perspective of the Middle East-North Africa (MENA) region were given as follows:

#### Driving forces of Water:

1. Supply is limited and new sources are sought;
2. Productivity of water is addressed with metering, regulation, pricing, and leakage measures;
3. Governance is addressed with water policy reform and regulation;
4. Demand is measured according to demography, consumption patterns;
5. Trade can be examined in terms of virtual water.

#### Driving forces of Energy:

1. Oil and gas prices;
2. Bio-energy (land/crops);
3. Nuclear technologies;
4. Wind/solar power;
5. Economic diversification and risk;
6. Global demand for energy.

- Second, the talk touched upon an issue of hydro-centricity that resonated throughout the workshop. Hydro-centricity and energy-centric attitudes prevent an adequate understanding of the structure and dynamics of water and energy use in the Middle East. Allan strongly suggested that answers for water or energy issues were not restricted to each sector or its regional manifestation. Instead, the parameters for addressing regional water problems are found outside MENA, and involve the consideration of food trading and virtual water.
- Keeping in mind the overall EWE project and the ideas to be discussed in the two-day workshop, Allan suggested that it takes approximately 25 years for concepts to be operationalized. Therefore, when linking water, energy, and the environment, we must be aware that sustainability is politically determined.
- Virtual water may be part of the solution for the water problems in the MENA region and may address some of the problems outlined above. Virtual water is a non-hydrocentric approach: it is technical but looks at politically silent approaches; does not take the river basin and the groundwater basin as the starting point of analysis or problem solving. The significance of not starting with the basin may be advantageous when dealing with politically contentious boundaries, particularly in MENA.
- "Second best works": Desalination can be seen as second best to policies that promote water conservation, the reuse of water and the realization of the concept of virtual water. Still, desalination is a

policy that has currency in the region – e.g. the Israeli government published bids for desalination contracts and the private sector decided to take part in these bids.

- Engagement of scientists: scientists and anyone who has information on these issues should feel responsible to inform the public and the policy makers, to engage in policy making and to find ways to make their knowledge and ideas more communicative.

### **Discussion:**

- Shuval: Ideas such as Allan's 'virtual water' and Fisher's 'water trading' can change the discourse and the perceptions of policy makers – simple ideas can change the game. These simple ideas should be suggested repeatedly to policy makers and other simple ideas should be sought after.
- Mor: Monetizing water may simplify political problems. Desalinated water can be produced less expensively these days. The real questions are: is there an economy willing to pay the real cost of water and is there political will to have regional cooperation on this issue?
- Allan: Pricing water is still political, for example in the UK where it is fully privatized.
- Member of the Audience: Which international institutions should be responsible for implementing these policies of water management?
- Allan: The principle of equitable use should inform the relevant institutional design. There is no institution in the world that is solely responsible for implementing these policies.
- Fisher: Desalination provides an upper bound on the value of water but not an efficient one. Placing an economic value on water does not mean it has to be from a personal consumptive perspective. The basis of valuation can be national policy priorities. Desalination does not necessarily provide cheap water.
- Fisher: Putting a price on water is not the solution for everything and should not be seen as such.
- Feitelson: Regarding manufactured water, this is an engineering solution; politically it's different. It may not be the best economic solution but it is successful at securing political support.
- Feitelson: When talking about desalination one should also remember the possibility of reusing water.
- Tony Allan: Reused water in Israel is significant.
- Lumis Khaliviva: Would you call the Middle East as being too hydro-centric, for example the King Hassan project? And what value do we put on privatization? The driest areas tend to be the poorest; women tend to know the value of water the most.
- Allan: People in poverty don't have options. Virtual water has been around since people decided to live in large groups.
- Khaliviva: Is Egypt's claim that they have abundance of water a political claim? Should Egypt stop cotton production and switch to virtual water?
- Allan: Egypt needs to diversify their economy, not only rely on agriculture.
- Snidauf: Different languages among various stakeholders need to be understood. This is important for Forum 2000 to facilitate an effective exchange of views. What would you say is a universal platform for such a unifying discourse?
- Allan: One platform would not achieve that. In addition to platforms, knowledge sharing and translation into policy is necessary.

## *Session 2: Water and Conflicting Interests*

### **Hydropolitical Resilience and Vulnerability in the Jordan Watershed**

Jakub Landovsky

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Jan Snidauf introduced the session on conflicting interests: he stressed the challenges posed by transboundary/international disputes involving multiple groups with divergent interests. One of the aims of the session was to look beyond the exigencies of water resource conflicts in search of durable, cooperative approaches.

#### **Points from lecture:**

- Landovsky provided a conceptual framework for an institutional assessment of transboundary water resources. He also provided case examples to illustrate his argument. The summary below focuses on the conceptual framework because of its possible relevance to the EWE project.
- One of his main arguments was that an appropriate institutional framework was needed as a precursor for implementing any other strategy such as virtual water. Landovsky proposed a framework that has roots in biology, with particular emphasis on the idea of ‘parts to the whole.’ In other words, the interaction of the parts of a system has effects on the whole of a system; therefore understanding a portion of a system can provide insight on the greater system, though this does not mean a part of a system is necessarily representative of the greater system. He proposed a complex adaptive systems inspired framework that provides metaphors that can be operationalized in water management.
- Another main argument was that water may be a catalyst for peace, not just conflict. This assumption is a result of Aaron T. Wolf’s project at the Oregon State University (OSU). OSU team created and analysed three databases in order to come to following conclusions: the databases can be found at: <http://www.transboundarywaters.orst.edu>
- The components of the framework are:
  1. Watersheds
  2. International freshwater treaties
  3. Historical experiences 1950-2000
- The database prompted the following working hypotheses:
  - 1) Conflict is more likely if the basin is undergoing rapid change.
  - 2) Existing institutions are unable to absorb and effectively manage that change.
- Part of OSU’s work to address the above working hypotheses is the *Resilient Institutions Project*. This project asks two main questions:
  - 1) How to identify or measure the rate of change in the system of an internal watershed?
  - 2) How to foster resilience of the water institutions?
- Several notions from complex adaptive systems theory, as applied to water management, may aid in thinking through the questions mentioned here:
  1. Perturbation – external stimulus, which has an impact on the water institution
  2. Steady state – sustainable system performance according to the present set of rules.
  3. Resilience - ability to return to the steady state following a perturbation
  4. Emergent behaviour - production of global patterns of behaviour by agents in a complex system interacting according to their own local rules of behaviour, without intending the global patterns of behaviour that come about
  5. Ambiguity – a means reduce political costs or address uncertainty in treaty design and treaty implementation

#### **Chair’s comments**

Mark Zeitoun (Chair): The Complex Adaptive Systems (CAS) concept is similar to the sustainability triangle (economy, environment, society) in that we must examine the relationship of parts to the whole. We also need to unpack the meaning of cooperation, to compare indicators and assign values. Just because there is absence of conflict does not mean that there is absence of tension. The work of Glen Hearn addresses this,



as does that of Elizabeth Kistin, who suggests that outcomes should be focused upon, not just implementation.

# A Framework for Hydro-Hegemony, a Power-based Analysis of Transboundary Water Relations

Mark Zeitoun

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## Points from lecture:

- Zeitoun began his presentation highlighting the tension between the claims to legitimacy of international water law and its shaping by relations of power. The presentation introduced the theory of hydro-hegemony, illustrating it with case examples from the MENA region. Informed by the power theory of Steven Lukes, Zeitoun added his own ideas related to hydro-hegemony. In summary, power theory divides power into three categories: structural power (force), bargaining power (created through legitimacy in a relationship) and ideational power (ideologies, thought-control, hegemony, etc.).
- Hegemony was described in terms of high or low efficiency, with four primary categories of methods and compliance mechanisms.
- Hegemony can be valued as positive or negative. The focus of hydro-hegemony is a continuum between shared control and contested control.
- Is the Palestinian-Israeli Joint Water Committee (JWC) an example of institutionalized hydro-hegemony? Though billed as a cooperative mechanism, the structure of the licensing procedure of the JWC ensures joint ‘mismanagement’ of the resources. Since the JWC applies only to those transboundary waters located within Palestinian borders (and not the transboundary resources located within Israeli borders), the JWC grants to Israel an effective veto. Development projects in Palestine are thus subject to Israeli technical, political and military screening. Proper integrated water resources management (IWRM) is not possible with so many projects stalled for reasons other than technical ones.
- Israel currently maintains a situation in violation of the principles of international water law, which promotes ‘equitable and reasonable utilisation’. The current 90%-10% split of transboundary water control maintained in Israel’s favour is ‘inequitable and unreasonable’.
- A ‘leadership’ form of hydro-hegemony along the Jordan River basin would involve valuing water on economic, rational terms. As for third party management, an example could be Friends of the Earth Middle East.
- Zeitoun outlined the positions of each party: the Palestinian view is to reallocate existing water resources, while the Israeli view is to maintain the status quo and retrieve/create new water for Palestine.
- The Swedish Foreign Ministry (2006) has recently advanced proposals for promoting an equitable and reasonable allocation of regional water resources between Israel and Palestine, which entail a significant regional reallocation (Ministry for Foreign Affairs, 2006, *Transboundary Water Cooperation as a Tool for Conflict Prevention and Broader Benefit Sharing*).
- Zeitoun outlined the implications for cooperation:
  1. Politics should not be avoided – we should not act like an ostrich with its head in the sand.
  2. Power asymmetries are always present – this imbalance should be used to produce beneficial outcomes, not unilateral actions.
  3. ‘The outcome of cooperation between an elephant and a fly is not difficult to predict’ as Chomsky says. Attempts at cooperation on transboundary water issues that do not even acknowledge power asymmetry (and base injustices) are not sustainable.
  4. Attempts aimed at cooperation through the creation of a level playing field will be more sustainable as well as consistent with international water law.

## Discussion:

- Eran Feitelson: There is an inconsistency in these two presentations with Tony Allan's. These presentations were on basins while Allan's talk argued basins are the wrong scale to address a problem, particularly for benefit sharing. What is the scale we are talking about?
- Feitelson made three other major points:
  1. The more parties are involved the more difficult it becomes to reach mutually agreeable outcomes (collective action theory). The Swedes and Norwegians have good intentions, but are not realistic.
  2. Where do basin ideas come from? Mainly Western Europe and the US. Are these ideas applicable in arid regions with different settlement patterns and political cultures?
  3. Mark and Jakub referred to countries as actors. However, interest groups within the countries form different positions: internal discourses and politics must be considered.
- Urooj Amjad: Perhaps both speakers can collaborate because hydro-hegemony (HH) theory may benefit from accounting for 'change' and CAS may benefit from accounting for power asymmetries.

Landovsky's work and the OSU team's use of CAS. CAS is part of a very large vocabulary and variable definitions. The paradox is that there are no set definitions, many disciplines use them in their own way, rarely agreeing on their use. Partly due to unstable definitions, its operationalization in the social sciences is difficult. Many people who are new to the concepts mistakenly think prediction is their ultimate goal and use, when in fact CAS contends otherwise – that prediction is nearly impossible. Be cautious with the methodology. Metaphors are useful to a point. Transferring concepts from the hard sciences to a social science context may not yield desired results, because different validity claims are at stake. Be aware of the relationship of CAS with soft systems methodology and systems theory. They have overlaps, but aren't the same: do not use these terms interchangeably. Also, complicated and complexity mean two different things. Because a system is 'complicated' does not mean it is necessarily part of a 'complex system.'

- Shuval: The hegemonic country is not always interested in doing the right thing. It is a matter of enlightened self-interest: e.g. US-Mexico cooperation on water resources.
- Feitelson: What is the goal to be achieved? If we go toward conflict resolution, we have to separate intent from position; that is why scale is important. It is misguided to transfer ideas from the Danube to the Jordan River.
- Seifter: How do third parties come into the game? Could third parties be seen as unhelpful because of their different views, historical experience and interests, or hegemonic role?

### **Responses from the speakers**

- Landovsky: We chose the physical structure of basins as the starting point because one has to start somewhere, and it is one of the most commonly used starting points. CAS can make sense of the complicated interactions.
- Zeitoun: Agreed that we need to understand internal tensions, but also outcomes need to be understood. Also, international water law is based on customary law. Not misguided as unit of analysis, and should be examined more comprehensively
- Zeitoun: The University of Dundee is looking at hydro-hegemony (HH), and I agree that HH could usefully engage with ideas of change.
- There is scope for Israel to play a leadership role in the basin. The US-Mexico case is a good example of such cooperation.
- It is hard to project the interests of all those that are involved.
- Regarding the Swedes, Americans, Norwegians, they used to intervening as third parties. What I presented is not idealistic. Using our academic position we can navigate the politics as insiders in that country as well as be neutral. Are we not another interest group or third party? Taking a stance is not being neutral. This is not easy, but not impossible.

- Landovsky: Would like to work with Mark on HH and Complex Adaptive Systems (CAS). Metaphors were used as a way of understanding the emergence of institutional rules: my work looks at the changing rules. The most resilient water institutions probably operate on the “edge of chaos”, as this state supports emergence of new rules and adaptation of the state’s water policy.

### ***Session 3: Water and the politics of integration***

#### **Water Governance Options for Action**

Eran Feitelson

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Michael Mason (LSE) gave an introduction to the session. Mentioned that the presentation was a collaboration with Prof. Marwan Haddad who was sadly unable to attend the workshop because of events taking place in Gaza. Mason highlighted several points and questions that the EWE might be interested to investigate further:

- The importance of understanding governance structures.
- The nature of the community must be understood if there is to be movement from a community of fate to a community of choice.
- Cooperation: What are the conditions of cooperation? What kind of cooperation? In depth cooperation? Or coordination?
- Political communities must be considered in terms of their influence of power.
- The public often gets neglected as a political actor – how to identify and involve the public? We must ask what are the various types of NGOs and individuals making public interest claims/
- Protection failure: we often assume that governments effectively represent and protect the interests of their national publics. However, ‘protection failure’ alerts us to instances where governments prove unable or unwilling to prevent harm either to their domestic publics or to people in other countries negatively affected by the activities of their nationals.
- Consider regime theory: to move away from state-centric and hydro-centric focus is good, we have to understand how individuals and other parties operate. What is the role of the private sector and the civil society?

#### **Points from lecture:**

Feitelson focused on public-private participation in Israel and Palestine at the Mountain Aquifer:

- Regional water problems are solvable, once leaders manage to overcome the political problems. Water problems themselves will not be an obstacle for peace. The question remains: what to do in the meantime until the peace treaty is signed?
- Israel and the PA are heading towards a separate water management systems, but Feitelson noted that a more efficient and equitable system needed institutions for collaborative planning and management (e.g. a joint water authority)
- Involving the private sector in the regional water management might help us to get out of the “vicious cycle”.
- Private participation may aid the current impasse on water management in the region.
- Feitelson emphasized the need to add economic incentives in order to prevent defaults on payments. Other countries and international organizations can be the safety net for those who cannot pay the cost of water. This will encourage private companies to invest in the region.

## **Discussion:**

- El-Shuraydeh: There is no quantification of water rights of Palestinians.
- Allan: I like the diagrams (see presentation). Do they take into account political dimensions? (Feitelson answered 'Yes').
- Younis: What about drought? Is it possible to deal with groundwater and water rights?
- Shuval: Nice to see good news. As a result of desalination, today Israel has excess water. The environment of plentiful amount of water helps in negotiation; businesses want to know their share (in the case of private sector participation).
- Allan: We must distinguish between types of drought, such as agricultural or drinking water.
- Amjad: Private Sector Participation (PSP) may help jump-start problem areas. However regulatory structures need strong legal and enforcement structures. Unstable political and economic areas not suited for this. Ironically, this may attract investment because it is not a strongly regulated area; and could possibly provide incentives for 'getting their act together. Unless it already exists, perhaps exploring multi-utility companies (water and energy) with PSP may be something to consider in the MENA region.

## **Responses from the speaker:**

- Regarding the public, we have at least 3 groups: 1) epistemic communities; 2) NGOs etc., and 3) interest groups. Epistemic communities were a step ahead of negotiators. What type of coalitions can you build? The interest groups are trying to bring in the water industry. They have power and finances, which is not part of the discussion in the Middle East.
- Palestinians and quantifying of rights – this is a negotiable political issue. If we as an epistemic community come up with numbers, they also become political. The best strategy would be to get support for an idea and then put down dissenters.
- Drought and storage – there were studies done on the red line in Lake Tiberius.
- Risk investment – the safety net for this would be the international community.
- Price of water to consumers – again the international community could help.
- Regarding how Mekorot would respond to PSP initiatives: Not sure, the chair of Mekorot is an economist so might be open to the idea. In general Mekorot today is looking at international markets and is interested in “selling” its knowledge.
- Framing of the problem is crucial to see if policy can be effectively implemented.

## *Session 4: Energy Old and New*

### **The Energy and Water Supply Interrelationship**

Giacomo Luciani

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Amit Mor introduced the session and pointed out that energy represents approximately 30% of the cost of water.

Prof Luciani opened his lecture by outlining expected energy trends, he then continued by touching upon issues related to power and water interrelationships focusing mainly on seawater desalination. He concluded the lecture describing the main challenges and outlined ways to create synergies in order to overcome them.

#### **Points from lecture:**

- Higher oil prices lead to slower demand growth and greater diversification of electricity supply.
- Fossil fuels continue to dominate global energy supplies, but oil is losing its global share while gas and coal gain.
- International Energy Agency's Baseline Scenario: In the absence of new policies global energy demand and CO<sub>2</sub> emissions will more than double by 2050.
- The Alternative: Accelerated Technology scenarios demonstrate that the use of technologies that exist or are under development can return the global energy-related CO<sub>2</sub> emissions to levels close to today's by 2050.
- New Technologies Package:
  - Major increase in energy efficiency
  - Decarbonisation of electricity supply - More: nuclear power, renewables, gas, coal with carbon capture, and biofuels in transport.
- Nevertheless: Fossil fuels still supply between 66% and 71% of global energy by 2050.
- The major contribution to CO<sub>2</sub> emissions reduction is from energy efficiency.
- Power and water:
  - Power generation is the main interface between energy and water.
  - Water can be 'produce' from seawater or brackish water through the use of energy; it can be transported over distances, again through the use of energy. Therefore, the cost of energy influences the cost of water
- Water desalination:
  - Water can be desalinated either by way of distillation (absorb heat to produce steam) or by way of filtration (i.e. reverse osmosis).
  - Water distillation can be pursued in combination with other industrial processes that generate steam.
  - Power generation is one such process, but not the only one. In future, we may see systematic reuse of waste heat from a variety of industrial plants to distill water.
- In the Gulf countries, the demand for power and water varies significantly throughout the year. During winter months, when the load requirements for air conditioning are low, the demand for power is greatly reduced, while the demand for water remains fairly constant throughout the year.
- This leads to an under-utilization of 50-70% of the power generation capacity, effectively increasing the cost of the desalinated water. The water-to power ratio may vary from 700 to 1600 m<sup>3</sup>/day/MW. The variation in the electricity demand, expressed in terms of the ratio of the peak to the minimum demand, varies in the range of 4:1 to 5:1, while the peak-to-minimum water demand varies only from 1.3:1 to 1.4:1. Electricity demand varies seasonally and even hourly, while the water demand remains essentially constant.
- Exploiting synergies:
  - The key challenge for producing affordable water is therefore to maximize utilization of waste heat and optimize the use of capital equipment by stabilizing the load of power plants.

- RO is one interruptible power client which may contribute to reducing or eliminating seasonal/hourly fluctuations in power demand.

## Deserts as Sustainable Power Houses and Inexhaustible Waterworks for the World

Gerhard Knies

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### Abstract

The discussions on energy supply security, on fossil fuel reserves and on Green House Gas emissions are escalating. Acceptable solutions to the energy problem seem to be difficult or even out of reach. The future of our civilization and even the basic living conditions seem to be at stake. Under these circumstances we may look at the earth's deserts which might provide a solution to the global energy and water problems. The sun is radiating about 1000 times as much energy onto the earth's deserts as humankind is using. At each km<sup>2</sup> of desert energy equivalent to 1.5 million barrels of oil is arriving annually. We do have the technology to convert at least 50% of it into useful energy as heat for steam production, for power plants and for seawater desalination. Thermal solar power and desalination plants and deserts can provide humankind with clean power and fresh water at any conceivable demand, if the sun-belt and the technology belt begin to cooperate. How EU-MENA could cooperate to solve their energy, water and climate problems by combining the supplementary capacities of sun-belt and technology-belt countries is the subject of the talk.

### Points from lecture:

- Introducing the Trans-Mediterranean Renewable Energy Cooperation (TREC) project, Knies stressed that his talk focused on energy scenarios not predictions.
- One way of linking energy and water needs, since they may complement each other, is using steam power plants, powered by solar energy, to produce storage and desalination as cooling. The by-product of one produces the need of the other.
- There is space for 10 GW transmission capacity.
- The cost of solar power is \$50/solar barrel. The increase in the number of collectors decreases the cost of solar power.
- Iron and glass would be needed to build solar collectors, which is abundant on the earth.
- The main issue is the cost of steam.
- The DESTERTEC conference which will be held in early 2007 will address technical and political issues. The Club of Rome, the Spanish Centre for Research on Energy, Environment and Technologies (CIEMAT), and further organizations, will organize it jointly. Experts from science, technology, industry, finance and politics will be invited.

### Discussion:

- Amit Mor identified two key questions:
  - Can Lebanon, Syria, Jordan, Palestinian Authority, Gaza have sustainable energy consumption?
  - What can this forum offer to businesses, governments, EU, civil society as a viable project in the short run (such as 10 yrs)?
- Luciani + Feitleson: Currently the TREC project for a Gaza solar desalination plant seems a bit unrealistic.
- Shuval: We need a good demonstration project. The Gaza project is such an example (for instance on the issue of air pollution reduction). It is on hold now because of the present situation. Have to think of a tactic to get it on the map in the political, business, technological sectors.
- Seifter: How does the electricity grid, which is a good example of a complex system with many links, come into the picture?

### Responses from speakers:



- Luciano: On small water and big water (question asked by Allan), we are going in an unpredictable direction.
- How long will fossil fuels last in some countries? Agriculture in many countries is dependent on fossil fuel inputs. It may be possible to transport electricity over long distances on an electricity grid. The logic of the pilot project is that energy calls for a wide array of parallel initiatives and technology. We need a systems analysis of energy supply and demand.
- Knies: The policy in the UK now is that Beckett wants to make energy the top of the national agenda. We don't need experimentation any more. Technology has been developed 20 years ago in California. Projects need to be demonstrated and accepted.. In Aquaba, the World Bank delayed the project for 10 years.

**Chair's summary of the session:**

- We need to be concrete for this forum. A demonstration project does not have to be in Jordan, Palestinian Authority (PA), Israel, or Syria; it can be almost anywhere else. It may be best not to directly involve the PA right now since there will be a delay, but they should participate.
- Regulation of gas already exists and the EU is connected to the grid.
- EU, PA and Israel are not yet connected to the North Africa grid.

## Session 5

### Energy Brainstorming

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#### Allan:

- We need always to remember that politics comes first. For this reason we must take into account from the early planning stages the involvement of the major players: oil sector, government officials, politicians, World Bank, NGOs etc.

#### Feitelson:

- Mentioned the Loz project in the California desert. This plant is still operating today but the company was bankrupt and today operates under a new name 'Solel'.
  - Laster: The Solel project in California is a 350 MW Thermal Solar Plant that has been operating for almost 20 years and provides energy for 500,000 households in California. This company signed about half a year ago a contract in Spain to build a thermal solar plant. This company is the same one that is going to build the 100 Mega Watt plant in the Negev. For more information about the company: [www.solel.com](http://www.solel.com)
- Any solar/desalination plant will need land (space). This fact usually involves going through the approval of different planning committees (politics). Therefore making a plant at the first stage only for the production of electricity (without desalination) is more sensible.
- When dealing with cross-boundary project one needs also to take into consideration the (inter)dependencies – we need to research further this concept and find ways to overcome the downfalls that are attached to it.

#### Mor:

- Estimated the size of the land needed for a 100 Megawatt (MW) solar power plant at 1 square kilometre.
- Recommended the company Solel (mentioned above) as one with the capacity of building such a plant.
- The issue is political rather than economic in nature. We need to take advantage of current EU regulations that encourage the shift towards renewable energy resources.
- Coal and natural gas plants are still three times cheaper to build than thermal solar plants but in the long run the price of the energy production evens. And that is without taking into account the positive externalities of solar energy and the negative externalities of gas/coal power plants.
- Stressed the need to involve key political figures from the early stages of the project (Mubarak, Peres, Prince Hassan, Havel and other EU figures etc').
- Recommends the EU as the buyer of the energy produced.

#### Luciani:

- The discussion of the solar desalination plant for Gaza seemed to him unreal. Saw little chance for a solar power plant that will provide energy to a Gaza desalination plant because of the current political instability. If we decide to work towards a solar power plant then we should not combine it with a desalination plant for Gaza.
- There is a reason why Israel and the PA are the only countries in the region that are not connected to the power grid in the Middle East.
- A general remark: believes that if the current politically volatile situation continues, the EU will give up investing in this part of the world.
- Suggested keeping options as open as possible to all sorts of renewable energy technologies and not to focus only on solar power.

#### El Shuraydeh:

- Thinks that Jordan is the right place for implementing a pilot project.

- Recommends leaving out at this stage the Israeli-Palestinian focus.

**Knies:**

- Mentioned the building of a 10 mw solar power plant that is supplying energy and a cooling system to a small resort in Jordan.
- Focuses only on solar power in the MENA.

**Amit Mor summarised the brainstorming session on energy:**

- The influence of the ME political instability on the oil market reminds us again the importance of finding alternative energy resources and at the same time the importance of bringing back on track the peace process.
- Cooperation that will lead to win-win situations between Middle Eastern countries is needed now more than ever.
- In Egypt/Jordan/Israel/PA at least for the next 15-20 years solar energy or other renewable energies will not be the main source of energy - fossil fuel, gas and coal will continue to dominate the sector.
- Nevertheless at Amit there is place for a project the would be a combination of expertise between Israel, Egypt, Jordan and when possible the PA.
- EWE should look into the vision of a 50-100 Mega Watt thermal solar system project that would be located preferably in northern Sinai (but it would be possible to locate it in the Jordan Arava area as well). There are not many chances to locate it in Israel: first, because of the lack of available land and, second, Israel is already taking steps to build a 100 Mega-watt solar plant that should be built in the next three years in the Negev desert.
- There is a need to come up with such a concrete project and present it to important political figures and private sector investors. Mor offered to set up a list of relevant people who should be invited to a small conference where the EWE idea for the thermal solar plant would be presented in more detail.
- Any project should have a strong commercial base so that it will attract the private sector.
- It is important to secure EU buyers – they will act as a safety net and will assure that the investors will gain profit from this project.
- It is recommended to investigate the different government regulations.
- TREC is a long term vision that we can refer to but not as something that is realistic at this point.

## Session 6

### Liquid Assets: An Economic Approach for Optimal Water Management and Conflict Resolution for the Middle East and Beyond

Franklin Fisher

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#### Abstract

The seminar's theme is on water as a means of cooperation not war. There is a way to think about water other than basic water balances. This talk focused on the Mountain Aquifer (MA).

Joint efforts of Israeli, Jordanian, Palestinian, Dutch, and American experts have produced an optimizing model for water management, infrastructure analysis, and conflict resolution. That model – 'WAS' for 'Water Allocation System' – applies economic analysis, broadly defined, to the solution of water problems. It provides a systematic and system-wide method for analyzing water policies, infrastructure, negotiations, and conflict resolution.

- Infrastructure questions investigated include the necessity of desalination on the Mediterranean Coast and – for Jordan – the somewhat complicated interrelations of the various projects being considered to alleviate the coming water crisis in Amman (including the Disi fossil aquifer and the oft-discussed Red Sea-Dead Sea Canal).
- It is shown how the WAS model can assist negotiations. Estimates of the effects of the water loss to Israel in the event of a return of the Golan to Syria or the pumping of the Hasbani by Lebanon show the effects to be small.
- The possible effects of Israeli-Palestinian cooperation in water is evaluated and shown to be a win-win situation for both parties.

The WAS model provides a powerful tool for domestic infrastructure analysis. More importantly, water is shown not to be worth war and to be a potential source of cooperation.

#### Points from lecture:

- Fisher argued that water is scarce and its value can be negotiated without an emotional attachment.
- Water cannot be valued more than it costs to replace it. The current cost is \$.60 or less per cubic meter on the Mediterranean coast.
- It will cost more money to move water from the MA to coast, about \$.40. Therefore, 100 million cubic meters per year is a lot of water in the MA. And it is not going to cost more than \$20 million per year (upper bound price set by cost of desalination). Fighter planes cost more than that. For this reasoning, it is silly to go to war over water in the MA.
- Fisher then posed the question of what water is worth. He and a team devised a model each for Jordan, Palestine, and Israel. In a free market, not all stakeholders are represented or are influential. This WAS model shows allocation and use, but does not prescribe decisions.
- Shadow values. A fundamental property in micro-economics is that when maximizing values, where each shadow values the real price. In other words a shadow value is the extent to which the net benefits from water would increase if you loosened a particular constraint on their maximization.
- Shadow values are not the only way to evaluate infrastructure: look at changes in benefits and compare to capital costs.
- A question that must be answered: Should Israel import water from Turkey?
- The model doesn't take account of change over time. At what rate should the aquifer be depleted? WAS model looks at affects of uncertainty of climate change. However, using this model doesn't tell you which decision to make.
- We haven't done full cost-benefit analysis of Red-Dead Sea Canal: WAS may be useful for this purpose.
- The figures used in the model need to be updated.

- If canal were to be built without regard of capital cost, then it would be a useful thing to do. But if so, a pipeline from Amman would no longer be needed, because it would be considered inefficient. This doesn't mean the pipeline shouldn't be built. The introduction of other scenarios would be useful to investigate the feasibility of this.

### **Questions and Comments:**

- Landovsky: Does the WAS model include the price of property?
- Fisher: The present model, no. Also, the current model does not assume over-pumping.
- Allan: Can you please mention the trials of getting this work published.
- Fisher: The main trials was in talking to politicians, getting them to think of water in terms of money
- Feitelson: What happens to instream users? E.g. tourists?
- Seifter: Can the WAS model be applied to countries in southern Europe?
- Allan: An example in the UK that is relevant here is that the economic regulator, OFWAT, knew that water companies have high leakage rates but OFWAT still didn't prevent it. So the decision still goes back to politics.
- Shuval: Desalination in Israel was postponed by 10-20 years. Instead hydro-hysteria was promoted. The farm block in Israel pushed for it. Mekorot campaigned in the papers on shortage. Settlers were afraid of a water shortage.

### **Responses by speaker:**

- The method can be used in most countries. A model could be built for any particular case, also for any country in Europe if commissioned.
- People think in quantities, not how much they have to pay. The Israeli Water Commission took a desalination position for political rather than economic reasons.

## An Israeli Approach to Resolving the Israeli-Palestinian Water Issue

Hillel Shuval

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### Abstract

The Israelis and Palestinians are partners in sharing the water derived from the Mountain Aquifer. The rainfall over that area flows naturally underground from the mountains towards the areas of Israel along the coast and some 80% of it has been pumped up and utilized historically by Jewish farmers going back some 80 years within the current internationally recognized borders of Israel. The Palestinians base their claim for their rights for these shared waters on the fact that some 85% falls as rainfall over lands which will be included within the Palestinian State and should be allocated to them based on the concept that the water rights should go along with the land. The Israelis base their claim on the fact that international water law recognizes prior or historic use as a recognized basis for water rights regardless of the sources of the water. Israel cites the case of Syrian and Iraqi claims of water rights to the Tigris and Euphrates rivers which are derived mainly from rainfall in Turkey. Five riparians share the water resources of the Jordan River Basin – Syria, Lebanon, Jordan, Israel and the Palestinian Authority. Based on estimates from the World Bank and other sources the 2005 availability of water resources/person/year is as follows: Lebanon-1000 m<sup>3</sup>/per/yr ; Syria-800 ; Jordan- 200; Israel 240; Palestine- 70. I have estimated that the that the *Minimum Water Requirement- (MWR)* needed to maintain a reasonable level of social and economic life and to meet *vital human needs* in the Middle East is about 125 m<sup>3</sup>/per/yr. The MWR would meet the needs for water for drinking/domestic/urban purposes for a hygienic standard of living and for commercial and industrial employment, but not for agriculture. Water for agriculture could be provided by recycled water. The MWR concept has been accepted by many as offering a fair basis for providing an equitable starting point for estimating vital human water needs. From the above it is clear that the Palestinian suffer from the most severe water shortages of the five riparians on the Jordan River Basin. The Lebanese and Syrians are the relatively water rich riparian partners with some ten times as much water per person/year than the Palestinians. This lecture proposes following the primary principle of international water law in calling for an equitable sharing of the water resources on an international water basin, giving priority to meeting *vital human needs* regardless of geographic considerations and historic claims. Thus, we propose that Israel relinquish to the Palestinians a portion of the natural waters of the Mountain Aquifer that it currently uses. We also propose that Lebanon and Syria, as the two relatively water rich riparians relinquish a portion of the Jordan River waters to the Palestinians in the spirit of the proposal of the Johnston plan of 1956. Reallocation of waters to the Palestinians should have as its goal meeting their urgent needs for the *Minimum Water Requirement* as an equitable basis for sharing the water resources to meet *vital human needs* as called for by international water law among the five riparians.

### Points from lecture:

- ‘Transboundary’ is a set term in international law: the waters of the Mountain Aquifer are considered shared waters on an international basin.
- Main Palestinian claims and concerns:
  - 80-85% of water from MA is currently taken from wells and springs mainly within Israel.
  - Palestinians feel this natural local water should be considered Palestinian water.
  - Palestinians reject expensive schemes to desalinate, as proposed by Israel, which would put Israel in control of water thus depriving Palestinians of independence.
- Main Israeli claims:
  - Israel claims legitimate historical riparian water rights to that portion of the MA’s water (historic prior use).
  - Israelis are concerned about over-pumping by an independent state of Palestine.
  - The UN Convention of the ‘Law of the non-navigational uses of international water courses’ is not obligatory.
  - Law doesn’t give recipe for equitable sharing but calls for it.
- Shuval recommends that Israel should reallocate what they pump in the West Bank for settlers (75 million cubic meters and 50 million cubic meters from the Jordan River). The total would be 200

million cubic meters (MCM) which represents 15% of Israel's current use or 45% of the additional amount offered by Israel for the Palestinians.

**Comments:**

- Zeitoun: Lebanon feels they are being compromised on the Hasbani River. Regarding the Mountain Aquifer, the Palestinian Authority has the right of equitable use, agriculture is 90% Israeli and 10% Palestinian, and this is rarely mentioned with regard to equitable use.
- The cost of desalination is low, which is a compelling reason for Palestinians and Israelis to cooperate.
- Landovsky: As for the dispute between Slovakia and Hungary used by Shuval to demonstrate the use of international law, Slovakia did not break international law by building the infrastructure but did break international law by letting water flow.

**Responses by speaker:**

- At present there are no negotiations on water since Palestinians and Israelis are not negotiating anything now. Hamas said it won't negotiate with Israel and won't recognize it as a state, therefore it can't expect Israel to negotiate. On customary law, it is debatable and is never enforced by a court. Hungary and Slovakia voluntarily went to the International Court of Justice: they are an exception.

***Session 7***

**The Role of Virtual Water in Water Resource Management in the Arid Middle East. A Re-evaluation of water food security.**

Hillel Shuval

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**Abstract**

Agriculture and rural village life have historically played central roles in the life, economy and culture of the Middle Eastern and North African (MENA) countries. However, in the 21<sup>st</sup> century many of these nations are facing the reality that their natural fresh water resources will shortly become fully utilized and that there is an urgent need to reevaluate long term water resources management strategy. While calls for food security based on growing all food locally arouse popular support, the lecture showed that the modern, rational, economic approach to this question is that the MENA countries with little water should accept the reality that priority in utilization of their limited fresh water resources should go to meet the immediate vital human needs of drinking water, domestic and urban use as well as for high income producing commercial, industrial, tourism use and also assuring quality of life with green open spaces. It is more rational to import most of the high water consuming food and fodder, particularly the staples which can be shipped and stored easily from those countries with plenty of water from natural renewable sources; in other words, to import 'virtual water' in its most economical form – food. Our study shows that in reality Israel and Jordan have de-facto adopted this policy and import 80% of their national caloric intake from abroad while the Palestinians import over 65% of their caloric intake. Plans must be made over a 20-30 year period to retrain the agricultural population for alternatives employment in a modern economy.

**Points from lecture:**

- The term "food security" is used by the agriculture sector to justify the extensive use of water. Such use is misleading. The fact is that countries with water shortage like the ones in the Middle East cannot obtain food security through their own production (one possible way to obtain food security is by storage). None have enough water to grow food locally (Jordanians, Israelis, Palestinians). The notion of 'food security' conjures strong, irrational feelings.
- There are environmental benefits that come with agriculture. These also need to be considered.

- Solutions: Water embedded in food concept (virtual water). No agricultural sector can afford to pay the cost of alternative water sources except recycled water.

### **Discussion:**

- Allan: Society is hooked to grandiose projects. We need to change this way of things. How can an epistemic community gain more power?
- Knies: The buying power of a population is an important factor; We've been talking implicitly about food security vs. food autarchy (food self sufficiency). These two are different. We need to reconceptualize the problem.
- Feitelson: There is a difference between agricultural security and food security; We need to categorize 3 types of countries based on a) rapid population growth, b) low income, c) industrial sector, which is also the agricultural sector. Dividing into categories of developing or developed countries is not useful.
- El-Shuraydeh: How far can we go before we need to import treated wastewater cost? Fresh water is only included in this?
- Khalikova: Suppose these countries all do this, what is the cost to the environment? How do you figure in population growth and transportation? Which countries will do the growing? Europe is already expensive.
- Zeitoun: Food security vs. self sufficiency, this is important in operationalizing in Gaza. Regarding the politics of distribution, what are the priorities of water use?

### **Responses from speaker:**

- The model looks at fresh potable water only; implicitly waste water is built in. Food can be grown with wastewater.
- Food security is a matter of language. Food security is a cover word for food self sufficiency.
- These ideas are not intended for application to all countries in the world. The idea is to prevent irrational water projects and overcome the drive for megaprojects. The focus should be on food not water – acquiring water through food is the issue.
- The cost of virtual water is 6-8 US cents per cubic meter; there is no cheaper water than this.
- We need a world food bank that is available to poor countries.
- There are no environmental costs on transportation to meet food needs. Growing food has negative impacts on pollution of groundwater (pesticides).
- There are political reasons why Gaza is not getting food. This is not related to virtual water but to the idea of food security.



## Session 8

### Brain-storming Session: Water & Energy

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#### Guide points and questions suggested by Pavel Seifter for brainstorming discussion:

##### 1. The EWE project's context:

It is useful to keep in mind the starting point, which was HRH Prince Hassan's and President Havel's wish to explore the possibility of employing the EU inspiration for the ME(NA) region. We therefore started with searching for what I call the "Monnet Key", i.e. the critical point which has the power to change the whole setting. That was at the core of EWE's original idea of cooperation and integration for the broader Mediterranean region. The question we now have to ask is what is our 'philosophy'? Is it shared responsibility? Do we want to be internal to or distanced from the conflicts? Is our purpose a kind of aid or assistance or charity or something different?

Secondly, the EWE project does not live in an empty space, we have to relate and connect it to other projects around. We do not want to repeat or unnecessarily overlap work done elsewhere and well. What is the state of art? Some answers have been given in the presentations of this workshop. What further background research do we need to commission?

##### 2. The EWE framework.

The first characteristic is linking the inside (countries of the region) and outside (the role of external parties to the regional issues – US, EU, international institutions). There are three ways of interference: projecting national interests and security; entering the region through trade and economy; presence through assistance and aid. There are three ways of assistance: technical competence and best practices, assistance in negotiations and mediation skills, facilitation of investments in trans-boundary settings. Where does EWE fit in?

The second characteristic is the 'big basket' approach – linking issues and sectors. EWE links water with energy and environment. What is their interface, what is their interplay? How do they form a unity? There is a multiplicity of factors that shape the issues: trade, agriculture, security, politics, culture, social and economic development. Linking energy and water has been attempted in Tony Allan's presentation, the energy session was meant to highlight the same interconnectedness. Environment has not entered our debate yet. Central to the success of regional integration is the capacity to link issues into 'bigger baskets' from which a range of potential benefits can be generated. How to move the problem definition out of the watershed, up into the more strategic 'problem shed, where issues of scale can be transcended (as we are being urged by Tony Allen)? What approaches are most useful (parallel national action, multi scalar analysis etc.)?

Third, this is to do with the necessity to overcome elements that impede closer cooperation, with a need to address international and multilayered issues. EWE is therefore based on the two principles of a regional and community approach. The regional approach sees cooperation on an international level, and integration on a supranational level, as preferable and indeed opposed to isolated, unconnected bilateral management and power arrangements. The community principle is to be seen more as focusing on the process and on institutions as building blocks for integration than as merely on institution and structure building. Which is the right theoretical approach (regime theory, functionalism, cultural theory etc.)?

##### 3. EWE's "added value" (what do we expect from the EWE?):

Academically: explore the nexus between water and energy, and both with environment?

Explore the nexus between these and high and low politics, actions and actors? Can cooperation and integration on the combined issues of water, energy and environment have a spill-over effect on political tension and conflict? Issues: Where is the bridge from a hegemonic regime to an integrative (community) regime to be found? Is it through a continuum of stages from hegemonic cooperation through equitable, complementary regimes? As for actors and movers, how do we apply cultural theory? What are the discursive processes in play? What is the hegemonic discourse present in

different environments of conflict or cooperation? How do we give regional integration a 'voice'? What is the scale of openness or resistance to regional integration?

Politically, EWE is expected to connect academic findings, recommendations and projects with the real world of politics. (No mean expectation!) The first way is through public awareness – opening 'ears and eyes'. What are the strategic targets? Government actors, institutional and managerial structures, media, civil society, private business – local, national, regional, international, global? The second way is through recommendations (these should be summarised and publicised in the EWE's final report in 2008) and political lobbying. The third is through providing a public platform, assistance, testing ground or a launch pad for projects. Two such projects recommend themselves at the moment: Fisher's Water Allocation System Model (WAS) and TREC's Solar/Desalination Project for the ME(NA). A third idea has been mentioned as desirable– but no sufficiently developed project has been offered yet: an R&D regional network base for EWE research and technology (possibly in cooperation with the EU and US).

4. The seed period (August to October 2006) given by the LSE grant for the EWE project defines the time to prepare a plan. First, we have to define the research tasks. Second, we need a programme of meetings, workshops and conferences, which in part will serve research purposes and in part will serve public promotion. Third, the EWE structure has to be set up: the research body (three workgroups/teams for water, energy and institutions), the planning body (central group), and the political support body (advisory board of senior leaders). The institutional backbone has been set up at the beginning of the year through a Memorandum of Understanding between the London School of Economics and Political Science, the Higher Council for Science and Technology, Amman, and the Forum 2000, Prague.

#### **Discussion:**

##### **Knies:**

- Suggests that relevant governmental representatives be invited to the October Forum 2000 conference in Prague where the TREC idea would be presented to them..
- Doesn't see much use in endless academic research. We should approach the private sector and government officials with what we already have and leave them to deal with the rest – it is unwise to intervene in their job.

##### **Feitelson:**

- Research idea: It was apparent throughout the workshop that the energy sector is ahead of the water sector especially in regard to its relationship with the private sector – research can be done on the lessons to be learned from this relationship.
- Idea for a workshop: invite people from the water private sector and hear their suggestion on how to improve the current situation. Mekorot's general manager is open to discussing business opportunities.
- The problem shed: defining the term relevant to the EWE project (scale, scope, etc')
- For an optimal water management system of the Jordan River/ Mountain aquifer the institutional structure needs to be further defined. Also the franchising idea needs to be developed.
- Framing: how do you frame ideas and projects and make them appeal to governmental officials and the private sector?
- Shuval's figures for basic domestic use can be used in future negotiations.
- Is integration useful? Depends on what kind and what for. What does operationalizing problem-shed look like? The basin-scale is not useful.

##### **Allan:**

- Mentioned that he could give us some good names of people from the water private sector from the U.K and abroad that can help us in our investigations.
- Believes that on top of the governmental officials and the private sector we should also involve the NGO's because 'they have the long term vision.'
- Emphasized the need for funding for the EWE. We should apply to EU Framework 7 for a bigger budget, if we are looking for a bigger impact and want to influence a larger network.

- Making the EWE ideas more available to the public – one way of doing that is do arrange a conference in London and inviting 1000 people.
- Perhaps there could be some link between EWE and Stockholm International Water Week August 2007?

#### **Shuval:**

- Two major ideas came out of our discussions on water. One is based on Fisher's work and the other is Feitelson's idea about approaching the private sector.

Suggestions following from there:

1. Further investigate these two ideas and see how they can fit the EWE project..
  2. Organize a workshop that will further discuss these two ideas.
  3. Arrange a simulation game based on these two ideas (Fisher's model & water franchising). Try to invite to this simulation game key players from the five riparian countries of the Jordan River (Lebanon, Syria, Israel, Jordan and the PA). In this simulation game sides can be switched and there is no need to talk about exact figures.
  4. Perhaps the private sector could fund these initiatives?
  5. Launch these ideas at the Forum 2000 meeting?
- Energy: we should select a project like the one Mor suggested as long as the project will be big enough to have an impact.

#### **Fisher:**

- His project suggests a model for water optimization but not a model for optimal water management. Maybe there is a need to build a model for an optimal water management in the Middle East that will be based among other things on his group's work.
- Investigate how to integrate the private sector in his model.
- Thinks that the Dutch might still be interested in funding a simulation game similar to the one Shuval suggested.
- There might be a need to update the database of his research.
- If we consider trade of water as a conflict resolution tool, we will need to know about the organizational rules in order for this to be modelled or simulated.

#### **El Shuraydeh:**

- Suggests more attention to the environment, notably to the broader notion of human environment. We need to show short, medium and long term impacts and not to limit ourselves too much to details at this point.
- Let us define and map the different targets group/players and find ways to approach them. Are our main clients governments and decision makers?
- The private sector should be offered a concrete business plan – that is the language that they understand so this is how you need to approach them.
- Our goal is promoting regional cooperation. It is therefore necessary to approach policy makers in the MENA as well as the EU.

#### **Mason:**

- Research further how good ideas developed by the epistemic communities are turned into concrete policies and projects.
- How to bridge between epistemic communities and the private and political sectors.
- EWE could also study itself to understand the process by which an epistemic community attempts to influence policy.

#### **Concluding remarks:**

#### **Snidauf:**

- With regard to one of the defined goals of the workshop and its proceedings the Forum 2000 needs to be clear about its future water programme (the 'Prague Platform'):
  - Are we simply a forum for talking or more than that?

- Should we be a launching-pad for projects?
- Is it wise for the Forum 2000 to limit itself to one project? We may be in danger of being perceived as an interested party. .
- Forum 2000 is prepared to invite high-level politicians and people from the private sector.

**Seifter:**

- There is a space between a vision of a solar/desalination plant in the MENA and actually realising it. EWE should investigate this space and identify ways that can be offered to decision makers and can lead to the realization of good ideas. This space should be filled also with social research, cultural theory, language framing and other academic theories relevant to EWE projects.
- The nature of the EWE project is intended to be action-oriented; it is not merely a discussion group. The three institutional pillars of the EWE project are the London School of Economics and Political Science, Forum 2000, and the Higher Council of Science and Technology, Jordan. Their cooperation has been formalised through a jointly signed Memorandum of Understanding. The three institutions are of course independent, which applies also for the Forum 2000 and its activities, also concerning its own water programme. Some of the activities overlap quite naturally, as is the case of this workshop and possibly some other workshops in the future, and cooperation is envisaged in regard to Forum's pool of public figures from various realms of political, cultural and business life.
- A proposal for a fundraising plan will be prepared in course of the project's preparatory period (before the end of October 2006)