

MedWater Policy
**Policy Initiative to Overcome Water Competition between the Vital
Economic Sectors of Agriculture and Tourism in the Mediterranean**

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Adaptation of Policy Modules to the MEDWATER Target Regions

Case Study Dead Sea Area

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Introduction

Each MedWater target region has a particular profile and is facing individual problems. In consequence the water conflict in each region has a different character and therefore requires an individual sustainable water policy initiative. Consequently, the elaborated policy modules of the Transboundary Water Policy Initiative are to be adapted to the specific conditions of each target region. In an exemplary way water policy initiatives are formulated for each of the MedWater target regions which are:

- a) Cap Bon region in Tunisia
- b) Dead Sea Area in Jordan**
- c) Fethiye Region in Turkey
- d) Jericho district in Palestine
- e) Naxos Island in Greece

Policy Targets for Sustainable Water Supply for the Dead Sea Area

Every water policy initiative aims to generate a strong conflict solving potential between the vital economic sectors of agriculture and tourism. **Policy targets** are defined which promise a very efficient ratio between efforts and effects. The definition of policy targets is based on a careful analysis of the current water situation in the target region and the respective technical and socio-economic reform potential. Based on this analysis the most promising **policy modules** are selected which are necessary for achieving the reform targets. With this methodology three highly important policy targets for sustainable water supply for Dead Sea Region in Jordan have been developed. The policy targets and the appropriate policy modules are summarized in the following table:

Policy Module	Cultivation of Water Modest Crops	Implementation of Additional Inland Brackish Water Desalination	Protection of the Dead Sea Ecosystem
Legislative Framework	Restriction of Groundwater Irrigation		Governmental Restriction on Additional Evaporation Ponds
			Environmental Impact Assessment for the Exploitation of Non Conventional Resources
Water Pricing Scheme	Direct Governmental Subventions		
Institutional Framework		Co-operation with International Development Banks and Financial Institutes	
Water Infrastructure		Governmental Inland Desalination Projects	
Mobilising of Financial Resources		Creation of Favourable Conditions for Private Investment	
Public Actions and Capacity Building	Public Dialogue		Public Dialogue
	Enhanced R&D Capacities		
Interregional co-operation			Agreement for the Management of International Water Systems

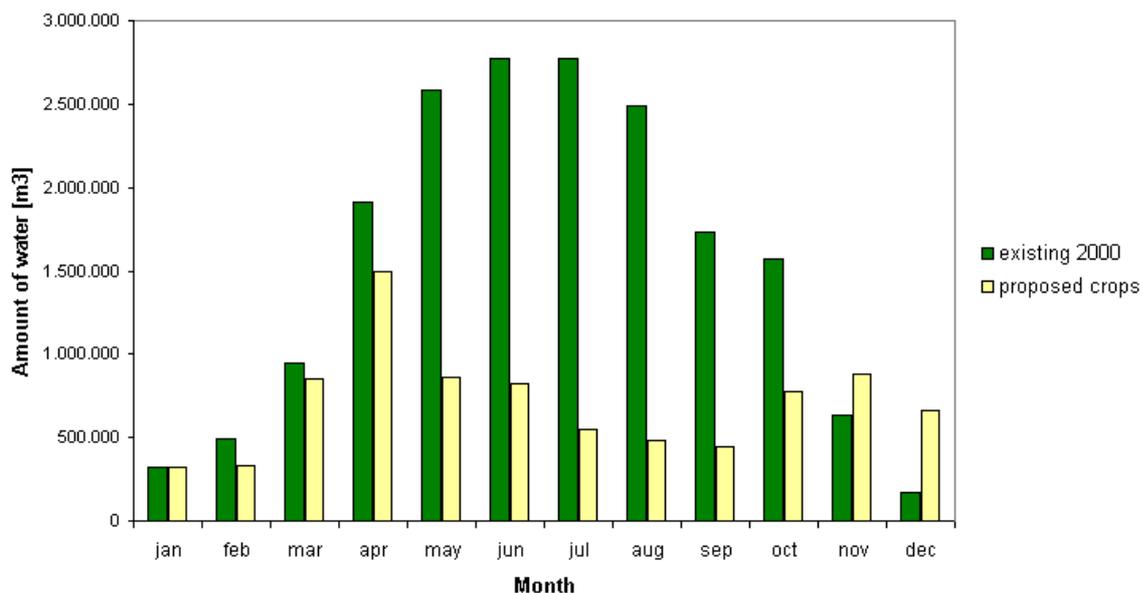
Policy Target “Cultivation of Water Modest Crops”

Situation in the Dead Sea Region

More than 80 % of the water supply in the project area in Jordan is consumed by agricultural irrigation. Within this large amount 76 % is required for citrus and banana cultivations. The huge water quantities required for these economic activities are covered by exploiting groundwater aquifers. It is obvious that a change of the agricultural products and an adaptation of the agricultural methods to the arid climate conditions would release the water situation in Jordan and in the Dead Sea Area significantly.

The Jordanian government already has implemented binding guidelines for imposing water efficient crops. These crops are particularly modest in their water demand in the critical months of June till August. These guidelines are not always followed by the farmers since citrus and banana plantation is more profitable than most other crops. The gap in the water demand between the political guidelines and the real water consume can be documented in the following figure that can be found in the MedWater Report “Water use and Competition between the agricultural and tourist sectors”.¹

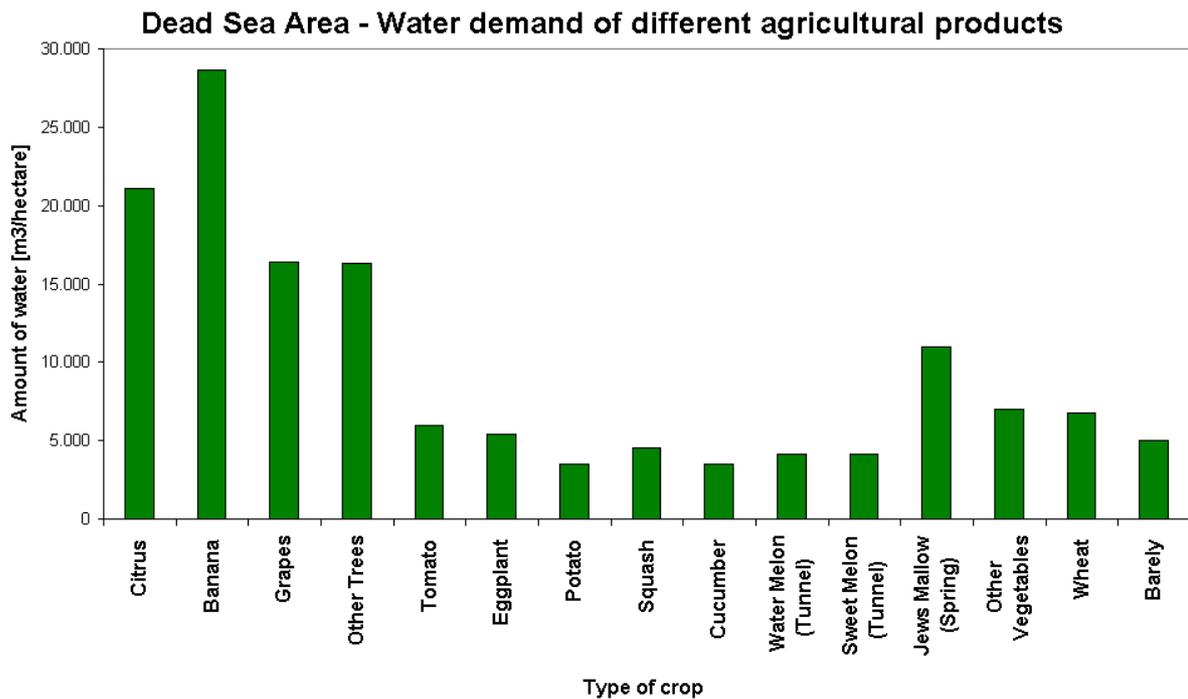
Dead Sea Area - Water demand in agriculture



¹ See MedWater Report 2(2002): 18

Technical Option for Cropping Water Modest Plants

In comparison to the tropic banana and citrus plantation many traditional domestic crops have a modes water consume. These traditional crops have their irrigation demand in the wet season. The vast differences in the water demand can be seen in the following diagram which can be found in the MedWater Report “Water use and Competition between the agricultural and tourist sectors”.



Intense research was performed on the definition of water stress and salt resistant crops which also bring decent economic yield. Encouraging pilot projects in the Jordan Valley were for example implemented with Muluchia, a Jute Plant which is a popular vegetable in Egypt.

Policy Modules Supporting this Policy Task

The binding restrictions of water intense world market plantations so far have not proved their ability to significantly reduce the irrigation water demand. Thus, this policy module has to be combined with a well-designed set of accompanying measures.

Policy Module: “Restriction of Groundwater Irrigation”

The program for water modest agricultural patterns requires the restriction of the individual water supply. A law for groundwater control already exists in Jordan (law 85/2002). The effectiveness of this regulation for improving the situation in Dead Sea Region has to be analysed in the coming years. Also surface water tapping should be put under administrative control.

Policy Module: “Strengthening of Water Authorities and Supply Facilities”

The administrative strength is very important for imposing the water related legislation. The Jordan Valley Authority and the Jordan Water Authority are important administrative body for the field of water management. Moreover, a Project Management Unit monitors all activities carried out by Water Authority of Jordan and Jordan Valley Authority. Currently a unit is under preparation to take over the important field of monitoring and managing of groundwater resources. It is important that this find quickly receives the approval by the government.

Policy Module: “Direct Governmental Subventions”

The economic strength of many farming units does not allow the shift of agricultural activities to water modest cultivations. Thus, the reform should be supported with smaller governmental loans which are to be obtained with limited securities and under modest financial conditions.

Policy Module: “Public Dialogue”

A well-designed PR campaign is required for raising the understanding between farmers for the urgent need to shift to water modest plants. The campaign should highlight niche markets for certain products and suitable promotion campaign.

Policy Module: “Enhanced R&D Capacities”

Scientific research is very important for enhancing the knowledge on salt resident species and water stress adapted agricultural methods. Jordan already has a set of excellent institutes and consulting companies service as think tank and operating pilot and demonstration projects. These existing capacities have to be strengthened by national and regional programs. The research exchange with other arid regions of the world and with the European Union should be strengthened.

Policy Target “Implementation of Additional Inland Brackish Water Desalination”

Situation in the Dead Sea Region

Tourist development is an important economical goal in the Dead Sea Area for which several planning and feasibility studies were carried out. The main issue in this regard was to ensure sufficient water supply. The feasibility studies have shown that brackish water could be taken from the Southern Wadis of Dead Sea Region and then transported with conveyors to Amman and the tourist region at the northern Dead Sea Shore. These water sources with the relevant quantity of 45 MCM per year could then be exploited with an inland desalination unit at the end of the conveyor line.

Technical Options for Environmentally Sound Inland Brackish Water Desalination

There are various mature and cost efficient desalination systems for brackish water. Most suitable for the Dead Sea Region seems to be a Reverse Osmosis (RO) system. Inland desalination however holds environmental dangers. Firstly, the plant is expected to produce saline brines of approximately 15 MCM per year that have to be discharged without any damage to the local water shields. Feasible discharge options could be evaporation ponds or a discharge conveyor leading to the Dead Sea. Moreover, the overall energy requirements for the site - about 45 MVA per year – should be generated in an environmentally sound way. This additional energy demand could be covered by renewable sources being abundant in the Dead Sea Area. Finally, the take-outs from the Wadis must not put additional pressure on the water-shed of the Dead Sea Ecosystem.

Policy Modules Supporting the Policy Task

Policy Module: “Co-operation with International Development Banks and International Financial Institutes”

The awareness for the burning water crises has been growing quickly between development institutions in the last decades. Thus, a socially and environmentally balanced project with clear positive impact on the future water supply situation has very good chances for finding monetary and political support in the development institutes.

For mobilizing this support a tight co-operation between all project stakeholders from public and private side is required.

Policy Module: “Governmental Inland Desalination Projects”

The daring and for the entire region highly important desalination project should run under the auspices of the government. The relevant governmental bodies should invest enough money, time and expertise for being able to push the project ahead in the required speed. Additional know-how can be obtained by the initiation of Private-Public Partnership.

Policy Module: “Creation of Favorable Conditions for Private Investment”

Additional expertise and funding from private companies will support the project development considerably. To attract private investment, the government has to create favorable framework conditions in the project. The project design has to recognize the legal and financial interests of an investing company. This includes a tailor made co-operation scheme for the Public-Private Partnership (PPP) as well as the acquisition of additional donor funding sources.

Policy Target: “Protection of the Dead Sea Ecosystem”

Situation in the Region

The destruction of inland water systems in arid regions can create disastrous environmental, social and economic damage. In this respect it is alarming news that the surface level of the Dead Sea drops for 80-100 cm each year. A destruction of the Dead Sea will bring with it a complete change of the local climate and salt storms threatening the livelihood of the entire region. Three major reasons are to be defined for this decline:

- Water take-outs in the Jordan river
- Water take-outs in the Wadis of Dead Sea Region
- Evaporation ponds for salt production.

Options for Ecosystem Stabilization

Various actions for preserving the Dead Sea and so the entire region are under discussion. The most ambitious suggestion is to create a saltwater conveyor from the Red Sea to the Dead Sea to refill the ecosystem using the altitude difference of more than 400 meters for energy generation. Next to this huge project costing around a billion US\$, alternative solutions are to be considered.

Policy Modules Supporting the Policy Task

Policy Module: “Governmental Restriction on Future Evaporation Ponds”

The famous Dead Sea salt is a valuable product on many international markets bringing important employment and economic yield into the region. Its production in evaporation ponds however is creating a significant loss of the Dead Sea water contingent. The erection and operation of additional ponds therefore should be put under governmental permission. These permissions should strive to minimize water out-takes e.g. by using the brine of the desalination sites.

Policy Module “Environmental Impact Assessment for the Exploitation of Non Conventional Resources”

The intended projects for enhance brackish water exploitation will create additional pressure for the Dead Sea ecosystem. Therefore, about all future projects should be decided on the basis of a careful Environmental Impact Assessment.

Policy Module: “Public Dialogue”

A well designed PR campaign is required for creating all over the region the understanding for the need of a joint effort of all stakeholders to give the Dead Sea and with that the entire region a sustainable future. One effective option would be to get in touch with people, who have already made experiences in this field, such as experts from the Aral sea region.

Policy Module: “Agreement for the Management of International Water Systems”

The existing water treatments have to be further developed to integrate a saving plan for the entire Dead Sea Area. This plan of action has to comprise a comprehensive analysis of the water situation and outline concrete measures for water allocation. Emphasis has to be put on securing a sustainable use of the domestic water outlets along the Jordan River. Additionally, Action Plans for water saving should be developed. The integration of international bodies to facilitate the implementation of the international agreement should be considered.