

Private Sector Considerations in Governing Water & Energy Resources – Can Water Scarcity drive Efficiency in Service Provision and the Development of Renewable Energy Sources?”

Udo Kachel, Director Regional Office Amman - Dorsch International Consultants

Jordan, being one of the most water scarce countries in the world in addition has to shoulder the unusual burden of pumping the precious resource from far away sources over hundreds of kilometers (Disi-Amman 330km) and thousands of meters in elevational difference (Jordan valley – Amman 1,300 meters) to the major urban consumption centers. These very specific conditions result in a staggering 17% of the national energy production being used for pumping water.

Electricity is generated using oil and gas as primary source. Renewable energy, though available in abundance (solar and wind) does not play a significant role in electricity generation due to the missing institutional arrangements and lack of incentives, the recently approved Renewable Energy Law no.3 of 2010 is the first step to overcome this. Efficient use of both, water and energy is apparently not a priority within the various government authorities responsible for the management of both commodities as

- Non Revenue Water (NRW), the most important composite performance indicator of a water utility, remains at consistently high levels between 40 and 50%. For comparison, NRW levels in Germany are ranging between 5 – 10%.
- Recent energy audits in a number of WAJ pumping stations revealed an energy saving potential of between 25 -30%.
- The electricity distribution companies subsidize the tariff for pumping and even gave WAJ a flat rate tariff of JOD 0,043/kWh, thus killing up front any incentive for WAJ to save electricity.

Although huge investments have been made in the water sector over the last 10 years, and Mega projects like Disi are under construction, the present status did not really change during this period.

It seems that the institutional framework and rigid civil service rules prevent WAJ to act and remove the internal inefficiencies to reduce energy consumption, the carbon footprint and on the other hand use the precious water resources in a sustainable and efficient way to provide adequate services to the population.

Role of Private Sector

Unfortunately, the private sector only plays a marginal role in operation & management of water supply systems in Jordan. About 10 years ago, the Ministry of Water & Irrigation embarked on a road to commercialize operations by involving the private sector, and the few successful projects in reduction of NRW and energy saving are in fact clearly illustrating the importance of performance based contracting through the private sector.

What is not yet clear and missing is a clear focus on the most important fields of inefficiency, i.e. the NRW and energy consumption and a more dynamic and flexible implementation outside the present bureaucratic system.

A striking example is the famous Disi project. Without reducing NRW, Disi will be a financial disaster for the GOJ. If the NRW cannot be reduced significantly, only 50 – 60% of the 100 million cubic meters per year will be paid for. This will probably increase the cost per cubic meter by more than 400%, waste energy and the precious fossile groundwater from Disi and last not least drive WAJ into costly and energy-intensive desalination as the last resort to satisfy the water demand of the growing population.

A major limiting factor are the subsidies in water and electricity tariffs, which do not reflect the real costs of producing water and energy and thus the obvious benefits of private sector engagement are not visible. The Minister of Finance on the other hand is facing an ever growing deficit in the Water Authority of Jordan and subsequently a high burden on government budgets.

If the real cost of energy production/ distribution and water production/ distribution would be reflected in the respective tariff structures, the private sector would be even interested to at least partially cover the needed investments and engage in performance based contracting models.

The way out

The water-energy nexus in Jordan can be characterized by a kind of paradox behavior of the responsible players in the water and energy sector, namely the obvious water scarcity but allowing high losses in water and energy in provision of the services to the public and on the other side a huge potential in renewable energy sources but not tapping it.

The rigid institutional framework and highly bureaucratic procedures in most government institutions, have to either be by-passed or a coherent system of performance based management be introduced. This could start within the Ministry of Finance and the Ministry of Water by introducing performance budgeting principles and a proper assessment of opportunity costs in combination with timely implementation of the needed projects.

The private sector should play its role by engaging on performance based contracting models, and partly funding of the needed investment if subsidies on water and energy tariffs are removed. If this is politically and socially not possible, the real cost of water and energy must be established and the cost/benefit analyses for private sector engagement be based on these real costs.

Typical intervention areas for private sector engagement could be

1. Reduction of water losses through performance based contracting, thus indirectly reducing energy usage and improving the financial performance of a water utility, which in turn generates the

needed revenues to cover the required investments.

2. Improving the energy efficiency in water pumping through investment in pumping equipment and operation of pumping stations.
3. Generating energy in water supply and wastewater systems like installing power generating devices in high pressure pipelines to reduce operating pressure (Disi – Aqaba transmission pipeline) or producing gas in wastewater treatment plants (As Samra WWTP is producing more than 90% of the needed energy in the plant itself)
4. Investment in renewable power generation like solar and wind farms in suitable areas like Disi (about 40 MW needed for pumping).

The in parts highly complex approaches and the wide spectrum of expertise could be covered by a combination of local and foreign companies, making sure that the transfer of knowledge and technology is a guiding principle of the business activities. On the German side, the German Water Partnership (GWP) could be utilized to support water sector related initiatives.

It needs to be emphasized again and again, that all stakeholders must commit to a kind of efficiency drive and to consider time as a valuable factor in implementation of any kind of initiative. Such commitment is the key for success and makes sure that the GOJ is not running behind events, but rather ahead in managing the two most important sectors.



Udo Kachel is the Regional Director of Dorsch International Consultants, located in Amman, by profession a water engineer with post-graduate studies on privatisation of water utilities in developing countries. With more than 18 years of professional work in the Middle East (Jordan, Syria, Egypt, Yemen, Lebanon, Iraq), covering operations management, re-structuring and commercialisation of water utilities, water loss reduction and leakage control, energy efficiency, conceptual development and implementation of corporate GIS solutions and planning/design of water supply systems a profound experience on practical implementation of efficiency improvement in water utilities has been gained.