

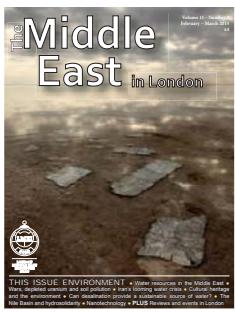
The Middle East in London

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THIS ISSUE: ENVIRONMENT • Water resources in the Middle East • Wars, depleted uranium and soil pollution • Iran's looming water crisis • Cultural heritage and the environment • Can desalination provide a sustainable source of water? • The Nile Basin and hydrosolidarity • Nanotechnology • **PLUS** Reviews and events in London



Atefah Khas, Urmia Lake, Iran. From *Reflection* series (*Reflection of Lake*), 2009. Photo by Shahrnaz Zarkesh. Courtesy of Janet Rady Fine Art

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The Middle East in London

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Karin Aggestam, Dan-Erik Andersson, Ronny Berndtsson and Kaveh Madani discuss the need for water cooperation between the countries of the Nile Basin

The Nile Basin and hydrosolidarity

The power plant of the Aswan High Dam in Egypt



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The Nile is a source of life that plays a crucial role in the economics, politics and cultural life of 11 countries and their more than 370 million inhabitants. The population of these countries is expected to double within the next 30 years. This means that an astounding three-quarters of a billion people will depend on a single river with dwindling flow for their livelihood.

Moreover, the Nile has had a long and complex history. It extends through Egypt and further south, flowing through some of the poorest countries in the world such as Ethiopia, Eritrea and Sudan. The area is confronted by severe problems due to both climatic conditions and socio-economic factors. From an ecoclimatic point of view, most of the region extends across semi-arid and arid zones. The semi-arid belts have been particularly affected by cycles of drought and desertification in the past decades. Socio-economically, the Nile region is characterised by a rapidly

increasing population (especially in Egypt and Ethiopia), which has resulted in a sharp decline of per capita water availability during the last decades. The socio-economic problems are severe in many of these countries and rely heavily on the availability of water from the Nile for irrigation.

Thus, the Nile River is one of the most important river basins with regard to the socio-economic conditions and climate change for a major part of the global poor. The historical use of the river water still very much determines present day water use and hydropolitical problems. Historically, Egypt and Sudan have decided water allocations within the basin. The 1929 Agreement between Egypt and Britain gave Egypt the right to use 48 cubic kilometres and Sudan 4 cubic kilometres of water per year. The annual flow of the river is about 84 cubic kilometres (14 per cent from the White Nile and 86 per cent from the Blue Nile). The 1959 agreement between Egypt and Sudan

allocated 75 per cent to Egypt and 25 per cent of the river water to Sudan. In 1999 the Nile Basin Initiative (NBI) was initiated with a broad agreement. The NBI is a regional inter-governmental partnership led by the ten Nile riparian countries, namely Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania and Uganda. Eritrea participates as an observer.

Several occasions since 2011 have added to the complexity of the situation. The Arab Spring brought hope for improvement on aspects of democracy and human rights. But it also opened up new negotiations on established agreements, and the expected improvement in living standards will increase the demand for water resources. In 2011 Sudan was divided into two countries. Potentially this could have led to a more peaceful situation in the two countries and in the region as a whole, but it has already created tensions that have to be met with cautious conflict handling. In 2011 Ethiopia started the debated construction of the Grand Millennium Dam (now known as the Grand Ethiopian Renaissance Dam). Earlier,

In 30 years, an astounding three-quarters of a billion people will depend on a single river with dwindling flow for their livelihood

Water cooperation is a key to security, poverty eradication, social equity and gender equality

Egypt had threatened war if Ethiopia tried to block the Nile flow. Ethiopia responded that no country could prevent it from using Nile water (about 85 per cent of the Nile river flow originates in the Ethiopian highlands). Egypt countered that it would not give up its share of Nile water.

Egypt's only sustainable water source is Nile flow. At the same time Ethiopia's economic development requires better use of the hydropower and irrigation potential of the Nile water. Historically, Egypt used to be the most populous country of the Nile Basin. At present, Ethiopia has surpassed Egypt in terms of population. The upstream countries represent 240 million and the downstream 130 million people. Clearly, the upstream majority has some moral right to use water for improved living conditions. Hydrologically, just 3.5 per cent of the incoming sustainable water remains at the level of the Aswan Dam. At the outflow point in to the Mediterranean only about 1 per cent remains. This is an exceptional condition and shows the degree of severity of water use within the basin. What are the possibilities, then, to resolve the water problem and prevent extended conflict?

Judging from the above, the potential for conflict over water appears to be overwhelming. The escalating water problems and the risk of an ecoclimatic collapse with resulting famine and possible conflict appear valid. Even so, however, a future agreement could encompass peaceful co-use of the Nile water resources. Evaporation at Lake Nasser in Egypt is about 10 cubic kilometres per year while only about 2 cubic kilometres per year in the Ethiopian highlands. Consequently, water for Sudan and Egypt could be more effectively stored in Ethiopia. Countries with significant hydroelectric power potential could sell power to Sudan and Egypt. Upstream dams could trap sediments thus reducing storage losses due to silt sedimentation. These measures could reduce the potential for conflict and increase the effective sustainable water volume. There are also opportunities to increase irrigation efficiency, especially in Egypt, that traditionally uses water-wasting border and flooding irrigation. Rainwater

harvesting could be used to decrease the risks for failure in crop production and use marginal lands more effectively. Industrial and domestic water should be treated and re-used a number of times before being discharged into the Mediterranean Sea. Virtual water through food imports could be applied to save water for drinking purposes. These measures are quite obvious and could easily save many tens of cubic kilometres every year. There are also signs and plans for solving and handling the scarce water resources in the region. One example is the above-mentioned Nile Basin Initiative. Even so they are not implemented on a larger scale. Why is that? What are the obstacles that prevent politicians and administrators from implementing even very simple and inexpensive measures to reduce water waste and improve the water situation in the Nile Basin?

The concept of hydrosolidarity has been brought forward as a way to improve water management and to share scarce water resources in an equitable way. Water cooperation is a key to security, poverty eradication, social equity and gender equality. Water cooperation instead of water dispute could generate economic benefits, preserve water resources, protect the environment and build peace. The hydrosolidarity principle thus means broad cooperation or solidarity around water resource use and management. The goal of hydrosolidarity is the cooperative, unified

management of shared water resources, whether at the national or the international level. Consequently, hydrosolidarity is based on ethics between water consuming sectors (agriculture, industry and domestic use), between humans and ecosystems, between present and future generations and means cooperating over administrative, political, religious and cultural borders. The fundamental concept is that water is not only an economic resource that can be developed by technology, but, more importantly, water also has important political, ethical, religious, legal, health and democratic dimensions. A better understanding of water's transdisciplinary function can thus improve the efficiency of water use via an improved upstream and downstream collaboration.

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A Sudanese farmer operating an irrigation pump on Atram Island in Dar al-Manasir, North Sudan