**Challenges facing Atbara Dam Complex (ADC) Sediment Management**

by

Prof. Dr. Abdalla Abdelsalam Ahmed

DG of UNESCO Chair in Water Resources

[aaahmed55@yahoo.co.uk](mailto:aaahmed55@yahoo.co.uk)

**Abstract:**

Atbara river is one of the tributaries of the Nile river. It is the most northerly tributary of the Nile flowing from the Ethiopian Highlands. It has two branches Setit river (called in Ethiopia Tekeze) and Upper Atbara river. The total catchment area of Setit and Upper Atbara rivers is about 97000 km2 (68000 km2 and 29000 km2 respectively).

Atbara is a seasonal river with annual average flow amounts to 12000 Mm3. Khashm ElGirba dam (KED) was constructed on Atbara river in 1964 with a storage capacity of 1300 Mm3. Since then the KED lost about 70% of its storage capacity due to sedimentation. Currently there are two dams (DCUA) under construction, each on one of the two branches (Setit, Upper Atbara) with total storage capacity about 3700 Mm3 (2520 Mm3 for Burdana reservoir on Setit river and 1180 Mm3 for Rumela one on Upper Atbara river). The two reservoirs are linked by a channel flowing from Burdana to Rumela. Several recommendations are provided by a Consultant to operate the ADC (the two reservoirs plus KED). The main objective of the project is irrigation, drinking water supply and hydropower generation.

In this paper the experience gained from the reservoirs management in Sudan, in particular KED, will be reviewed and discussed. Sediment management will be the core of the operation rules which will be govern the ADC. This means that the sustainability of the reservoirs to serve the main purposes, on which the feasibility study is conducted, mainly depends on how the ADC will be operated.

The impact of the upstream development on the ADC operation (i.e. Ethiopia Tekeze Dam – called T5) will be examined. The paper concludes with several recommendations to maximize the benefits out of the ADC reservoirs.

***Keywords*:** *Atbara Dam Complex, operation rules, reservoir storage, sedimentation, uses.*