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TOWARDS THE MILLENNIUM DEVELOPMENT GOALS

Water budget for basin development authorities

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THIS PAPER PROVIDES data for Basin development authorities (Fig. 1)for formulation of basin development policy. Due to space constraints, only selected findings are presented below. Details of water consumption and demand residential urban and rural industrial, agricultural, irrigation and pastoralism which served as the basic for compilation of the presented data, could not be included for editorial limitations, methodology of this research is intensively discussed, in presentations by the same Author-titled "Water Resources Administration in Nigeria" presented at NMCS animal Conference in Itakpe and at Geocongress in Abuja (Schoeneich, 2003a, 2003b).

How much water have basin authorities?

Dynamic Water Resources of BDAs are presented in figure 2, The map shows that there is little water in northern RBDAs, only 2 km3/s in Chad BDA, and much water in southern RBDAs- as much as 106 km3/a in Benin-Owena RBDAs. The disparity between north and south is even clearer when presentation is made in cubic metres of water per square metre of land.

Then Total Dynamic Water Resources in Chad BDA are 0.019 m^3/m^2a, Sokoto-Rima RBDA has 0.019 m^3/m^2a , while Benin-Owena and Cross River BDAs have respectively 1.655 and 2.586 m^3/m^2a. In terms of Utilization Dynamic Water Resources, northern BDAs are also worse. In Sokoto-Rima RBDA Utilizable Dynamic Water Resources constitute only 23% Total Dynamic Water Resources, while in Niger Delta BDA they make as much as 70% of the Total Resources. Total Dynamic Water Resources in this paper are only those generated within Nigeria. They do not include inflow from Cameroon and Niger Republics.

Water budget of the basin for 2003

Water budget for year 2003 is shown in Figure 3. With few exceptions, all RBDAs are showing heavy surplus of Utilizable Dynamic Water Resources above year 2003 water consumption. This is not due to wealth of water resources, because in Savanna located RBDAs water resources are poor, but due to insufficient development of irrigated agriculture which should be the leading water consumer. The exceptions are: Hadeja-Jama'are RBDAs where irrigation is fairly well advanced, and Sokoto-Rima, Upper Niger, Lower Niger RBDAs where main component of water consumption is generated of electricity from water flowing from Niger.

Ultimate water budgets for the basin

Ultimate water demand is the demand existing at a time when all environmental resources in RBDAs are fully developed. Extrapolating the pace at which BDAs progressed in period 1976 to 2003, it may well take another 2667 years (proof is in full version of this paper), or rather never-never because much earlier social bomb may explode. Ultimate water budget is presented in Figure 4. The Figure shows, that BDAs located in rain forest will have huge surplus of water above the Ultimate Water Demand, while BDAs located in savanna will suffer from huge water deficit.

Conclusion

Basin Development Authorities cannot accomplish purpose for which were created, without knowledge of environmental resources under their jurisdiction, water being one of these resources. No river basin can be developed without knowledge of utilizable-dynamic water resources, without knowledge of acreage of irrigable land, and size of population for which jobs in irrigated agriculture must be created. Without this information, no basin development policy can be ever formulated. Data presented in this paper on water resources, water consumption and demand fill the existing gap. More information is available in the full version of this paper.

References

Scheoneich, K., (2003). Water Resources Administration in Nigeria, Invited Paper, Presented at the Annual Conference of Nigerian Mining and Geosciences Society, Itakpe, 5th – 8th March 2003.

Schoeneich, K . (2003). Water Resources Administration in Nigeria (Improved Version). Presented at the Geocongress, Abuja, 20th – 24th May 2003.

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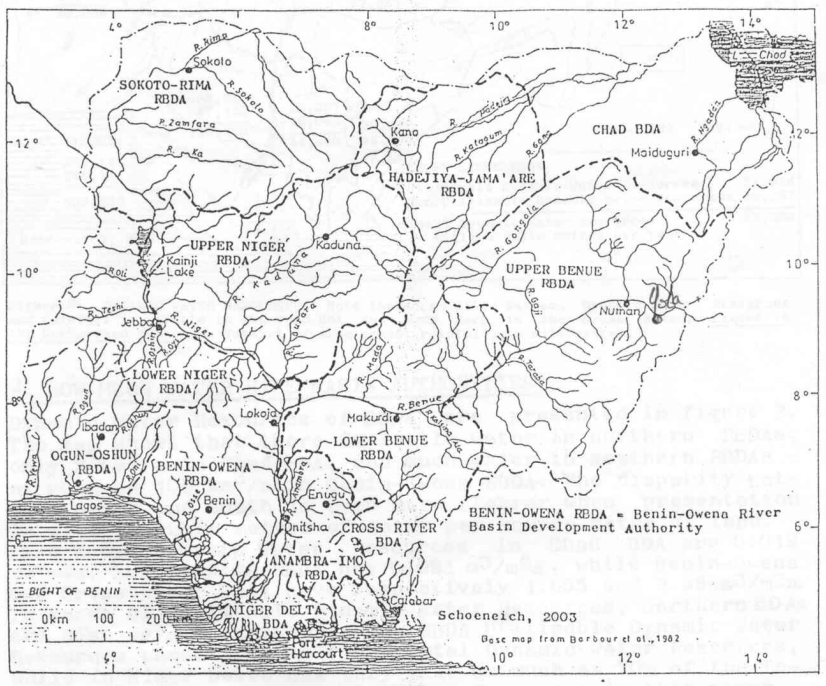

Figure 1. INTRODUCING RIVER BASIN DEVELOPMENT AUTHORITIES. Please note that the boundaries between the Authorities do not follow watersheds. They are administrative boundaries existing on 15th June 1976, when the first ten Basin Authorities were created by the Federal Government.

Figure 1.

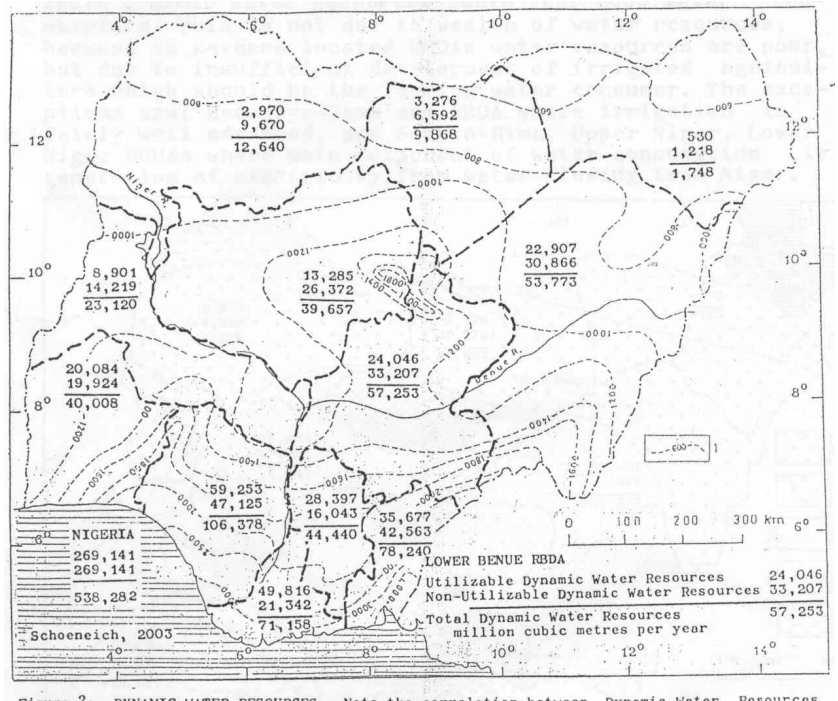

Figure 2. DYNAMIC WATER RESOURCES. Note the correlation between Dynamic Water Resources and rainfall - little in the Chad BDA and much more in the Cross River. Legend to the background map: 1 - Isohyet of mean annual rainfall, in millimetres.

Figure 2.

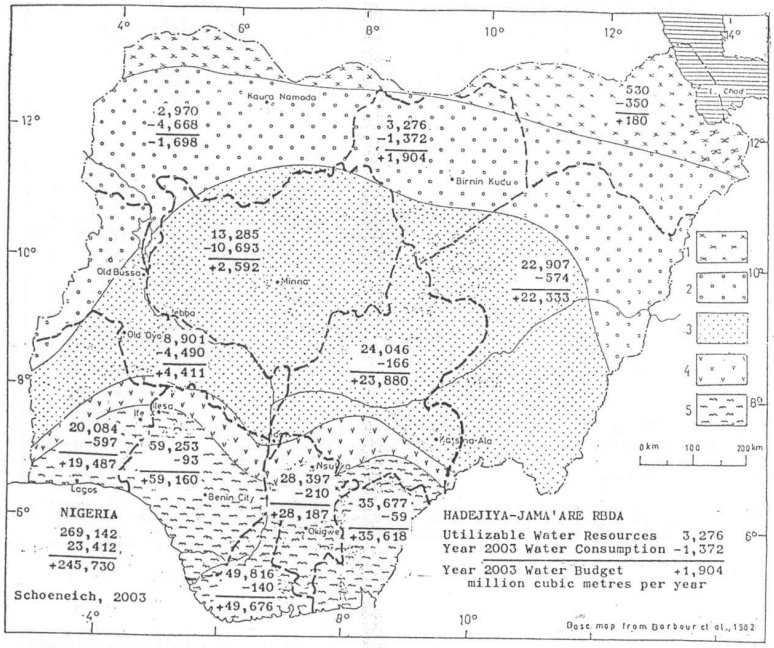

Figure 3. WATER BUDGET FOR YEAR 2003. Note that with two exceptions, all River Basin Authorities are using only negligible percentage of their Utilizable Water Resources. The exceptions are: Hadejiya-Jama'are River Basin Development Authority, where irrigated agriculture is already well advanced, and Sokoto-Rima RBDA which is using for generation of electricity water coming from outside the country. Legend to the background map: 1 - Sahel Savanna; 2 - Sudan Savanna; 3 - Guinea Savanna; 4 - Derived Savanna (depleted rain forest); 5 - Rain Forest.

Figure 3.

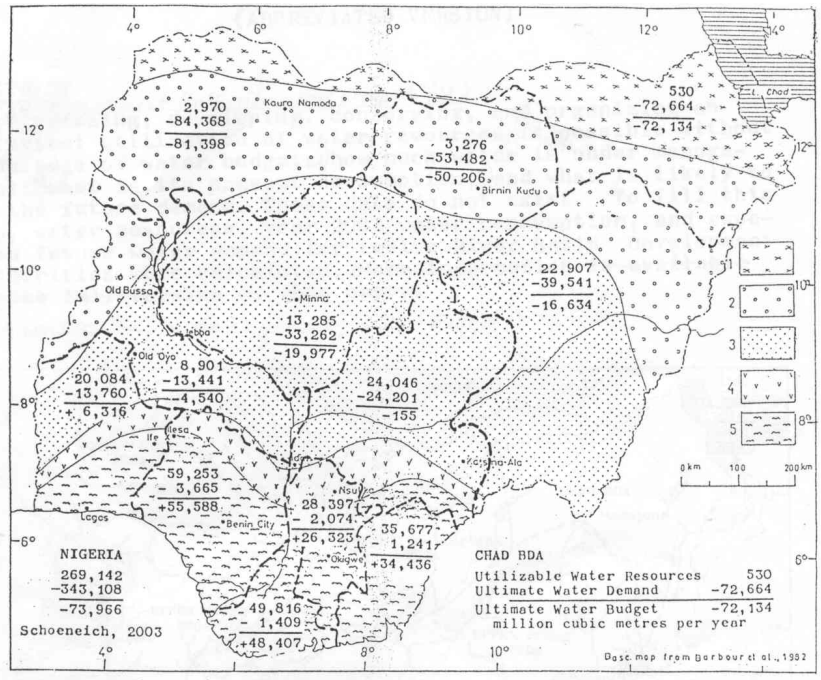

Figure 4. ULTIMATE WATER BUDGET. Note that in the time to come, when all environmental resources will be fully developed, there will be huge water deficit in all RBDAs located in savanna, and huge water surplus in RBDAs located in rain forest. For explanation to the background map, see figure 3.

Figure 4.