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RIVER DEVELOPMENT IN SOMALIA, SHABELLE AND JUBA RIVERS

River development in Somalia  
Shabelle and Juba rivers

1. The Shabelle and Juba rivers occupy the large drainage basins in Somalia. Other water resources such as Lake Dra, Lake Giro and Lake Bohol Madagoi, though locally important for water supplies, are comparatively small and generally intermittent. Both Shabelle and Juba rivers rise along the eastern slopes of the eastern plateau of Ethiopia approximately 1,000km inland from the Indian Ocean.
2. The areas of the drainage basins are estimated at 300,000km<sup>2</sup> for the Shabelle and 275,000km<sup>2</sup> for the - Juba, but most of the effective drainage takes place in the upper reaches of the basins. In Somalia and the border zone of Ethiopia contribution is limited to a relatively narrow zone adjacent to the rivers. The flow in small water courses is diminished by infiltration and evaporation to such an extent that it ceases before reaching the main rivers.
3. In the high land area of Ethiopia, where most of the flow originates, the drainage areas of the two rivers appear to be similar, with of the Shabelle perhaps slightly larger than that of the Juba; yet the flow of the Juba is more than twice that in the Shabelle. This can be explained only by differences in precipitation and/or in the runoff coefficients. There is insufficient data on precipitation in the upper Juba basins. But, geological maps indicate that the head water tributaries of the Juba flow on the basement complex, which presumably is impervious, whereas the head water tributaries of the Shabelle flow over sedimentary rock.
4. The Shabelle river within Somalia traverses a distance of approximately 630km before the last significant traces of it disappear about 30km east of the river and about the same distance from the Ocean. The length of the channel with Somalia is approximately 1,100km.
5. With minor exceptions the river receives no contribution within Somalia; the discharge decreases progressively downstream, the flow being reduced by evaporation, infiltration, use and by over-bank spillage when the stage is high. A natural result of this and the meandering nature of the river is that the cross-sectional area of the channel decreases progressively.
6. The flow of the Shabelle river is torrential, ranging from less than 10 to over 270 cumecs at Beletuen. The high flows of short duration occur in April to May and of longer duration from August to December. The peaks are not attained at the downstream stations because of the available flood relief channel and off-stream storage. The low flow period over two months, but can be as much as five months or less than two weeks.

7. The Shabelle river water carries more dissolved solids than does the Juba. Values of specific conductance, which generally are less than 1,500 micromhos, vary from less than 500 up to 4,000 micromhos. The high values occur after a long dry spell when the first rains wash the soluble materials that have accumulated along the land surface into the river. Sulphates vary from 100 to 600 ppm, but the high values do not necessarily correlate with high chlorides and specific conductances. The relatively high sulphates probably arise from dissolved gypsiferous rocks upstream.

8. The Juba river within Somalia traverses a distance of about 580km with a channel length of about 800km. Though the flow of the Juba rivers is twice that of the Shabelle river, it is similar to Shabelle river in the torrential nature of its flow, which ranges from over 800 to less than 10 cumecs. The water of the Juba river generally contains less dissolved solids than that of the Shabelle, but like the Shabelle the chemical quality varies throughout the year and periods of higher salinity can be correlated with periods of rainfall.

#### River Development In Somalia

9. Hydrometric Network:- river level stage readings have been taken since as early as 1925 at one location, Jowhar on the Shabelle river. Fairly regular observations of river stage have been recorded at two stations since 1951 - Lugh Ganane in the Juba river and Beletuen on the Shabelle river. Most other stations have records available from 1963 onwards.

10. Now the Juba river has 7 hydrometric stations, while Shabelle has 8. These stations record water level and river flow.

11. River retaining embankments on both rivers were constructed during the early 1960s and have been continuously maintained now.

#### Hydraulic Structures

12. There are seven barrages along the Shabelle river for heightening the water level for irrigation. One off-stream storage exists for storing the excess water in order to use during the low flows for the downstream area. One flood relief channel for diverting the excess water during high flow of the river has also been constructed.

13. Along the Juba river there is a gravity concrete dam with hydroelectric power, and another dam with a hydroelectric power will be constructed in the near future.

14. Along both rivers there are several small and large scale irrigation projects. Administrative organizations are different. The Shabelle river is administered by the Directorate for Irrigation and Land Use with the Ministry of Agriculture. The Juba river is under the direction of the Ministry of National Planning and Juba Valley Development, while its water are distributed by the Irrigation and Land Use Department of the Ministry of Agriculture. Several project of the Ministry of Agricultural situated along the Juba river. (A detailed discription of the barrages and projects, will be available during the meeting).