

3-3 Distribution of fossil valleys in West Africa

From 1989 to 1999, before launching this project, a feasibility study of the construction of subsurface dams was carried out in Niger and Mali in the Sahel region by a study group (the Sahel Greenbelt Study Group) sent by several Japanese companies. The results showed that the Niger River basin contain a good number of fossil valleys with a hydrogeological structure suitable for subsurface dams. In this study, the presence of fossil valleys was identified along the following tributaries: (Fig. 3.2)

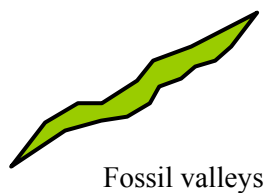
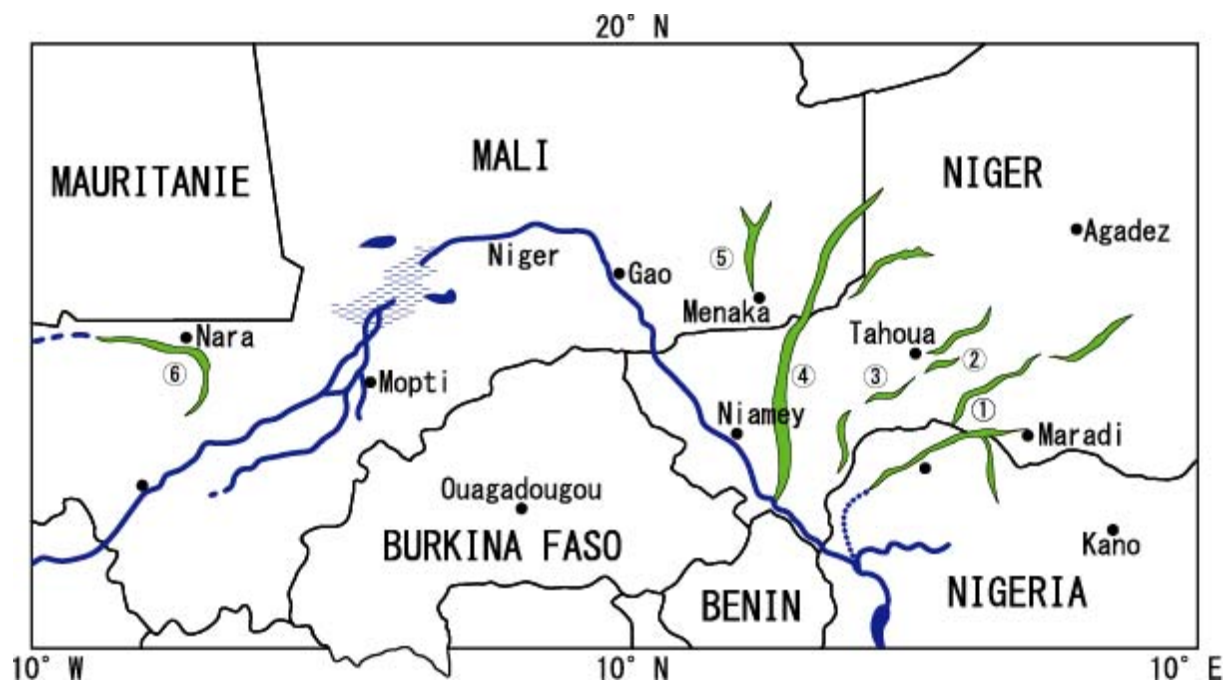
- Goulbin Kaba and Tarka Valley (Maradi, Niger, and Sokoto, Nigeria)
- Souma Valley (the south-eastern part of Tahoua, Niger)
- Dallol Maouri (Dan Doutchi and the western part of Tahoua, Niger)
- Dallol Bosso (the eastern and the north-eastern part of Niamey, Niger)
- Ezgueret River (Menaka, Mali)

The presence of fossil valleys was also identified in the Senegal River basin along the following tributary:

- Serpent Valley (Nara, Mali)

In general, there are *wadis* (temporary rivers that appear only in the rainy season) on the current ground surface of these fossil valleys. These fossil valleys on the current ground surface are huge compared with the discharge of the current *wadis*. They are several kilometers, or even several tens of kilometers in certain cases. Among fossil valleys that flow into these large fossil valleys, there might be small or medium-size fossil valleys that are suitable for subsurface dams.

This study suggests that there may be fossil valleys of suitable size for subsurface dams buried beneath current rivers in the eastern and the north-eastern part of Burkina Faso, a part of the Niger River basin. In the survey to select the project site, the potential existence of such fossil valleys in the central and the northern part of Burkina Faso was focused on.



- ① Goulbin Kaba, Tarka Valley
- ② Souma Valley
- ③ Dallol Maouri
- ④ Dallol Bousso
- ⑤ Ezgueret River
- ⑥ Serpent Valley (tributary of the Senegal River)

Fig. 3.2: Distribution of fossil valleys in Nigeria and Mali

Note: The above "fossil valleys" were identified by the Sahel Greenbelt Study Group of Japan in 1989 and 1990. In fact, there may be more fossil valleys.