

## Initiative for the Future of Great Rivers

### The importance of the long term for understanding the role of rivers in the adaptation of societies to climate change

Corinne Castel, 25 September 2016

The historic background for contributing to the creation of tomorrow's river landscapes [...and limiting risks]

River landscapes are the palimpsests of history that result from the combined action of natural (geomorphological history, hydrological processes, etc.) and human factors ("cultural landscapes" composed of networks of urban and village structures, settlements and hydraulic structures such as canals, dikes and dams, since at least the 3<sup>rd</sup> millennium BC in the Middle East, port installations and bridges, etc.). These natural and human factors interact. In other words, man acts on river dynamics to develop waterways, by diverting flows or by blocking them. On the contrary, demographic dynamics mirror river dynamics. We are far from the simple opposition between nature and culture.

Rivers and especially the great rivers along which populations have settled (at distances dictated by flood risks) since they became sedentarised (first in the Middle East, in the Fertile Crescent, as from the Neolithic period, around 13,000 years BC) are marked by the unique evidence of these interrelations between human beings and their environment.

However, these river landscapes undergo constant change (ongoing and in the future). There is no "definitive" map of river landscapes. The example of the Gargar in southwest Iran sheds interesting light on this aspect. Although it appears to be a river at present, a tributary of the Karun, with 55 km long meanders and its capacity to gouge incisions and capture wadis, it seems that it is the result of an ancient monumental irrigation system, the Masrukan, whose origins date back to the beginning of the Sassanid period, in about 300 A.D.

The interrelations between human beings and rivers are constant, but they are also dynamic and the river landscapes of today, however indicative and instructive they are for installing new urban centres, new districts or new industrial zones (such as a new terminal), for example outside floodable areas, are not simple "fossils" that have crossed the ages. We must take heed of them.

History teaches us that **our current needs are not all those of yesterday ... and will not be all of those of tomorrow**. Certain irreversible modern developments (concreting of banks, nuclear power plant cooling systems, etc.) must be replaced, if possible, by **evolutive structures**.

The history of these relations between human beings and rivers is based on recent memory, **though this must be regularly refreshed** (exhibitions, schools, etc.), on the study of textual and photographic documentation, and also on the study of place names (research). However, for the oldest periods, archaeologists gain understanding through the **prism of modes** of territorial occupation, by using methods such as intensive field surveys and site catchment analyses that make it possible to establish maps of ancient