

Floodproof diplomacy? Data Exchange and Flood Forecasting on the Mekong

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This document is a research brief prepared in the process of a Ph.D. in Geography started in January 2003 at Laval University in Québec, Canada. Thesis' tentative title is: "*Floodproof diplomacy? Data Exchange and Flood Forecasting on the Mekong*".

Research focus:

This Ph.D. studies hydrological cooperation on the Mekong river basin. We focus on the production and circulation of hydrological and meteorological data for flood forecasting purposes. Data exchange is considered as a critical component of both sound water-related decisions and sustainability of the Mekong River Commission as a basin institution. Our research aims at identifying the technical and political conditions or constraints to circulation of hydrological data in particular. A key consideration is that lack of data weakens the institutional capacity (technically and politically) of environmental regimes such as basin organisations. Research results are also expected to devise incentives likely to foster data exchange at both national and inter-national levels.

Background: Mekong floods and flood forecasting:

Floods have always been a fact of life on the Mekong. Since 2000, floods on the Mekong main stem caused annually 300 to 800 victims and 100 to 400 million USD of damage. Each year, 1 to 8 million people are affected by these disasters. Flood mitigation aims at several objectives: humanitarian (saving lives and property); socio-economic (preventing disruption of the social fabric; securing gains of development); technical (controlling or reducing hazards and vulnerability). Flood mitigation and management activities also have a strong political dimension in Mekong countries: by managing risk, authorities gain a technical credibility from public opinion, which backs up their political legitimacy to rule the nation².

Flood mitigation has progressively been an objective of intergovernmental cooperation and institutional developments on the Lower Mekong. Major floods in 1966 triggered riparian countries of the lower basin to set up a flood forecasting system in January 1968, based on the SSARR model³; after 1978 and 1981 floods, the forecasting system was extended to the Mekong delta (DELTA Model⁴) as well as to major tributaries. The 1995 Agreement sets flood mitigation as one of the key objectives and tasks of the *Mekong River Commission* (MRC). The *Flood Management and Mitigation Strategy* (FMMS) has been established in 2001 to serve as framework to MRC's policies and activities related to floods.

Mitigation of flood impacts is based on appropriate emergency and relief activities. These activities need lead time over flood events, which can only be gained through appropriate flood forecasting. Efficient forecasts are based on: sound calculation models; computing capacities; and hydrological and meteorological data. Data must be sufficient both in quantity and quality, and provided timely to forecasting teams. The transboundary nature of the Mekong river basin implies that cooperation of basin countries is a key feature of flood forecasting. Efficient forecasting requires inter-governmental exchange of hydrological and meteorological data (knowledge of processes) and products (forecasts; synoptic data). The international exchange of meteorological data already receives support through WMO GTS Programme, as well as through other mechanisms and initiatives.

The need for hydrological and meteorological data:

Three introductory comments need to be made on data. First, the technical importance of data exchange varies with the context. Relevant variables include: contributing areas; hydrological processes involved; location of the area for which floods are forecasted. Second, hydrological data remain needed despite

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² See for instance: K. Wittfogel's concepts of "hydraulic civilization"; M. Granet's concept of "mandate of heaven"; A. Smith's Thesis on flood management in Vietnam.

³ Streamflow Synthesis And Reservoir Regulation. Developed by the U.S. Corps of Engineers.

⁴ Developed with support from UNESCO.

progress made in remotely sensed modelling and forecasting (runoff, etc.). For instance, forecasting of meteorological events requires ground data for calibration of measuring tools, stations, radars, models, etc. Third, hydrological and meteorological data are also needed for activities other than flood forecasting only. Basically, any water-related policy, planning and project needs data: water sharing and allocation (in volume and seasonally); water utilization; irrigation; fisheries; land use planning; land cover monitoring; study and preservation of ecosystems; etc.

The lack of hydro-meteorological data has been noticed early in the development process of the Mekong river basin. For instance, the 1958 UN mission (so-called “Wheeler Mission”) confirmed the lack of data already stressed in previous UN and U.S. technical reports prepared in the process of establishing the *Secretariat for Coordination of Technical Studies* on the Lower Mekong. Both the need for, and lack of data seem to have been increasing since 1957, together with the diversification process of programmes and activities on the Lower Mekong. Basically, the focus of these activities was initially on the hydraulic/hydroelectric development of water resources and navigation, and progressively integrated more holistic basin development planning, including sustainability issues.

Since 1957, the improvement of the hydro-meteorological network has been a major issue for hydrologists of MRC Member countries. A classification system of stations was adopted in 1988, and the hydrometric network has been constantly monitored and upgraded since then. International funding and assistance (aid agencies; WMO; etc.) has been instrumental in this process, including in terms of cooperation with China and access to hydrological data collected in Yunnan province⁵.

Despite this commitment, it is noticeable to see that since 1957, the exchange of hydrological and meteorological data has not been mentioned explicitly in the successive institutional agreements signed by governments of the Lower Basin. In the last few years, MRC Secretariat staff has devoted time and other resources in designing, developing or strengthening procedures supporting exchange of water-related data, basin-wide. In addition, important differences have always existed among these countries: both in terms of technical capacity (tools, methods, human resources, funding) and political commitment to engage in data exchange procedures. These differences can still be felt today, as witnessed by interviewed staff of MRC Secretariat, international organisations and aid agencies active in the Mekong basin area.

Key methodological steps of the research:

- 2003: literature review; fieldwork contacts and planning. Location: Québec, Canada. Part-time consultancy for WMO;
- 2004: 4 months of fieldwork in Vietnam, Cambodia (MRC Secretariat, MRCS), PR China (Beijing and Yunnan Province). Purposes: assess data needs of MRCS staff; availability of data (and willingness to share) in Vietnam and PR China. Part-time consultancy for UNU-EHS, WMO and UN/ISDR;
- 2005 (planned): completion of fieldwork (1-2 months in Cambodia, Lao PDR and Thailand; possibly: PR China). Purpose: visit of National Hydrological Services and assessment of data availability (and conditions to data sharing). Resident Scholar at UNU-EHS and consultancy for WMO and UN/ISDR.

As of January 2005, 87 expert interviews (face-to-face or in group) have been conducted. Selected research results have been communicated (*Asia-Pacific Security Consortium*, CANCAPS, Québec, December 2004) or published (*The thin red line: environmental NGOs and the State in Yunnan*, in *Monde Chinois*, Winter 2005, Paris)⁶.

Preliminary research results (as of 15 January 2005):

Observations made on the field confirm that access to, and quality of hydrological data remains a challenge on the Mekong river basin. Intra-national features, such as lack of technical and financial capacities for data collection and management, often limit the possibility of inter-national cooperation over data exchange. The lack of political will or commitment also plays a role, both in terms of investment in data management and transboundary access (circulation) to data produced. Basically, hydrological data are still a political tool: at national level (power relations within and among organisations, institutions or administrations) and at inter-national level (inter-governmental negotiations). However, regional economic integration has been an incentive to improve cooperation.

⁵ See for instance the AusAID-funded AHNIP Programme.

⁶ Originally published in French. A revised and updated English version is in progress.

Two major context-level features influence data-sharing on the Mekong basin:

- Mekong countries, including China, have undergone major changes over the last 20 to 25 years. A key feature is the transition from command to market economy. Consequently, the role of the State is being redefined. In some cases, its actual *capacity* is being discussed or challenged. The Water Management Sector, together with flood management activities, have been influenced by these macro-economic changes. The overall picture is one of institutional instability: State services in charge of water-related issues are confronted with major or repeated organisational changes. Consequently, power relations are jeopardized, allocation criteria for public spending are revised, and salaries are kept low – if not reduced. In this context, hydrological data are a key asset to navigate through these rough institutional waters.
- Although often perceived as such, water is not so far a resource under quantitative stress. However, water is a matter of competition among users – at least among those with a political and economic bargaining clout that is sufficient for voicing out their views or concerns. Because of competition over water in the form of upstream hydraulic/hydroelectric developments (both on the Mekong main stem and major tributaries), national authorities consider that sharing water-related information opens the door to a more transparent, understanding of hydrological impacts caused by their projects. Consequently, sharing data is perceived as a potential risk of later criticism emanating from downstream stakeholders.

We suggest below a tentative typology of constraints to the exchange of hydrological data. It shows that data sharing is challenging because of the multifaceted, *total value* of hydrological data:

- Operational: Data enable informed decision-making and help reduce negative externalities;
- Economic: Data as a commodity help data owners make up for insufficient budget or salary;
- Organisational: Data help civil servants negotiate power deals through institutional instability;
- Financial: Exclusiveness of data enable owners to report first to authorities allocating budget;
- Strategic: Non-transmission of data help planners conceal environmental impacts of projects;
- Political: Control over data help authorities limit public scrutiny and protest over water issues.

The MRC and MRCS remain key assets in the basin for the following activities: upgrading of data collection and improvement of management; training of national staff; standardisation of hydrological data and products; fund-raising activities; relations with China; etc. Despite this commitment, a basin-wide framework for data exchange is still lacking. In that respect, both the ongoing MRCS procedures for data management and the WMO-developed WHYCOS can be positive contributions. However, additional measures are still lacking in MRC countries, as well as in PR China. For instance, the patrimonial status of hydrological data (public data and/or commodity) is either unspecified, or not enforced. In some cases, the security status of data often restricts access to water-related information, both officially and *de facto*. More generally, limited access to data deprives environmental contestation from figures to back up their views, and protects authorities from public scrutiny into water-related decisions made. In addition, water-related projects often under-estimate the issue of data.

Objectives of final fieldwork planned for 2005:

- Clarify national-level constraints and incentives to data sharing (both technical and political);
- Anticipate potential difficulties arising from MRCS activities and Mekong-HYCOS;
- Suggest potential side-measures supporting MRCS flood forecasting and HYCOS process.