

## CHILDREN SECURITY AS PART OF THE "LIVING TOGETHER WITH FLOODS" STRATEGY IN THE MEKONG RIVER DELTA, VIETNAM

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### **Abstract**

Each rainy season, the Mekong River Delta receives flood flow from the upstream of the Mekong River. Floods in the Mekong Region are beneficial for agriculture and fisheries productivity, but high floods also result in the losses of life and property. Records of flood losses show that children were at high risk. The "Living together with floods" strategy of the government and the people should also help prevent children from drowning. This paper reviews the situation and risks leading to children drowning during the flood season and recommends solutions to secure for the children's lives.

**Key words:** *Mekong River Delta, floods, drowning, children security, solution.*

### **1. FLOODS IN THE MEKONG DELTA**

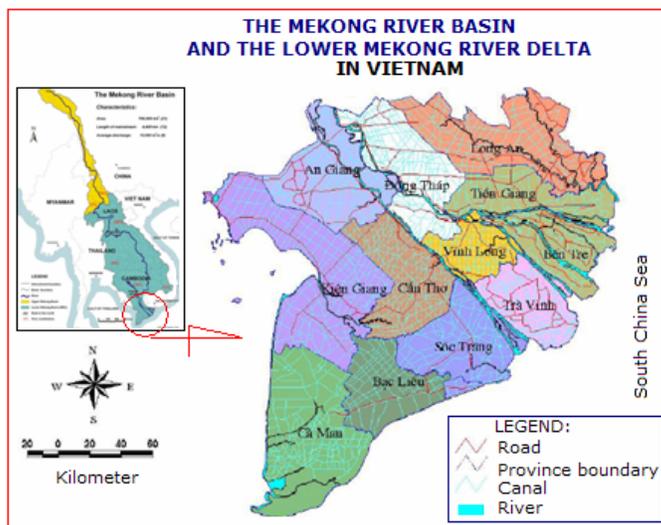


Fig.1: The Mekong River Delta

The Mekong River Delta, the most downstream section of the Mekong River, is known as the "rice bowl" of Vietnam (Figure 1). Due to its location, the delta receives the total volume of floodwaters from upstream. Annual flooding is a recurrent feature of life, nature and in the Mekong River Delta. Each year, water overflows from the main river channel and overland from Cambodia across the Vietnam border. Viewed from the sky, it is easy to identify the extension of flood inundated areas in the Long Xuyen quadrangle and the Plain of Reeds, the lands

between Tien River and the Hau River and the numerous stream and canal system that flood water flow laterally over to the low areas. The flooded area ranges from 1.2 to 1.4 million of ha in years of low and medium flooding, and around 1.9 million of ha in year of

high flooding (Socialist Republic of Vietnam [SRV], 2005). Flood waters start in July, increase gradually in August-September, and peak in October before falling in November (Figures 2).

Based on the peak water level at Tan Chau Gauging Station of An Giang province, hydrologists consider that a low flood occurs when the flood peak in Tan Chau is less than 4.0 m, moderate floods occur when the flood peak is between 4.0 and 4.5 m, and high floods occur when the flood peak is more than 4.5 m. High floods are caused when three simultaneous factors happen: large water discharges originating from upstream as a result of typhoons or tropical low pressures; long and heavy rainfall in the MD itself; and high tides that lead high water levels in the rivers and canals system preventing easy drainage (Tuan, Guido, Viet & Haest, 2004). Given the water level of more than 4.20 m at Tan Chau, the MD has exceeded emergency flood conditions 22 times since 1926 - 2006 (Figure 3).

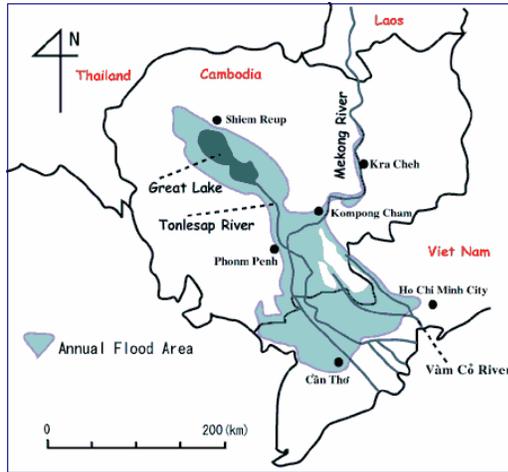


Fig. 2: Flood area in Cambodia and the Mekong Delta (Yamashita, 2005)

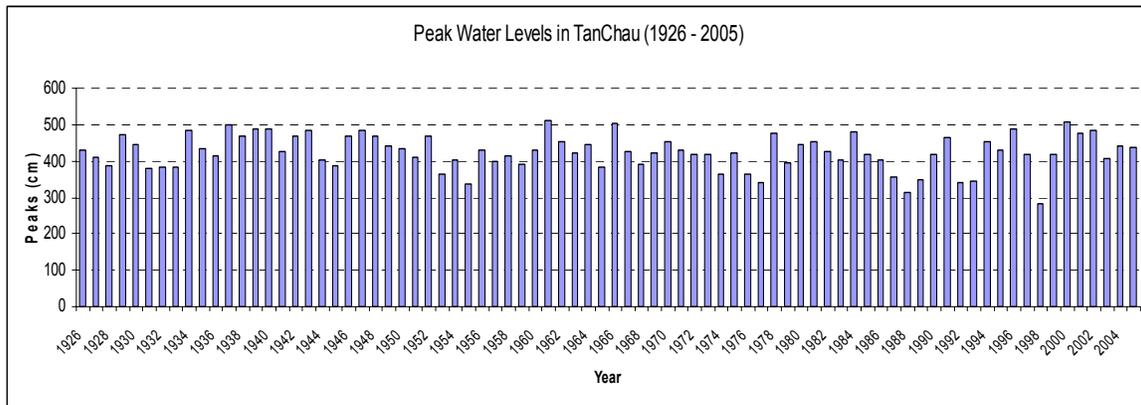


Fig. 3: Peak levels in Tan Chau in 1926 - 2005

In 2000, the Mekong River Delta faced a historically high flood, as severe as that of 1961 which was the most destructive flood in past 70 years. The flood in 2000 was extreme not only in terms of its very high peak level and discharge but also the earlier than usual arrival of the flood by approximately 4 – 6 weeks (Mekong River Commission [MRC], 2005). In particular, the flood event in 2000 had two peaks, the first one in August 3rd with the water level reaching over 4.0 m, then one month and 21 days later it was followed by a second peak of 5.06 m in September 24th, very close to the highest peak observed in 1961. The high peak of the water level in 2000 was 19 cm higher and 12 days earlier than the flood recorded in 1996 (Figure 4). The flood in 2000 had a volume of 420 million m<sup>3</sup>, distributed between the main stream flow and runoff volumes from Cambodia

as 17% to Hau River, 65% to Tien River, 3% to Long Xuyen Quadrangle and 15% to the Plain of Reeds. Flood water levels in the Plain of Reeds area, and in the Long Xuyen Quadrangle area were 30-50 centimetres higher than the ones recorded in 1961, 1978, and 1996 (SRV, 2005). Due to the Delta is very flat and low, the higher level in the flood results a higher damage in social and economic.

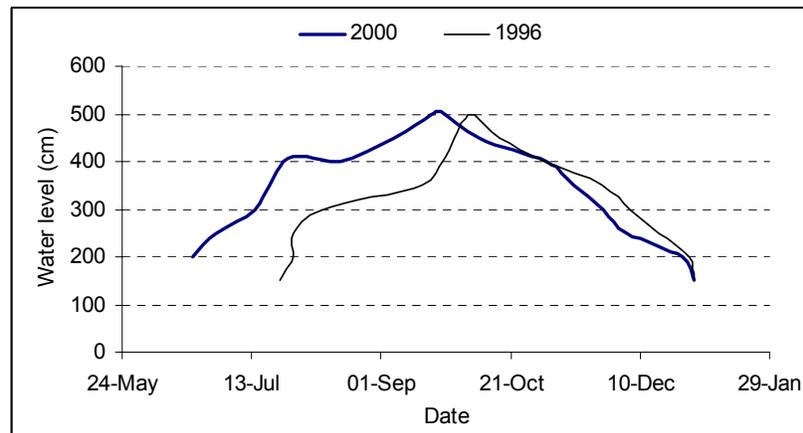


Fig. 4: Water level in the floods in 1996 and 2000 at Tan Chau Station

## 2. CHILDREN IN THE FLOOD SEASONS

The Delta's total population is estimated approximately 18 million people (2006), half of them are children. Apart from for those living in the urban areas, children in the rural area are familiar with the water in rivers and canals. Their daily lives are linked with the rice fields and flood plains. Some of them learn to swim at early age, but others were not trained. There is no official swimming training in the school program in the Mekong River Delta. It seems an irrational structure for children living in a floodplain as the Delta.

In the flood seasons, many schools and houses are often inundated. As a result, children left unattended in simple houses in stilts or boats are at risk while their parents were out looking for food, fish, vegetables or working. Most of drowned children come from the poorer communities although they habituate with the water around. Local people said that almost the deaths of young children occurred at night when they rowed and fell down the water while sleeping.

In Vietnam, the first day of the new academic year is usually in early of September. In the MD, this period coincides with a high risk of flood. Many pupils and students go to schools in the narrow wooden boats without life-vests or lifebuoys. Boat overturn accidents may cause many deaths of children from drowning. In peak flow periods, all children (over 160,000) in the high inundated areas are not attending their schools.

The beginning and the end of the rainy season are the best time for mosquito reproduction resulting in mosquito-based diseases. A recurrent dengue epidemic hits

children in rural areas, big cities and towns. Incidence of dengue fever was commonly thought to rise in the flood season (Few, Tran & Hong, 2004). Many provincial health services offices in the Delta reported dengue fever outbreaks. In 2007, the Delta's health centres were overloaded with children infected by dengue fever. Vietnam's worst dengue epidemic in recent times occurred in 1998 when 300,000 cases and 480 deaths were reported (Thanh Nien Newspaper, 2007). In 2000, 81.6% (40/49) of the deaths due to Dengue fever were reported from 9/12 provinces in the Mekong delta region. In 1999-2000, those mainly affected were below 15 years of age (92.7%) (89/96 deaths) (Tien, Tuan, Tuan, Toan & Quang, 2001).

Apart from drowning and dengue the other leading cause of deaths was snake bites. In the flood seasons, water occupies the surface land. Snakes find shelter from floods in higher positions such as trees and houses.

Table 1 gives some statistical data showing high percentage of child deaths in the total the losses of life in the flood seasons in the MD. Save the Children (2003) reported that the vast majority of the drowning deaths in recent years in the region was mainly children, mostly aged under six years of age. The number of the deaths since 2000 started to decline thanks to the building of residential clusters for people and day-care centres for young children during the floods.

Table 1: Losses of human life in some flood seasons in the MD

Year	1994	1995	1996	1997	2000	2002	2004	2005
Total deaths	407	199	250	607	280	132	35	77
No. of children deaths	265	180	160	524	211	114	30	65
% of children deaths	65.11	90.45	64.00	86.32	75.35	86.36	85.71	84.41

*(Sources: Data collected from the reports of SRV(2005), Chung (2005), international organization MRC(2005), ADRC (2005), UNICEF (2000) and author's documentations)*

### 3. LIVING WITH FLOODS

High floods in the Mekong Delta caused significant loss of life and destruction. The damage costs depend on flood levels in each year. The higher economic development in the recent years results in higher costs of damage. Floods in the Mekong Delta are not perceived as disasters by many farmers and scientists. Floods have positive effects and ecological functions. Positive effects of flood include sedimentation, fisheries, other flood products, leaching toxic in acid sulphate soils, eliminating rats and insects, provision of fresh water, refilling of groundwater, and protection of forest and provision of ecosystem services.

The 2<sup>nd</sup> Vietnam National Strategy and Action Plan for water - related disaster mitigation and management in the period 2001 - 2020 adopts a key strategy of preparedness and mitigation to the Mekong floods, while harnessing their environmental benefits, as "Living Together with Floods". This motto is understood as an integrated solution for adaptation and protection of human life and property, to maintain safe and sustainable

housing for local people, and to maintain social security (Truong, 2006). This National Strategy implies the children security specifically in general meanings.

Floods can be controlled by both structural and non-structural measures depending on the natural and social-economic conditions. Figure 5 provides some available ways for flood mitigation in the Mekong River Delta.

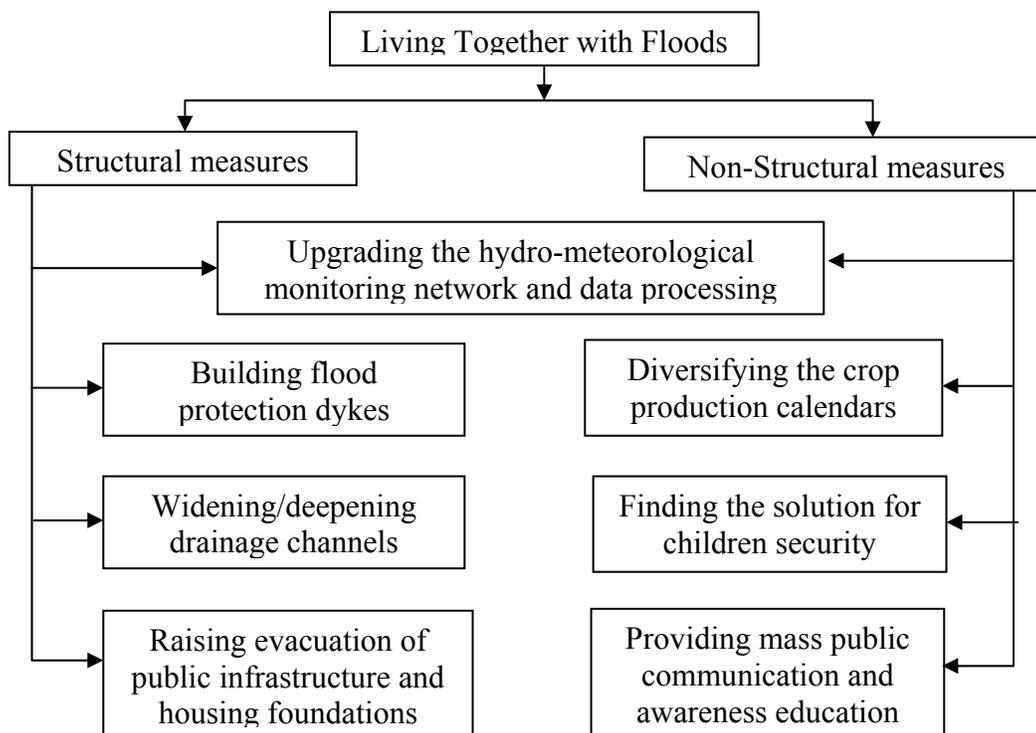


Fig. 5: Some ways for “Living Together with Floods” in the MD

#### 4. CHILD SAFETY

In heavily and medium inundated areas in the Mekong River Delta, provincial government offices and non-government organization have been providing assistance to build residential clusters for the villagers. Children in flooded areas should be moved to and kept in these residential clusters. The main goals are to protect children from life-threatening situations and to ensure access to education for children during the flood seasons. Below are some activities for children safety that have been done or suggested.

##### 4.1. Adjusting School calendars

As a traditional event, all schools in Vietnam start the new academic year on the same day, usually on the fifth of September. However, if merging the school semesters calendar with the Mekong river flow rate diagram, we may easily see that the school opening day coincides with the high flood period. In recent academic years, the Ministry of Education and Training allows local educational authorities to choose and adjust their school calendars reflecting the real natural conditions. Figure 6 proposes a school

calendar for the Mekong River Delta flood areas to reduce the negative impacts of missed days and the risks of traveling to school in high flood periods. In this proposal holiday is known as the “flood” rather than summer holiday.

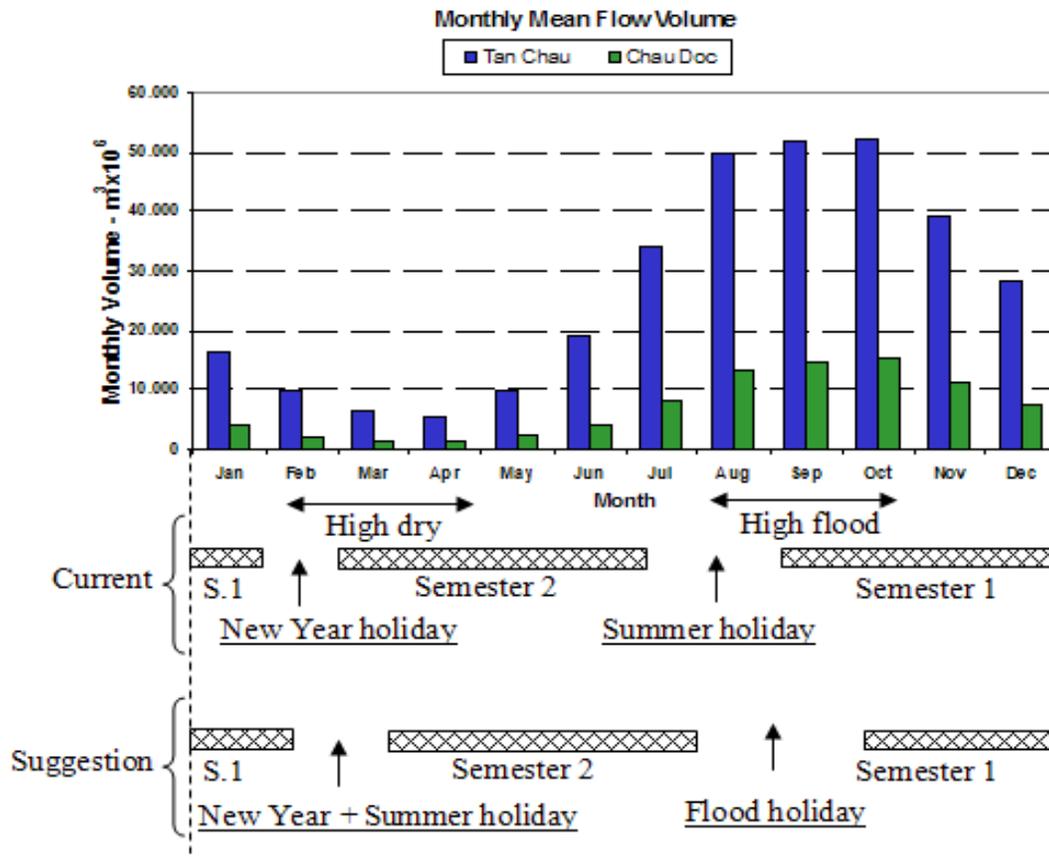


Fig. 6: Current and suggested academic calendars for the MD flood areas

#### 4.2. Establishing Flood kindergarten and Children day-care center

“Flood kindergartens” and “Children Day-care centers” have been established in the residential clusters to take care young children in the whole flood periods. Farmers can send their children to such child-care centers while they work to earn their living, fishing and collecting aqua-vegetables in the flood zones.

It is strongly recommended by the local authorities that the child-care houses must have the first-aid and medicine chests. Grasses and bushes around the houses should be cleaned to prevent snakes to shelter. These works are carried out frequently.

#### 4.3. Providing Life vests for children and other buoyant items

Life vests for children when going to school on boat in the flood areas are as important as safety helmets for people driving motorbikes on the highways. In recent years, hundreds of children have drowned due to lack of life vests. Children in the flood areas have to wear life-vests not only in the day time but also in the night time.

Around houses and schools, buoyant items such as banana or bamboo rafts, 20L plastic bottles can be used as floats. Bamboo or trees fences in the high flow speed positions are also useful to saving the lives.

#### **4.4. Training children to swim**

Girls and boys at the primary school ages in the flood prone area need to be trained how to swim and how to rescue somebody from drowning. However, it is really difficulty to implement this propose in the whole schools in the Delta due to the lack of swimming trainers, financial support, training facilities and tools as swimming pools, buoyant items.

It is suggested that in preparation for the coming flood seasons, mass organizations such as the Red Cross Association, the Scouting Association, and the Youth Union should work with teachers in schools to teach children how to swim and give them more knowledge on key disaster preparedness issues and actions: what should be done before, during and after the floods to protect life.

#### **4.5. Reducing breeding sites for mosquitoes**

Children are vulnerable to Dengue fever outbreaks in the rainy and flood season in the MD. The environmental conditions in flood areas and the residential clusters are poor where water is stored in uncovered water jars, glass and plastic bottles. Rainwater kept in blocked drains, improperly discarded tires, tree holes, coconut shells... are favorable habitats for mosquitoes' development.

Key preparedness actions are to improve and protect water sources and sanitation facilities including the installation of cleaning water supply via piped system, clearing of waste matter, cover and removal of stagnant water and unused vessels where mosquitoes can breed and mosquito spraying.

It is important to guide the people how to identify the difference between the symptoms of dengue fever and of other common fevers. The Health Cares authorities have a responsibility in quick action to diagnose outbreaks and prevent further transmissions once have some cases or epidemic in swing.

Campaigns to kill mosquito in the communities are needed. Students can participate in such environmental campaigns. Mass media and health care centers play an important role in propaganda, explanation, and control the water-borne disease epidemic in the regions. Their activities can include safe water supply and food sanitation control for the communities in general and for high priority the children in particular.

### **5. CONCLUSION AND RECOMMENDATION**

Children in the low-lying areas of the MD are at high risk of drowning from floods. Several recommendations have been put forward to improve the living conditions and human security for the poor people who are vulnerable to the annual floods. The above-mentioned suggestions have been applied more or less after the historical flood in year

2000 and should be continued. As evidence in table 1, since 2002, the numbers of children's deaths have reduced thanks to many of these integrated measures.

The "Living together with floods" policy, both theoretical and practical perspectives, should be evaluated in the coming study with highlighted survey on children security. It is needed for a consideration of the activity effectiveness of structural and non-structural measures and analysis of human behaviour on flood risks in the Mekong River Delta.

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