

Living With Floods: The Settlements of the Vietnam Mekong Delta



Traveling by boat is common in the Delta. This is the Hau River, a tributary of the Mekong River.

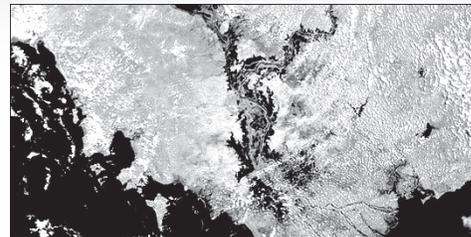
About one million hectares of the Delta is inundated by more than a meter of water every year. Learn how the Vietnamese government has tried to manage this natural phenomenon

BY ARLENE CHRISTY LUSTERIO

“Same same but different,” is the common Vietnamese phrase that means similar but not the same. In many aspects, the Mekong Delta of Vietnam looks similar to rural Philippines: the wide expanse of rice fields, raw dirt roads, and friendly faces of rural folks that greet strangers like me. My quest to understand and search for meaning and justification to the ever expanding informal settlements along waterways in the urban centers of the Philippines brought me to this neighbor in Asia, a country with a long history and a surviving culture of living with water, Vietnam.

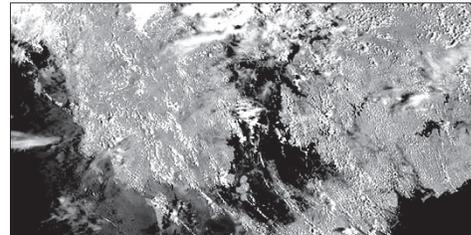
The Mekong Delta of Vietnam is a result of 10,000 years of gradual deposition of sediments carried by the Mekong River and its tributaries from as far north as Tibet on its way to the South China Sea. Located at the southern tip of the Mekong River system, the Delta has an area of 3.9 million hectares, expanding at the rate of 10 to 20 meters per year. It is home to almost a quarter of Vietnam’s population (16 million) with a density of more than 1.5 times the country’s average. About half of the land (1.9 million hectares) is inundated annually. During rainy season inundation above one meter covers about one million hectares of land. Within the river basin, the highest flood levels can reach up to six meters and last for six months. During the dry season, saline water intrusion spreads from the coast to 40 to 50 kilometers inland, covering an area of about two million hectares (20,400 square kilometers).

Land use in the Delta is dominantly agricultural (75 percent) while residential land covers only 2.5 percent. The agricultural production of rice and shrimp is noted along the banks of Hau and Tien rivers and the coast of South China Sea where alluvium (38.09 percent) and saline soils (18.04 percent) are found respectively. The unproductive and dominant acid sulphate soil (43.20 percent) occurs in the northern low-lying region of the periodically inundated Delta. Peaty soil (0.67 percent) in the south and western region are planted to melaleuca trees, a host to a high-value saprophytic snail raised for export, and home to migratory birds.



August 1, 2002

A satellite photo shows the Mekong River (top) and the extent of flooded areas after the rainy season (bottom). PHOTO FROM NASA.



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Vietnamese Policy

Though the Delta is a highly critical environment it still serves as the country’s rice bowl in the south. It also contributes 80 percent to the country’s total shrimp production area. Under the Doi Moi (economic renovation) policy, shrimp and rice exports are seen as the country’s ticket to economic recovery. The economic opportunities attract more people to live in the Delta and embark on shrimp and/or rice farming.

In support of its economic objectives, and the increasing population in the Delta, the Government resolved to “live with floods and aim at flood control,” in order to protect people and maintain normal lives during inundation. In this policy the approach is structural, aiming to control rather than work with nature, despite criticism from environmentalists. Flood control structures include: dams, dikes, sluices, and canals built to protect crops and properties; and residential clusters/dykes. A residential cluster is a dike protected region of two to three hectares in area provided with foundations elevated 0.60m above the highest flood line, roads and drainage, and basic house and utility lines for resettlement of

households in dangerous and flooded areas. A residential dyke is a linear development along a river, channel, or main road.

Non-structural measures to mitigate damage by floods include:

- Strengthening flood and storm preparedness organizations;
- Flood forecasting and warning on the flood situation in each area;
- Emergency relief during and after flooding to stabilize people's livelihood as soon as possible and get prepared for the forthcoming floods;
- Training courses and workshops on disaster preparedness and mitigation for disaster management officers;
- Improvement of public awareness on disaster management and mitigation through leaflets; and
- Research on disaster mitigation measures such as study on the shifting of cultivation timing to mitigate crop losses.

The government formulates a master plan (a strategic non-structural plan) to apply collective preparedness, response, adaptation, and evacuation measures. Vietnam learns from disasters by undertaking timely damage assessment, flood level monitoring, and updating its hydrologic and topographic data as tools for better disaster preparedness and disaster risk management.

Three Models of Settlements

“Xin Chào! Chị... tằm?” were the words I caught from the long line that Dieu, the head of the Youth Union of Tam Giang Dong Village, spoke. Tonight I will share her room and bed. As it became obvious that I didn't understand, she pointed to a pail at the corner of her makeshift room with slotted flooring made from mangrove branches, and a makeshift bathroom made of curtains. As my face remained blank, she decided to call my guide in her cell phone. He came to explain that I might want a bath. I can use the pail to fetch water from a water pipe just outside the door. I peered through the dim exterior of the makeshift house, or more fittingly a shanty, where the Tam Giang Dong People's Committee officers live. I can see a platform, a rooster and two ducks wallowing in the mud underneath, and three to five mud crabs digging their way through the wetland. Dieu left for a party with instructions to turn the improvised hook of nails to lock the door. I took off my shoes and socks and prepared for my bath. I didn't see them but felt them all over my legs - night vampires sucking my blood! Mosquitoes must have sensed I am a new comer.

The coastal area of Southern Vietnam is a wetland. With minimum infrastructure, materials for houses (such as mangrove branches) are collected around the area. Water comes from a deep well and electricity is provided by transmission lines from the city carried over rivers by towers. Life is simple and strongly related to water.

I studied three settlements: one within the river basin and two along the coastal area. I chose these as examples of formal settlements development in environmentally sensitive areas.

Hoa Binh Resettlement Project is located at the confluence of three rivers, Tien, Hau and Vam Nao in Phu Tan District, An Giang, a part of Lower Mekong Basin. It is subjected to inundation of up to four meters for a maximum of six months. It is part of the North Vam Nao Flood Control Project. Resettlement approaches here include:

- Project design readjustment to minimize impact;
- Near-site resettlement to minimize dislocation; and
- Land and house compensation in residential cluster.

The Gia Vet Resettlement Project is part of the Coastal Wetland Protection and Development Project in Duyen Hai District, along the coast of Tra Vinh. Households were relocated from Full Protection Zone (FPZ) to a Buffer Zone. The resettlement approach here include:

- Land and house compensation in residential dyke;
- Integrated shrimp production;
- Provision of utilities and school; and
- Mangrove reforestation to restore marine ecology and provide wind and storm buffer.



The author (far right, sitting) interviewing residents of Ho Gui.

This sluice gate also acts as a narrow bridge in An Giang province. When the water level rises, the bridge is closed.



Structural mitigations such as raised roads counter flooding in the Delta.

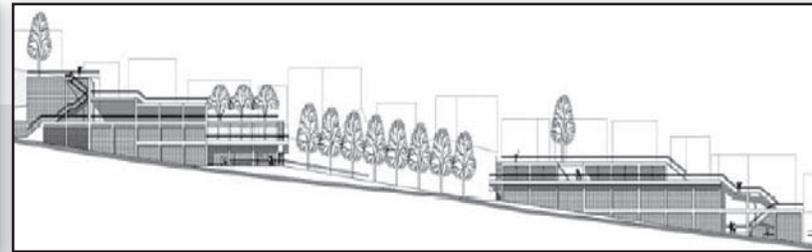
The Ho Gui Resettlement Project is for households located in erosion and landslide prone areas (near the confluence of Ho Gui River and the South China Sea). It is the poorest settlement in Nam Can District, Ca Mau. The resettlement approach here includes:

- Disaster-resistant house design;
- Provision of wind/storm buffer;
- Raised mound/foundation;
- Inner channel construction; and
- Provision of utilities and amenities such as health clinic, primary school, and market

Lessons

The Vietnamese approach to settlements in the Delta is strongly influenced by structural flood mitigating measures. Site development is guided by the up-to-date information on flood levels taken from gauging stations, typhoon path and tidal flows. Houses are built on engineered sites and are assumed to be on safe ground. Hence, design is typical and does not consider the presence of water.

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Ang mukha ng San Rafael Unido sa tabi ng daanan ay mapapalitan ng “Urban Front” o “Urban Façade”— isang bagong gusali na mayroong mga pampublikong espasyo kagaya ng hintayan ng bus, at mga balkonaheng nakakonekta sa mga hagdanan papunta sa komunidad.

Ang “urban front”

Ayon sa mga arkitekto, kasabay dapat sa upgrading ang paglagay ng limitasyon sa lawak ng komunidad, para maiwasan ang pagdami ng mga iskwater at paglaki ng informal settlement. Sa kanilang plano, ang mga bagong pampublikong gusali gaya ng elementary school, high school, at community centers ay itatayo sa gilid o border ng komunidad para maging “control belt” para maiwasan ang pagtatayo ng mga bagong bahay dito.

Ang “Urban Front” o “Urban Façade” ay isang pang bagong gusali na plano nilang itayo sa hangganan ng komunidad na malapit sa kalsada. Isa siyang istruktura na may mga publikong espasyo, gaya ng istasyon ng bus, market, at mga balkonahe na may view sa siyudad. May koneksyon din ito sa mga hagdanan papunta sa mga bahay. Layunin nitong ayusin ang gilid ng komunidad katabi ng highway, para magkaroon ng bagong “mukha” ang San Rafael-Unido. Ang konstruksyon nito ay nakatakdang simulan ngayong 2006.

Pirasong nagsasama-sama

Isa sa mgaistratehiya na ginamit sa pagpapalitan ng proyekto ay ang pagbibigay prioridad sa mas malawak na problema ng komunidad kaysa problemang indibidwal. Ayun sa mga arkitekto, importanteng linawin ito sa mga tao dahil sanay sila na unahin ang kanilang sariling problema, at hindi kaagad nila naiintindihan na kailangan solusyonan muna ang mga malalaking problema na nakakaapekto ng karamihan sa mga tao ng komunidad.

Hinambing ng mga arkitekto ang problema ng komunidad sa isang puzzle: “Kapag ang mga piraso ay nagsasama-sama, nagkakaroon ng solusyon ang mga mahahalagang problema. Pag nagkaroon na ng kalsada, mga daanan para sa mga tao, mga lugar na tinalagang tapunan ng basura, at maayos na network ng tubig at kuryente, nakikita na ang pagbabago sa lugar.”

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Structural measures immediately address the impact of flooding to life and property. But these can disrupt natural processes, resulting in adverse environmental impacts such as:

- Disruption of natural overbank flows, and the periodic flooding deposit of fertile soil to rice fields. Dike construction deprives fields of natural fertile soil suitable for farming which may result to increased use of fertilizer.
- Exposure of potential acid sulphate soils to air during canal and sluice excavation, resulting in acidification of soil and eventually water. This may result in the depletion of soil nutrients making it unsuitable for farming. Canals and sluices also block seasonal fish migration depriving schools of fish of a spawning sanctuary which may lead to a reduction of fish species in the Delta;
- Increased water flow results in rapid sedimentation at river mouths causing channel bank erosion on one side and accretion on the opposite bank, resulting in channel migration that causes changes in the course of water ways.
- Construction of canals facilitate increase in salt water intrusion through faster subsurface penetration of saltwater, affecting agricultural production.

For settlements development to be sustainable, it must consider social development, economic development and environmental preservation.

The socio-economic considerations for sustainable settlements development in river basin and coastal areas include: provision of access to material and financial resources, services and amenities; maintenance of social structure that provides support in times of crisis; and the maintenance or improvement of quality of life.

Considerations for environmental preservation include: the protection/rehabilitation of mangrove forests; provision of environment-friendly flood mitigation measures that allow natural

ecological processes to take place; application of organic riverbank erosion control measures to avoid sedimentation and rapid bank erosion; and waste management.

Physical considerations include site conditions, such as surface water level, volume, source and direction of flow, and quality; climatic conditions influencing wind speed and direction; soil bearing capacity; presence or provision of buffer zone in environmentally sensitive sites; provision of basic services and amenities; accessibility to water or land and limited mobility; and use of light weight materials for construction.

It is also important for a team of specialists to work together to have a better understanding of the coastal and river basin environments and together formulate possible solutions.

As I leave the Delta to move back to Ho Chi Minh, I tried to keep my balance after a long boat ride, my head still swaying lightly to the rhythm of the waves. I could take a handful of the salty seas for memory but it would drip through my fingers and what is left would soon dry up into crystals. Water is not all that we think it is. It has many faces. And so is the life on it or around it. Peering through life with water the Vietnamese way has brought me face to face with various actors in the water world:

... the extremely thankful and shy smiles of shrimp farmers in Gia Vet for the 15,000 Vietnam Dong I paid them for the time they spared to answer my survey. It's not even worth a dollar!

... women paddling canoes in floating markets or carrying bricks on their backs from the factories to a waiting truck for paid labor.

... the skilled boat driver hitting a peg on the bank for a calculated stop, a passenger hopping in a second later and the boat moving on to its next destination... they drive and ride boats like motorbikes on the road!

I see the passive simplicity of life nurtured by flexibility and resilience complicated by solutions some of which are foreign to people in the Delta. Adaptation switches roles between places and people... whether it's the place adapting to the presence of people or the people adapting to the place... determines the extent of impact on each other.

(If you want to know more about this research, email arlene.lusterio@gmail.com)