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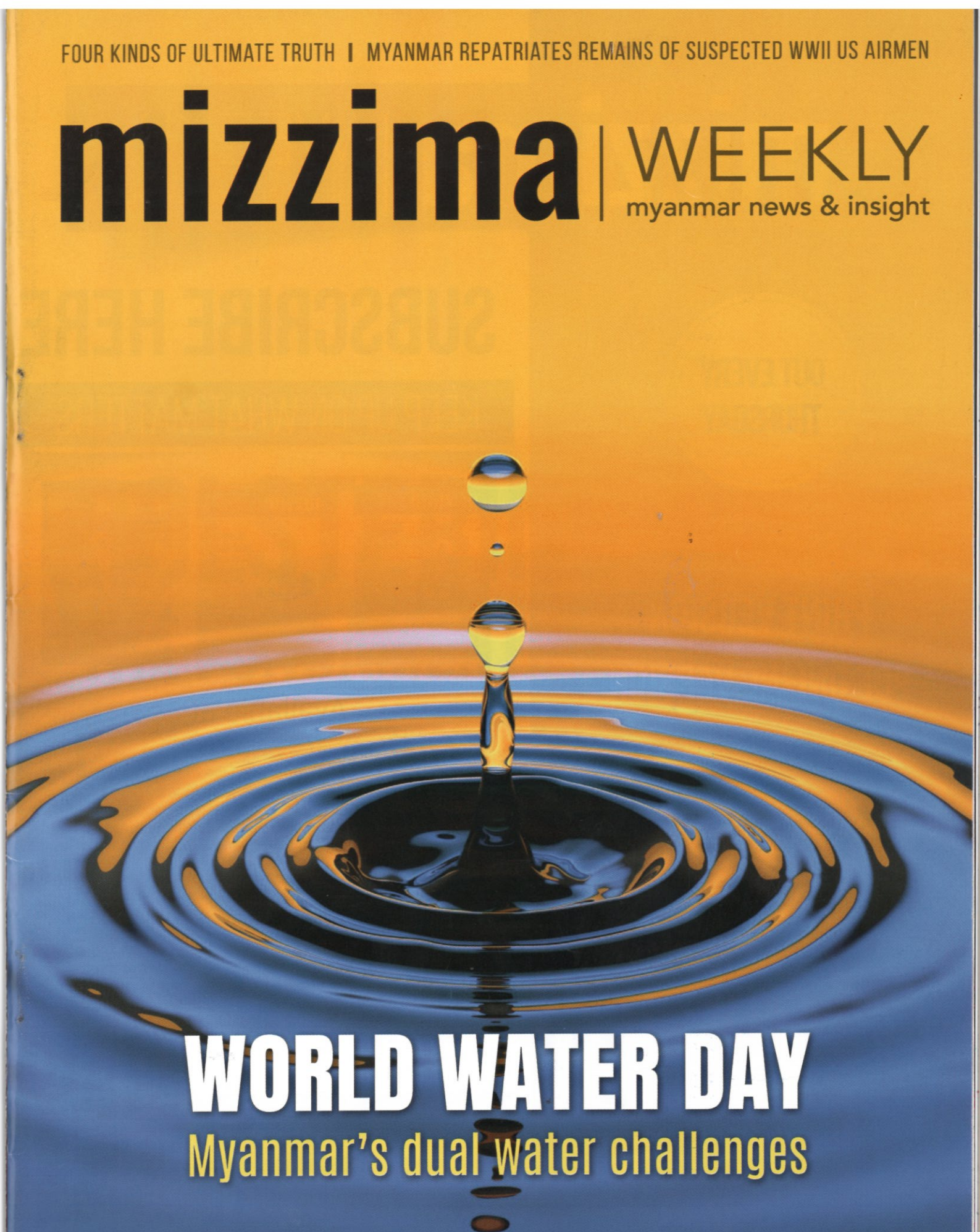

WORLD WATER DAY

Myanmar's dual water challenges

VOL 8, ISSUE 12
2500 KS
9 780025 183850

ISSUE 12, VOL. 8, March 21, 2019 | Issued every Thursday | mizzima.com

WATER MANAGEMENT OPTIONS IN MYANMAR

To mark World Water Day, Mizzima talked to Tian Fuqiang, Tenured Associate Professor, Chair of Bio-Energy Working Group, ICID about the water challenges in Myanmar.

What are the challenges here in Myanmar?

In my opinion, Myanmar shares common challenges with global world. Of course, Myanmar has its special water challenge features. So we can say, the most prominent water challenge here is water scarcity. We have two kinds of different water scarcity. The physical water scarcity – that means we do not have enough water at all, pysically. And the second type is the economical water scarcity, that means we do not have enough infrastructure and water facilities to supply water. I think worldwide these two types of problems is very common around the world. Especially for Myanmar the most serious shortage is economical water shortage. So this is the first water challenge we face.

And the second one, the biggest water challenge, is flood and drought and other water-related disasters. As we learned from the opening address of this World Water Day, flood and drought happen frequently in Myanmar.

How can Myanmar cope with the extremes of flood and drought?

So as I mentioned, there are two kinds of water challenges we face. The second one is flood and drought. In my opinion, we should apply two kinds of measures to cope with the water extremes. The engineer method and the non-engineer method. The non-engineering method of the water resources system – but the first things is the water infrastructure, it is an engineering matter because if you have no tools, how can you manage the water? So in my opinion, the most important thing is the water infrastructure. If we have enough water storage facility, we can store flood water, during the flood event, and then after the event, we can eventually supply water for various purposes.

And for drought, the same thing, if we store water in other times then we can prevent water shortage during the seasonal drought, other extreme drought, the longer drought. So water storage is very important. And for flood of course we need other type of water infrastructure, like levies. So in some ways, the water infrastructure, including the water storage facilities are an important matter to cope with flood and drought disasters.

The Three Gorges Dam in China. Photo: Ted McGraith

We can say there are two points – one is the transboundary river management that involves upstream and downstream countries, so we need to collaborate to manage the river. Another point is the involvement of other countries' international organizations.

For the transboundary management, I think there are two important principles we should adopt. The first one is equitable use. The second one is no seeking harm principle. We should balance the principles. It is not easy to realize but if we work hard and use our wisdom, we can work out smarter solutions.

Let's take the Columbia River shared by Canada and the United States as an example. This river is shared by the United States in the downstream and Canada upstream, this river after World War II faces two challenges. The first one is energy need as the economy grows then there is a need for a lot of energy and the second challenge is the flood that happens frequently in this river basin caused a lot of damage to both countries. One extreme example is 1948 flood. It even destroyed the city of Vanport in the United States. So to address the two challenges, the two countries sat down and wrote treaties in 1964. The basic aspect of the treaty was to build three dams in the upstream in Canadian territory. The new dams will increase the power generation in the downstream, in the American power plants also provide additional protection for the downstream United States. So these additional benefits, according to the treaty, will be shared equally by the two countries. So Canada built three dams but paid by United States. And additionally, from 2003, Canada annually received 200 to 300 million dollars for additional benefit in the United States.

I think this is a good example for sharing rivers, for sharing futures. This is first point, the transboundary river management. The same thing should apply to Myanmar and Southeast Asian rivers. So that involves the involvement of countries, especially developed countries in terms of technology and education. So they can help the developing countries like Myanmar to increase the capacity to manage the water resources in a sustainable way. So this is capacity building issue. Everyone can help.

What would you say are the role of dams in this water management issue?

A good question. I think we should look at this question in two aspects. The first is the benefit of dams and the second is the possible negative impacts of the dam. Generally dams play an important role for human development. We have some data to view the relationship between human development index and storage capacity per capita for many countries. So the results clearly show a positive co-relation between HDI, human development index, and storage capacity, so it creates a positive role of dams in sustainable development. That is a little more detail, we can repeat that the dam can provide protection from flood and from drought and provide many benefits for water supplies and can be a power source, the hydropower plant. So this is the major part of the dam.

Also we should look at the positive or negative impacts of dams. For example, it may harm fish migration and also may affect the archeological sites. But if we manage it properly, this negative impact could be reduced or eliminated. Let's also take the Columbia River as an example. The Columbia River Treaty was rectified in 1964. Let's look at the

"Dams can be very helpful for sustainable development"

Columbia River Treaty again to look at the role of the dams. Recently, I noticed the US Department of States released news on May 22, 2018, last year, to say the two countries, the United States and Canada sat down to negotiate to modernize the treaty. So why did they consider that, renegotiate the treaty? They should note the dams' important roles, the positive roles for the two countries. So we should say the dams should have two aspects, the benefits and the possible negative effects. We should also should note the dam has no original theme. If we designed and constructed and managed the dam properly, we should consider the dam as a useful tool for the development and we should use this appropriately.

How can management of water help with dealing with water disasters and shortages?

Very important for sustainable management. Your question is the global risk over the disaster events including flood and drought. We have many such examples. One example is the 2010 drought, because of drought the jute crop reduced significantly and increased the global food price in the market. So some developing countries they cannot afford the higher price. So according to research this caused some social unrest and political conflicts in some countries. If we consider climate change, this situation may get worse, more frequent flood and drought may occur in the coming decades. So this gives us important challenges – how to address the extreme disasters for a peaceful world to avoid the spillover risk? So according to the climate change research, the most increasing risk of flood and drought will occur in low and middle income countries. Just in these countries, they do not have enough water infrastructure, so the most important thing to address is to develop the water infrastructure in these developing countries.

What about water saving measures for irrigation?

I think we can learn something from China's experience. In China, agriculture water consumption is a major part of the total water consumption, occupy over 70 percent, so the government launched a lot of measures for water saving, to reduce agricultural water consumption, then we can use more water for domestic and industry and for the environment. So basically, the most important measure we adopted is to level fields, adopt new irrigation measures, including letting water move smoothly to save water, to allow the water to seep into the ground.

And the second matter is to adopt highly efficient water technology, likely the sprinkler irrigation method, and the drip irrigation method. One good example, one successful example, is happening in northwest China, especially in Xinjiang Autonomous Region of China, a new irrigation method combining the drip method with plastic emulsion is applied to the last two decades. So this method is called the mulch irrigation method has higher water use efficiency and higher crop yield. So it is applied widely and is popular.

Of course, the Chinese government also launched the policy reform to save water, to make sure the farmers adopt the new methods. So this is the main thing from Chinese and I think it can also apply to Myanmar.

What about efforts to control the Ayerarwaddy River?

I haven't studied too much in the Ayerarwaddy River but I think we can get experience from its neighbour river, the Lancang Mekong river. The two rivers share the similar characteristics and face similar problems – flood and drought. So in the Lancang Mekong case, the dams are constructed at the upstream. They can provide a good roles for the flood and the drought. We have discussed this a lot and especially, a recent example, and show the dam's function, was the 2016 drought and emergency water release. So in 2016, a major drought occurred in the Mekong including Cambodia and Thailand and Vietnam. This drought was invoked by the longer, stronger El Nino phenomenon. And to combat this drought the Chinese government coordinated the upstream dams to release water to the downstream. And we have ... the Chinese government has MRCS – the Mekong River Commission Secretariat – have a joint evaluation report. That report did show the benefit of the dam as transfer, supplement and (provided water downstream) and alleviated the drought. So I think there are some dams in the upstream of the Ayerarwaddy River that can do the same thing, the same thing for the flood and drought.

And the second benefit of the upstream dam is of course the hydropower. We know Myanmar has a shortage of power, they need power, and if we build a hydropower dam it can help a lot of people. This is the hydropower benefit, and the regulation of the hydropower usually it stores water in the flood season and releases its water eventually in the dry season. So it will definitely increase the low flow during the dry season. It is a benefit to the dry season irrigation.

Of course, the upstream dams can have some negative effects, as I just mentioned in the Columbia River. And in other rivers, the dams can harm fish. Of course we can adopt some measures to alleviate or decrease such negative impact. For example, in the Lancang Mekong River, the upstream dams adopt a lot of measures to restore or protect fish, the fish multiplication and release stations. They also build an alternative environment for fish, because they cannot go upstream through the main stream, and they build a branch tributary to move into small dams and the fish can breed in that area. So in this way it can reduce the negative impact on the fish.

Maybe some other negative impacts like the bank erosion because the dam blocked some sediment, and the water become cleaner and this could increase the bank erosion. But we can build some engineering project to the dam. It is not hard to totally eliminate such impacts.

Generally, I should repeat my opinion, the dam has no original sin and if we properly design and construct it and manage it then dams can be very helpful for sustainable development.