

The whole land mass right up to the sea, must be considered a water catchment - not just the upper stream forested areas.

Datuk Lim Chow Hock



Water-stressed areas like the Klang Valley, and states like Malacca, Perlis and Penang can no longer rely on dams alone for a potable water supply, he warns.

According to Lim, very few water catchments have been gazetted and legally protected. Many are exposed to incompatible development that can adversely affect water resources. At least 3% to 5% of virgin forest reserves have been cleared already, and we're only relying on upper catchments, which can only trap between 10% and 15% of rainfall at best, he says. That's not enough in water-stressed, high population areas. We have no choice but to go downstream to tap water, he says.

"In Malaysia, about 70% of the 496bcm surface runoff, or river flow, is lost to sea as flood discharge. And of the remaining 30%, half cannot be used because of saline intrusion. This means that only 15% of surface runoff can be used. This is termed 'effective rainfall'. Water is coming down but we're just letting it go to waste."

He argues that the whole land mass right up to the sea must be considered a water catchment - not just the upper stream forested areas. When it comes to gazettement of water catchments, it must be done in totality, he thinks.

"We must make sure that whatever comes down is harvested. The only way to do that is through total catchment management," he explains, stressing that gazettement doesn't mean saying no to development - it's saying yes to "controlled development".

Citing Singapore as an example, he says almost 70% of the urbanised island is gazetted as a water catchment. The Kallang River water catchment stretches until its mouth where the barrage is. It used to be wasted water going to sea but now it's an invaluable resource, he says.

Malaysia, he believes, must review its laws to facilitate the gazettement of down-

stream water catchments even if they are on private land. Areas protected as water catchments should cover all water bodies, including ponds and lakes, which can be used for recreational purposes and as tourism attractions, he suggests.

"You can still conduct mining activities, build homes and have eateries by the water body, but any water body whether it's on plantations or in villages or towns, must be gazetted so that every drop of water that comes down is not wasted or made unusable because of pollution.

"In some areas, it might even be necessary to tap into our groundwater reserve. If we can do this, even during the drought, we have nothing to worry about."

While it's a "good idea", Malaysian Nature Society president Henry Goh thinks an in-depth study of the secondary effects is necessary as downstream gazettement may affect communities which depend on the water bodies for their livelihood.

Penang Water Watch's Dr Chan thinks gazettement downstream water bodies may not be practical.

"Development in urban areas has already reached the river's front door, so to speak. In KL, buildings closely straddle the banks of the Klang River. It's the case for many rivers that run through urban areas like Sungai Pinang in Penang - there's simply no space," he points out.

Lim stresses that good governance, though complex, is important for the sustainability of our water resources. Existing water policies are spread among the functions of seven different ministries. The National Water Resources Council formed in 1998 has not been provided with a legal mandate to act effectively, he feels.

Population growth and economic development will continue to stress water availability as demand rises. Water resources must be managed in an integrated and holistic manner by using the principles of Integrated Water Resources Management (IWRM) for all river basins to ensure sustainable development, he says.

IWRM balances sustainable development (national interest) and desirable socio-economic development (public interest) with ecological conditions (environmental integrity), he explains.

More institutional reforms are needed in the long term to bring all water related agencies under one ministry. For sustainable management, people must realise that water is a valuable asset. It must be appreciated for the future, adds Lim, who is also a commissioner with the National Water Services Commission (SPAN).

Association of Water and Energy Research Malaysia's Piarapakaran wants the Environment Quality Act 1974 (EQA) and Water Services Industry Act 2006 (WSIA) to be amended. These Acts, he explains, don't cover the overall losses incurred by the public and industry when there's pollution.

"Cleaning cost plus operational losses and severe pollution penalties will show the true cost of pollution. But amendments to the EQA and WSIA are needed so that both SPAN and the Department of Environment can work together to charge the culprits."

Bigger buffer, please



WE need bigger buffer zones that correspond to the size of gazetted catchments. Activists feel that protecting water catchments is easier to achieve, and more crucial, than gazettement downstream bodies of water.

The existing 10m buffer zone may not be enough for large catchments, says S. Piarapakaran, president of the Association of Water and Energy Research Malaysia (AWER).

In 2014, the wettest town in Malaysia, Taiping, had to ration water. It doesn't take a genius to know that if catchment areas are disturbed, karma will bite back, he shrugs.

Water catchment, he explains, is an area that is able to flow rainwater to a particular river. A virgin forest can control its own climate, which helps maintain river flow and reduce the impact of a dry season.

"When a catchment is segmented into protected and unprotected areas, the forest's climate control ability is compromised. And you'll end up with white elephants like Seremban's Gemencheh dam. The land-use around it was converted from catchment to plantation. Now, the water company has to spend more than RM30mil to build a back pumping system, pushing pump maintenance and dam de-siltation costs up.

"Bukit Larut (formerly Maxwell Hill, in Perak) is another example. A hostel was built in a catchment area for tourism. The river flow and waterfall have not been the same since."

Malaysian Nature Society (MNS) president Henry Goh suggests doubling the 10m buffer zone. Zeroing in on protecting our forests to prevent surface runoff, he says better management is needed in the conversion of forests for agriculture.

Large scale cultivation of mono-crops has greatly compromised the water catchments. We have to seriously consider replacing logging as a source of income, he says.

Without the forest acting like a sponge, we have to resort to protecting downstream lakes, swamps and even mining pools, from exploitation and pollution, MNS conservation department head Balu Perumal adds.

And groundwater should only be a back-up, he adds, wondering whether we've reached such a point of desperation that we can no longer rely on our forests.

Authorities are now looking at options like buying water from other states, using water from mining ponds and extracting groundwater - measures that he feels, are "exceptionally drastic" and should be avoided.

"We don't want to end up like Singapore

having to turn to recycled and desalinated sea water. At that stage, the price of water will be too expensive."

Maintaining forested areas as water catchments is important for long-term sustainability. Look at how Selangor has to buy water from Pahang to drive its economic growth, Balu points out. The state's original forest cover has shrunk by 30% and what remains is no longer able to retain sufficient water during the dry season, he says.

While stressing the importance of buffer zones, he feels that the size should depend on the type, intensity and scale of the development. Dams without forested catchments upstream are pointless, he adds.

Meanwhile, AWER's national survey shows that more than 70% of almost 5,000 Malaysians want Parliament to be directly responsible for water resources if the respective state governments' failure to protect their catchments leads to a water crisis and higher tariffs.

Around the world, many agencies report directly to Parliament. Simply passing the responsibility to a ministry will be no different from what we are facing at the state level now, AWER's Piarapakaran believes.

Calling on Malaysians to adopt simple measures that can keep water bodies clean, MNS's Goh pleads: "Reduce, recycle and reuse all non-biodegradable materials. Stop using polyethylene for packaging, carry your own water bottle and use a tiffin carrier. When trekking in the forest, take your rubbish out and throw it away properly."

He thinks education is key. Public awareness campaigns must be intensified as it's easier to gain compliance from the informed.

Penang Water Watch president Prof Dr Chan Ngai Weng wants us to love and respect nature. Do something to help stop pollution - volunteer with or support non-governmental organisations. River protection and conservation isn't solely the government's responsibility, he insists.

"It's everyone's job. Rivers are God's gift to humanity. We should be stewards protecting rivers, not the culprits that pollute and kill them!"

Balu stresses that we must maintain enough forests to sustain our need for freshwater and to mitigate the impact of climate change. We must start re-forestation exercises in a big way and stop our destructive habits, he urges.

"Be thrifty with water. Pay your Indah Water bills on time because the company cleans your sewage before it goes into the river. And hold regular gotong-royong sessions to beautify rivers."

Piarapakaran thinks it's important to introduce mandatory water efficiency labelling for household, industrial and agricultural items. A minimum water efficiency standard must be imposed so products that don't meet the minimum requirement cannot be sold here.

Increasing efficiency ensures availability of raw water to be converted to treated water, he says.



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FLOOD DISCHARGE