# CHALLENGES FOR ASIA IN WATER MANAGEMENT AND SUSTAINABILITY

## SECOND KEYNOTE SPEAKER

TUESDAY, JANUARY 23, 2007

**by**

Honorable Senator Pia S. Cayetano

*Senator of the Philippines, Chair of the Senate Committees on Environment and Natural Resources and on Health and Demography*


Good morning again,
Mr Tadahiko Ishigaki,
Mr Shunsuke Ohtsu,
Other officers of Hitachi,
Panel speakers,
Guests and
The young leaders.

Let me start by giving you some basic facts about Asia and water. Of the 6.3 billion people in the world, around 4 billion people are in Asia. This is why fresh water is very important to Asia, and why the withdrawal of fresh water in Asia within the last century has become a very big problem. The largest increase in demand for water has been in agriculture, mainly for irrigation, followed by industrial use including hydro-powered generation. Deforestation in some important watershed areas has reduced the water levels in rivers, especially during the dry seasons. By the mid 1970s, concerns over the sustainability of water supply and the protection of water quality had become very important issues. Most developing countries in the region have experienced growing water scarcity, deteriorating water quality and conflicts in water allocation. Access to safe drinking water is the lowest in South-east Asia and South Asia. About 715 million people in rural areas and another 100 million areas in urban areas still have no access to safe drinking water.

When you hear statistics like this, it sometimes isn't very real to you. So let me ask you today: try not to have a drink of water for the next six hours, and see what that feels like. This is what 715 million people in rural areas, and 100 million people in urban areas have to go through. Or, like them, you could take your chances and drink water that you know to be contaminated. Give this some thought over the next few days, during the course of your discussions.

There are 1.75 billion people in rural areas and 300 million in urban areas who are in need of hygienic sanitation. Dirty water and poor sanitation cause more than 500,000 infant deaths in the Asia-Pacific region, as well as a huge burden of illness and disability. According to the World Health Organisation (WHO), diarrhea associated with contaminated water poses the most serious health threat in this region. That is why, in a nutshell, water management is vital.

To help you get a better understanding, I will present to you the situation in a specific area of the Philippines. It is my hope that this will help you to truly understand the problems we are facing, because the problems that we have are replicated across many of your own countries.

A little bit about the Philippines. The country stretches 2,000 km from north to south and consists of 7,100 islands. The Philippines' inland waters comprise 421 rivers. The country also has 59 natural lakes, and more than a hundred thousand freshwater swamps. Unfortunately, it ranks 37th in the world for having the most polluted freshwater. While there are 36 other countries that are worse off, this is still not good.

I have had the privilege of going boating and swimming in many of the rivers in the Philippines. When you swim in a river, you don't assume that it is clean; you try to keep your mouth shut. There are a lot of rivers in our country and in your own countries that may look clean on the surface, but are actually heavily contaminated. And you may not know it, unless a study has been done on it.

The case in point for today's discussion is a province in central Luzon. This province is composed of 22 municipalities. Like most rural communities throughout Asia, this province is undergoing rapid industrialisation. But, when faced with such spanking new industrialisation and robust trade, we need to consider the cost to the environment.

In this province, the population is over two million people. In terms of population growth rate, it is the fastest-growing province in the region, with an annual growth rate of 4.93%. The Philippines actually has a very high growth rate – as a predominantly Catholic country, population management is a very controversial topic in the Philippines, where you have some population programs opposed by influential church leaders, leaving the population to grow at a tremendous rate. This has brought about many difficulties. As communities become denser, household waste multiplies, and the ability to deal with this waste becomes a problem.

In this particular province, there are a number of industries, including jewellery making, tanneries, pyrotechnics, garments and textiles, livestock and poultry and fish production.

Let me start with fish production. This province is one of the major fish producing provinces of our country, harvesting 50,000 metric tonnes of fish per year. The agriculture industry is a thriving industry, as a consequence of its geographic location – this province is sandwiched by steep mountain ranges on the northeast, with large river systems passing through the province before finally draining to the Manila Bay on the south-western side. The wide delta formation is an ideal site for agriculture, covering thousands of hectares. The natural bio-geo physical features of the province and its strategic proximity to Metro Manila has its advantages and disadvantages – balancing aggressive economic growth with environment quality remains a big challenge.

The Philippines produces four million metric tonnes of fish, and the province I mentioned earlier produces 50,000 metric tonnes. The value of fish production for the entire Philippines' production is $2.92 billion; for the province, it is $36 million. Together with other industries I mentioned earlier, fish production contributes to the well-being of the people, by providing them with a livelihood. Many of these began as cottage industries, but moved out of that phase and have become fully industrialised, with big manufacturing plants. However, these are the very industries that are polluting the waters and contaminating the fish, effectively bringing about health problems for not just the province, but also the people who consume the fish that originate from the province.

Let me go into the detrimental effects of each of these industries. Because of Luzon province's proximity to Metro Manila, it has become a strategic hub for various industries. It is a major supplier of fresh water supplies and pork meat to Metro Manila. According to a study conducted by the University of the Philippines, the water in Luzon's river system has heavy metal content: lead, mercury, arsenic, cadmium and chromium. These metals are used in the precious metal refineries and tanneries. Not only can these heavy metals find their way to the aquatic life forms that we eat, they can also contaminate the ground water that we drink.

Given that 50,000 metric tonnes of fish are produced in Luzon, it is not possible for me, as Chairman of the Committee of Environment, to simply say: let's close down the fish sites and stop selling the fish. There are millions of people depending on the fishing industry for their livelihood.

When I first heard of this problem, I thought it would be a simple matter of banning fishing in that region, and telling the Department of Environment to start regulating the sale of fish. However, it is more complex than that. Of the 93 rivers surveyed in Luzon Island from 1989 to 2001, 11 were identified as dead rivers. Five of those dead rivers can be found in

the province. A dead river is a river where nothing can live or grow – not even fish, mangroves or other fresh water plants. While five of the rivers in this province are actually dead, the fish that we eventually eat will still pass through these rivers because they are all interconnected. There are fish plants located adjacent to these dead rivers, such that the fish caught along these rivers take on the pollutants present in the rivers. Water, soil and air pollution have started to contaminate the food chain, through the fishes caught in this province. In addition, shellfish ingesting the same pollutants are collected in the mouth of the river system, draining into the Manila Bay.

Among the detrimental effects are highly toxic pollutants found in water waste, sludge sediments, soil and ground water. The water is also polluted from organic waste: household effluent, piggery waste, solid waste and other industrial waste. Organic waste is a problem: while people have been able to distinguish between biodegradable waste and non-biodegradable waste, they have been indiscriminately disposing of their waste in the rivers. With something like 500,000 households throwing their biodegradable waste in the rivers, the decomposition of the waste slowly poisons the river.

In the Philippines, we passed a law in 2000, known as the Ecological Solid Waste Act of 2000, which requires local governments to convert open dump sites into controlled dump sites within three years of the law's passing. The problem lies in the implementation: most people and local governments find it difficult to prioritise the environment, a new concept to them.

And so on to my favourite part – solutions to the problem. The solutions we are looking at to solve the problem of polluted water comprises two phases. The first phase is the identification of all possible sources of pollution; the organising of industries by controlling pollution at its source; the enactment of regulatory measures and the strict enforcement of environmental laws, information, education and communication; the joint monitoring of the industries by government and non-government organisations. To identify all possible sources of pollution, there must be a study of all contributors to the pollution of the water, and the amount generated by each. In this particular river, the jewellery making, the tanneries, the pyrotechnics and the firecrackers that we all enjoy are major contributors to this problem. All of these sectors have been identified, and so has the amount of pollution that they produce. This information has been given to them, and there is an admission on their part of their contribution to the problem. This is the first, and a very big step, in finding a solution.

The second part of the solution is to organise the industries by sector, and mobilise the stakeholders involved. Each sector should be given a specific responsibility in connection with the environmental project. In the Philippines, this has been done already. Each of the sectors already has a loosely put-together association of members, but we spearheaded the initiative to organise them in a more cohesive manner, with the specific purpose of addressing the pollution problem in each of these sectors. Now, the jewellery makers and the tanneries all have their own associations. Each sector also has a representative leader, who represents their members in the overall programme to clean up the river.

The third part of the solution is to control pollution at its source, at the industry level. It is important that the industries feel a compulsion to improve their operational procedures, in order to arrest or lessen the harmful output. Cooperation with the appropriate government agencies is vital at this point. I find it very heartening that the industries have been willing to acknowledge their role as the source of pollution, and that all of them have agreed to review and look into their procedures so as to account for the industrial activities that have contributed to the waste discharge. In the jewellery making process, this is easily identifiable: mercury is introduced to amalgamate with the gold and allow it to be separated from the impurities. So that's why they use the mercury. Without a proper disposal system for the mercury, it simply flows out into the drainage system. It is the same thing with the pyrotechnics industry and the tanning industry. Most firecrackers are made in developing countries, and I highly doubt that any of the manufacturers in the province that I speak of have the proper regulatory measures in place to prevent the backflow of the use of these hazardous materials into the river system.

When these industries first came about, at least half a century ago, there was no understanding of the ill effects of the chemicals or metal products that were being used in the manufacture of these products. It is news to these industries that they need to invest tens of thousands of dollars to clean up their production processes, and so it is very difficult for them to

comprehend this added cost to their business. But it is a reality. And whether out of social responsibility, or out of the fear of being closed down by the authorities, these industries have banded together to try to find a solution to the problem. It will, however, be a long process.

We want the industries to take responsibility for their own waste. There is a term that is used by environmentalists: "Polluters pay." And what it really means is that, if you pollute the environment, you pay the price of making amends.

The fourth item is the implementation of regulatory measures and strict enforcement of environmental laws. This is self-explanatory – it is important that the government and the community work together to ensure full compliance with environmental laws. In the Philippines, we have passed three major laws relating to the environment. The first is on ecological solid waste management, the second is the clean water law, and the third is the clean air act. They all complement each other to ensure that we have clean water, clean air and clean surroundings. The problem with the ecological solid waste management law is that the implementation is quite costly. Each local government unit, the municipalities and cities, was given three years to set up a controlled dumpsite as opposed to an open dumpsite. Constructing a controlled dumpsite is a huge expense, and so only a handful of cities had put up the dumpsites by the time the three years came and went. The local governments clearly did not take this law as seriously as they should have, since, as I mentioned, there is still not yet clear understanding of the importance of these environmental initiatives.

Furthermore, the local governments had other issues to contend with. In the city, setting up a dumpsite is a priority because of the ongoing development taking place, and also because the residents will put pressure on the governments to comply. However, for a provincial mayor, digging a hole and lining it in an environmental-friendly way is among the least of his concerns. The provinces have enough open space for rubbish to be disposed far away from the residential areas, so that there will be no immediate reaction from the residents and no immediate urgency for the local government to comply with the law. Over time, it will become a problem, and then the government would have to react to the problem rather than take a proactive stance – which is not what we want. At the present time, we are still in the process of urging the local governments to act on this issue.

The next part of the process is to inform, to educate, and to communicate. It is very important to educate the target publics of the environmental problems and the possible solutions. This is being done at the industry level, but there is also a great deal of work to be done to raise awareness at the household level, so that people will realise that their domestic waste is also a major contributor to the environmental pollution. Many creative solutions can be employed to solve the environmental problem, as illustrated by the district's congressman. This river is a major mode of transportation for the area's residents, and there are 400 licensed boats that ply the river. The congressman gave the following instruction to each boatman: for every trip that you take, pick up one of the many plastic bags that are polluting the riverbanks. If each boatman picks up a single plastic bag on each outgoing and returning trip, that works out to be nearly a thousand plastic bags a day, picked up with very little effort. Small actions like these can go very far in contributing to a bigger solution.

Finally, there is the joint monitoring of the industries by government and non-government organisations. In the Philippines, it is very difficult to monitor every river, lake, and waterway because the country is archipelagic in nature and comprises 7,107 islands. And that is why we need the participation of non-governmental organisations, the NGOs which further environmental causes. These are vital partners of the government to secure the implementation of these laws, by being watchdogs, and by partnering with the government and being given authority to apprehend offenders or at least report environmental misdemeanours to the government agencies. They are also very instrumental in the process of information dissemination. I personally work with these NGOs to conduct seminars directly with the barangkali leaders, the community leaders who will then disseminate the information to households.

Let me go on to the second phase of my proposed solution, which involves remediation.

Remediation is the actual cleaning and treatment of polluted bodies of water. It also involves a long-term management strategy. The remediation project in the Philippines involves an international organisation, the Blacksmith Institute, as well as the national and local governments. It also involves our Department of Science and Technology (DOST), a very gifted sector of our government, where you will find the most ingenious creations developed at a fraction of the cost that they would incur if they were produced in European countries. Our Department of Science and Technology produces many patented products, suited for environmental systems, which can be used in the Philippines and also abroad. Right now, the cost of cleaning up the rivers has already been drastically reduced by the use of the DOST-developed equipment.

The remediation process involves a process called dredging, which combs through the riverbed and collects the sludge. The sludge and mud accumulated at the bottom of the river, where the contaminants settle, is scooped up. At present, the dredged material is simply set aside at the river bank, where it will slide back into the river. As such, the second part of the process involves transporting the soil to a place where it will cause less pollution, i.e. a controlled dumpsite. There is also a process called soil washing, which neutralises the metal content in the sludge by chemical and other processes. The by-product of the sludge processing and disposal must also be disposed of in the proper facilities. Otherwise, if they are simply released into the environment, the cycle will start over again.

And finally there is a process called bio-remediation. This involves placing the by-products in sanitary landfills that are protected by liners, so that the waste will not contaminate the ground water. This is an expensive undertaking because the pits have to be lined with a material that prevents the soil from absorbing the water.

It is imperative that we have the cooperation of various stakeholders. Without the full and the fervent cooperation of these stakeholders, nothing concrete can be accomplished. If the stakeholders are only interested in their personal and economic gain, you will have a problem. The only way to advance the environmental initiatives is for them to be self-regulatory. The government and non-government organisations can only initiate the pro-environment actions, but it is the industry players and the community that need to get involved with the problem solving. Because of the cooperation of the different stakeholders – the national and local government, the industries, the concerned NGOs, the communities – a good number of our water rehabilitation projects on the rivers in the Philippines have succeeded and are currently in the remediation stage.

Our work with the tanning industry is an example of successful environmental cooperation between government and industry. Following our discussions, the president of the tannery association took it upon herself to build a $50,000 wastewater management facility. Now, all the wastewater products from the tanning process are treated before disposal.

The specific river that I presented to you is just an illustration of the problems faced by the Philippines. Asia is the fastest growing region in the world, and unchecked environment exploitation would hamper economic development. In the case of water resources, the watersheds and ecosystems of many countries have already been severely degraded. Places such as India, Pakistan and Central Asia that were once known for their fertile lands have since been laid waste due to salinisation. There is a lot of wisdom in heeding the call to be a responsible player in the field of environmental protection. As we all scramble to contribute to the dizzying pace of development, we must also consider the environmental effects and ensure that the rate of our exploitation is checked such that there is room for replenishment.

Earlier, in my opening statement, in the facts about Asia, I mentioned there are 500,000 infant deaths from unclean water. This is also close to my heart because my other advocacy is breast-feeding, as both the chairman of health and as a mother. And when mothers don't breast feed in places where there is no clean water, they mix powdered milk with unclean water, making their babies ill. Once again, this comes back to the issue of costs. The cost of a can of milk is an immediate, short-term cost. The cost of clean water for an entire province is a long-term cost, but one that would eventually reduce the day-to-day cost to its residents. These are things that economic planners need to think about when planning their cities and prioritising their budgets. While these issues may not be at the forefront of your mind right now, you may one day be

involved in your community, your industry, or even your government. And you may be personally responsible for the water that the people in your area will be drinking.

On that note, I hope that I have left you with something to think about. Appreciate the clean water that you have available, though you do have to pay for it. Thankfully, you are not footing the bill for the water while you are here this week. But you will eventually have to pay the price if you want clean water, clean air and clean surroundings.

Thank you very much.

> “It is imperative that we have the cooperation of various stakeholders. Without the full and fervent cooperation of these stakeholders, nothing concrete can be accomplished.”