July 2014, Edition 2

Asian Council on Water, Energy and Environment

Confederation of Asia-Pacific Chambers of Commerce and Industry

Message from the Chairman

After the overwhelming success of our first edition, we present to you our second Asian Council on Water, Energy and Environment (ACWEE) newsletter.

Energy is the prime mover of almost all economic and technological advancement. It undoubtedly plays a crucial role in the development of a nation as the growth of all sectors largely depends on the availability, reliability and adequacy of energy. The demand for primary energy almost doubling in the Asian Pacific countries by 2035 and the increased demand and surge in energy prices in the Asian energy markets has renewed the concerns of governments, businesses, and individuals regarding the rapidly depleting fossil fuel resources, and expensive methods of generating electricity to meet the growing demand.

To support the industrial growth while also decreasing their reliance on high-emitting, expensive fossil fuels for providing such power, in emerging economies, especially throughout the Asia-Pacific region, there is a need to transform the energy generation from a fossil fuel based system to a more complete energy mix through the enhancement and capacity addition of renewable energy such as hydro, solar, wind, biomass, biogas, etc.

The transition towards a more efficient low-carbon economy may change both the way power is produced, transmitted, distributed and consumed. There is a need to assist in capacity building and promotion of best practices in the area of renewable energy, environment, climate change and energy security in the Asia Pacific region.

This edition of the newsletter like its maiden issue is a rich interesting assortment of articles on renewable energy, environment and energy security. We believe that you will find the ACWEE newsletter interesting, useful and informative. You are invited to contribute articles for the future editions. Please email the CACCI Secretariat at cacci@cacci.org.tw for more information.

Mr. Gyanendra Lal Pradhan
Executive Chairman, Hydro Solutions
Chairman, Energy Committee, Federation of Nepalese Chambers of Commerce and Industry

INSIDE

Shift to clean energy ensures future competitiveness: WEF executive

For emerging economies, the shift to risk reduction and sustainable development should no longer be a choice, said a senior officer from the World Economic Forum (WEF).

"It is almost a false choice between economics and sustainability," Bernice Lee, WEF Director for Climate Change, said in an exclusive interview with Philippine Daily Inquirer.

Lee explained that recent events in Asia were proof to the pressing need to push for climate-resilient systems and sustainable growth.

Ms. Bernice Lee, WEF Director for Climate Change

Economics of sustainable development

Super typhoon "Yolanda" (international name: Haiyan) for example, not only devastated lives and livelihood but also directly affected the country's industries and gross domestic product (GDP).

"The floods in Thailand probably cost Thailand 3% of GDP," she said, adding that it wrecked both industrial estates and small businesses. Whatever growth Thailand achieved in the years leading to 2011 was undone by the flooding and extreme weather."

"And this is exactly why, when we make decisions on our investment structure, we have to bear those costs in mind," the official said.

Lee pointed out that economics and sustainability go hand in hand.

She said many countries now understand that investing in "cleaner options" is not a "distraction from growth but on that prepares them better for future competitiveness."

China, which in the past has been criticized for its coal stock, now has more solar and wind investments. Lee said the country now has a lower share of "carbon emissions growth" in its GDP growth.

"We know ultimately that we need to clean them up, we should be investing in cleaner options upfront," she said of emerging economies seeking to address their carbon footprint.

Climate resilience

With extreme weather caused by climate change becoming a serious problem for many countries, especially in Asia, changes across the industries have become more pressing,

"Climate change is a reminder that there is no such thing as the normal anymore," Lee said. This is why people should be more focused on risk reduction than disaster response

> "Climate change is a reminder that there is no such thing as normal anymore. We need to do more than just preparing ourselves against disasters, but also change the way we think about our production system." -*Bernice Lee, WEF Director for Climate Change*

"We need to do more than just preparing ourselves against disasters but also change the way we think about our production system," she added.

Shifts in agricultural and energy industries are among the most crucial.

"We obviously not only need to figure out better crop insurance. We also need to make sure that we're investing in smart agriculture production methods that would handle water better, that can help us manage drought, as well as floods," she said. "We need to make sure whichever pathway we choose agriculture production would be more sustainable."

She said that energy solutions should both address lower carbon emissions and the effects of climate change.

"I think the direction is very clear, that is our only way forward," Lee said.

In the end, it is more cost-efficient to invest on risk reduction than disaster response.

"The United Nations reminds us that every dollar we spend on preparedness and risk reduction, we save $7. And at the moment the number says that every dollar we spend today on risk reduction is outmatched by about $9 we are spending on recovery globally," the WEF official said.

For countries with limited resources, Lee suggests transferring risk to the market. Incentives, for example, could be offered to companies willing to invest on stronger and climate-resilient infrastructure.

The WEF held its three-day conference on East Asia from May 21 to 23 in the cities of Makati and Pasay. The sessions tackled a wide range of topics, from economy to climate change.

Philippine Daily Inquirer ■

Energy planner from ASEAN should try to learn from each other

Climate change is a global phenomenon with global causes. This means that ASEAN countries also have a responsibility to ensure that continued economic growth does not come at the expense of further deterioration in the environment. For some countries, this may involve difficult political decisions. And while each of the ASEAN member states faces a unique energy landscape, this does not mean that Southeast Asian countries cannot learn from each other.

The ASEAN member states collectively registered a robust economic growth rate of five percent in 2013, compared to the global average of just three percent. Combined with their relatively high population growth rates, the result is surging energy demand.

The 2013 Southeast Asia Energy Outlook report produced by the Paris-based International Energy Agency (IEA) projects that ASEAN's energy needs will increase by 83 percent between now and 2035. Demand will be met predominantly by fossil fuels, namely, coal, oil and natural gas. Naturally, this raises concerns about whether ASEAN is doing enough to minimize the accompanying pollutants.

In terms of power generation, the poorer countries, such as Myanmar and Cambodia (where more than 50 percent of the population still lacks access to electricity) must make particularly hard decisions. These include decisions about the allocation of limited treasury funds and the need to provide the most affordable means of electricity generation to the poor. In earlier decades, several ASEAN countries adopted energy subsidy arrangements to minimize energy costs for the poor. Today, however, these subsidies are often criticized as being inefficient and working at cross purposes with energy conservation efforts.

Singapore faces a different set of challenges. Due to a lack of renewable energy sources, it is almost completely dependent on energy imports to sustain its power generation capacity. In addition, the large refining and petrochemical sector which constitutes about a third of the country's manufacturing output uses fossil fuel as its feedstock.

Nevertheless, Singapore has incorporated energy efficiency and conservation practices wherever possible. For example, it has shifted from using heavy fuel oil to much cleaner natural gas for electricity generation. The combined-cycle gas turbine (CCGT) power plants that run mainly on natural gas are also more efficient than steam power plants that run on heavy fuel oil.

Besides adequate power, a modern economy also needs an efficient public transport sector. A well-developed transport infrastructure can increase mobility whilst minimizing congestion and pollution. For example, Singapore continues to invest heavily in its Mass Rapid Transit (MRT). The rail network will be doubled by 2030.

Expansion and modernization of the urban transport systems in ASEAN's large cities, such as Bangkok, Jakarta and Manila is crucial. With financial assistance from the Japan International Cooperation Agency, Yangon is planning to set up a bus rapid transit (BRT) system and upgrade its problematic circular rail service. Phnom Penh recently started to introduce bus services, and is currently working with the Asian Development Bank (ADB) to improve its dilapidated railway system.

Another area that bodes well for energy efficiency in ASEAN is the growing prominence of energy service companies (ESCOs). They provide energy solutions, including the design, funding and implementation of electricity supplies or other energy sources. In addition to helping industries and the public sector save energy, the ESCOs, in conjunction with international financing organizations such as the World Bank, support electrification projects.

To help resolve Southeast Asia's complex energy issues, regional studies conducted by academic experts and policy-makers serve as collaborating platforms where regular discussions are held among specialists from each of the ASEAN member states.

The results of these discussions need to be taken seriously by governments. Currently, political pressures and hurried agendas sometimes reduce the willingness of officials to be transparent about their energy needs.

In an age where knowledge is shared globally, international energy organizations are keen for all countries to meet and share their energy planning experiences. ASEAN's energy planners should become closely involved with these and avail themselves of every possible opportunity to learn from the successes and failures of others. ■

The Straits Times

EU releases grant for India clean technology, energy efficiency project

EuropeAid invites non-government organizations, private foundations, government agencies and international organizations for a project grant to support India's sustainable and inclusive growth objectives through increased use of green energy sources, energy efficiency and clean technologies. The total grant is valued at 9 million euros..

The green eco-cities project support India's central and local-level efforts to promote and implement energy efficiency, clean development approaches and green energy sources, technologies and solutions; and its effective take-up by public and private sectors, to facilitate the sustainable development of cities in India.

The project focuses on fives pilot cities in various states across India, with a focus on the potential for adoption of energy efficiency, renewable energy and implementation of clean technologies; commitment and initiatives already taken in promoting energy efficiency, clean technologies and renewable energy; the willingness to commit human and financial resources to the program; and should have real environmental impact.

"There is a need for India need to accelerate the socio-economic development for its population, such as providing energy infrastructure to support its fast-growing economy; and this need coincides with rising concerns over climate change. India is currently generating about 3% of the world electricity but its share of the world population is 16%," the European Commission said, in a statement.

According to the Strategic Plan of Ministry of Urban Development for 2011-2016, the first step towards implementation of the Mission would be development of sustainable habitat; including standards aimed to increase energy efficiency in the residential and commercial sectors, urban planning and municipal waste. Emphasis is put on a set of complimentary actions comprising pilot projects related to green building, energy efficient construction material and technologies, recycle and reuse of solid and liquid waste, decentralized waste water management, use of low water technology as well as outreach activities aimed at raising awareness about economic and environmental benefits of energy efficiency.

"This project also gives beneficiaries exposure to EU best practice experiences on green energy, energy efficiency and access to clean technologies. Helping India increase its use of clean technologies in an urban context will have a significant long-term impact in mitigating its contribution to global greenhouse gas, along with enhancing its national energy security. It will also deploy an eco-friendly economy and create significant employment potential for skilled and semi-skilled workers," EuropeAid further said. ■

Asian NGO

Asian growth redrawing global energy landscape

From oil to nuclear power, via gas, coal and renewables, Asia's economic growth is increasingly steering the path forward for the global energy industry.

"It's clear that Asia's emerging economies have entered a historic phase of industrialization and urbanization," Peter Voser, chief executive of energy giant Shell, said at the ongoing World Energy Congress in Daegu, South Korea. "The pace of change is almost inconceivable."

Shell estimates that energy demand across Asia will double over the next 50 years, with China and India the main growth drivers for at least the next two decades. "This is not only transforming Asia's energy system, but also the world's," Voser said.

The geographical shift in global energy consumption is already becoming clear. China passed the United States in September as the world's biggest net oil importer, driven by faster economic growth and strong auto sales, according to data released by the U.S. Energy Information Administration.

In August, energy consultancy Wood Mackenzie predicted that China will be spending $500 billion per year on crude oil imports by 2020 to meet rising demand. As a result, members of the Organization of Petroleum Exporting Countries would be "compelled to shift their focus" from the United States toward China, Woodmac said.

Increasing Asian demand for natural gas is also resulting in profound sectoral changes, with suppliers boosting production of liquefied natural gas that can be transported by boat to markets not served by pipelines.

Asia also looks set to drive the nuclear power sector, despite significant public opposition in the wake of the 2011 Fukushima No. 1 plant meltdowns disaster in Japan. China is currently building 30 atomic reactors and India seven, and dozens more are in the pipeline across the region. ■

The Japan Times

Saving Asia's farm lands from climate change with salt-resilient rice

The first harvest of salt-tolerant rice variety in Taytay, in the Philippine island of Palawan, may pave the way for local farmers to reclaim lands lost to saltwater intrusion and protect the livelihood of coastal communities.

The municipality of Taytay, in the Philippine island of Palawan, is known as the island's "rice bowl." Yet, its status is under threat from rising sea levels invading fertile land, putting pressure on local authorities to protect the livelihood of coastal communities.

"We have physical evidence that there are areas which have been reached by salt water," said municipal agricultural technician Hernan Fenix. "Many farm lands, which were previously planted with freshwater varieties, cannot be planted anymore."

The local government estimates that about 1,500 of the area's 9,000 hectares of agricultural lands have been left unproductive because of saltwater intrusion into groundwater. Low crop yields and heavy production losses have forced farmers to abandon their lands.

Pilot-testing salt-tolerant rice

With the help of science, ADB and its partners are looking at ways to reclaim farm land that would otherwise be lost to the intrusion of the seas. Two salt-tolerant rice varieties, Salinas 1 and Salinas 9, from the International Rice Research Institute (IRRI) are being pilot-tested in 1.2 hectares of salt-affected rice fields in the villages of Pamantolon and Poblacion.

"I'm very lucky that I have been selected as one of the farmers who will pilot-test these two rice varieties," said farmer Reynaldo San Jose. "I was very eager to learn because this can be good for business."

About 42 cavans of rice (one cavan is roughly equivalent to 60 kilograms) are expected to be harvested in 2014. Both transplanting and broadcasting methods were used to plant the rice, with 16 kg of Salinas 9 and 4 kg of Salinas 1 cultivated using the transplanting method and 40 kg of Salinas 9 cultivated using the broadcast method.

This is one of the five climate change adaptation activities that ADB and the Global Environment Facility are funding under the Coastal and Marine Resources Management in the Coral Triangle-Southeast Asia (CTI-SEA) project.

"This intervention is significant because it addresses a climate change impact that directly affects the food supply and livelihood of coastal communities in the municipality," said Raul Roldan, CTI-SEA deputy team leader for the Philippines.The first harvest of the salt-tolerant rice will be used as seed supply for the next planting season.

The salt-tolerant rice story

The problems facing the farmers in Taytay is certainly not unique to the island of Palawan or the Philippines. According to IRRI, flooding or submergence of rice fields regularly occurs in about 15 million to 20 million hectares of Asia's rice lands. The Food and Agriculture Organization, on the other hand, estimates that around 6.5% or 831 million hectares of the world's total area is affected by salt-water intrusion.

In flooded and saline-prone crop lands, freshwater irrigation and drainage are usually not readily available. The use of salt-tolerant varieties is one of the most immediate solutions to restore land productivity.

IRRI, which is also based in the Philippines, has been at the forefront of this effort. Salinas 1 and Salinas 9 are two of nine IRRI-bred saline-tolerant varieties developed in recent years. *Continued on page 6*

(Left) Municipal agricultural technician Hernan Fenix monitors the growth of salt-tolerant rice varieties in a test plot in Barangay Pamantolon, Taytay in Palawan. *(Right)* Close-up of the salt-tolerant Salinas 9 rice variety. *Photos by ADB*

Coral Triangle Initiative Ratified

Nations come together to establish regional secretariat

Ministers from Indonesia, Malaysia, Solomon Islands and Timor Leste met in Manado, Indonesia and ratified an agreement to establish a Regional Secretariat for the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF). The Regional Secretariat will spearhead the CTI-CFF's regional cooperation programs to strengthen the management of coastal and marine resources and address climate change impacts on fisheries and livelihoods.

According to two new publications launched by the Asian Development Bank (ADB) at the CTI-CFF Ministerial Meeting held on 15 May during the World Coral Reefs Conference, overfishing and destructive fishing are primary threats to coral reefs and livelihoods in Coral Triangle countries. Other major stresses include climate change, pollution, and unsustainable coastal development.

The first Regional State of the Coral Triangle Report indicates that Malaysia, Indonesia, Papua New Guinea, Philippines, Solomon Islands, and Timor-Leste are perilously close to overfishing their bottom-dwelling and pelagic fish populations. This may have dramatic consequences for food security and livelihoods in the region.

The second, a study on the Economics of Fisheries and Aquaculture in the Coral Triangle indicates that the region contributes about 10% of the global fisheries food supply, with 4.6 million people directly employed in the sector, and an annual production value of more than $10 billion. Weak governance, poverty, and environmental degradation are placing these jobs and income at risk, and highlight the need for greater regional cooperation and investments in maintaining healthy and productive ecosystems.

ADB also initiated a Financial Architecture and Strategy Study to develop a long-term investment and sustainable financing plan for the CTI-CFF regional program. This will help engage potential investors and create a pipeline of sustainability-focused investments in line with local, national and regional development objectives.

In a joint message, James A. Nugent, Director General of ADB's Southeast Asia Department and Xianbin Yao, Director General of ADB's Pacific Department, said the studies "highlight key issues that decision makers must address if sustainable development of the Coral Triangle's coastal and marine resources is to be achieved."

Working with the Global Environment Facility (GEF) and other partners, ADB serves as a lead partner for mobilizing financial resources for the program. To date, more than $300 million in funding has been generated, with GEF providing over $125 million. ■

ADB Feature Story

Saving Asia's... from page 5

These crossbreeds have double the tolerance to salinity compared with naturally salt-tolerant varieties.

Saline-tolerant rice types can survive in saline-prone soil having salt levels of at least 0.3%. These varieties may have tolerance either during the seeding stage, during reproductive stage, or both.

Addressing the effects of climate change

Rising sea levels is one of the consequences of climate change having a negative impact on the lives of coastal communities across Asia and the Pacific. Through this project, ADB is supporting communities in the Sulu-Sulawesi Marine Ecoregion - including Indonesia, the Philippines and Malaysia - in protecting their coastal and marine ecosystems and developing increased resilience to natural and human-induced hazards. The project, which will run from 2012 to 2016, is designed to enable the governments of the three countries to implement priority activities across a range of areas.

Since July 2013, CTI-SEA has been working with the municipal government of Taytay to increase its resilience to the impacts of climate change. The pilot-testing of salt-tolerant rice varieties is one of the five priority strategies in Taytay's Climate Change Adaptation Plan. Others are mangrove reforestation, pilot abalone cage culture, training on early warning and disaster response and preparedness, and health management and sanitation monitoring.

The project in Taytay builds on the work of WWF-Philippines, which facilitated climate change adaptation planning in the municipality with funding from the Coral Triangle Support Partnership (CTSP) of the United States Agency for International Development (USAID). *ADB Story* ■

Climate change, risk management and the big emitters

The global landscape for climate action is changing quickly. The United States just announced plans to use its Environmental Protection Agency (EPA) to limit CO2 emissions from power plants, and an advisor to China's government said shortly afterward that his country, where six local carbon markets are now active and stricter pollution rules were recently approved, was considering national CO2 emissions controls starting as early as 2016.

These are the two leading greenhouse gas emitters, and they are stepping up their climate action plans as we move toward a new international climate agreement in 2015.

The push for effective action on climate change needs to come from many directions as the science makes clear the risks ahead. The World Bank Group along with others is calling on governments and businesses to support putting a price on carbon. Businesses, investors, and civil society groups have also been publicly calling for climate action. After the EPA announcement on Monday, more than 170 business leaders and investors, organized by Ceres, issued a letter of support for the planned U.S. regulations, calling them "a critical step in moving our country toward a clean energy economy."

Evidence and Risk Management

Underlying this growing recognition of the need for policies that drive the shift to low-carbon, resilient economies is the science, spelled out in the latest Intergovernmental Panel on Climate Change (IPCC) reports.

On June 2, as the U.S. EPA released its plans, IPCC lead authors Chris Field and Ottmar Edenhofer joined a discussion at the World Bank on the science of climate change and its impacts development. The impacts are evident in changes in water supplies as glaciers and snow cover disappear; in agriculture subjected to drought or excessive rain fall; and even risks of conflict, said Field, the co-chair of the IPCC Working Group II report on adaptation. It raises the risk to the poor, who have the fewest resources to adapt, but even the wealthiest societies are vulnerable to the impacts climate change.

Field talked about climate change in the framework of risk management – a framework that investors and business leaders are well acquainted with and which helps them now consider the risks and opportunities climate change creates for their sectors and businesses.

Climate change is a threat multiplier that adds new dimensions and complexity to the development challenges we're already facing, Field said. "Fundamentally, the challenge of managing climate change is a challenge of managing and reducing risk. We know plenty, but we need a transition from the perspective of knowing lots to doing lots," he said.

Sharing the Benefits

The IPCC reports describe the dangers posed by climate change, the trajectory with and without action and mitigation efforts, and the benefits of action.

The Working Group III report on mitigation, co-chaired by Edenhofer, discusses the local and social benefits of climate action, such as improving air quality, reducing health costs, and reducing other social costs of climate change. It's an issue both of the global commons and intergenerational justice, he said.

There is no single, magic bullet for slowing human-induced climate change, Edenhofer said. It will take a mix of policies and new technologies, including several discussed in the IPCC reports, such as carbon capture and storage technologies that can sequester CO2. It will also take time, but action can provide short-term benefits in jobs, health, and lowering the social costs of carbon.

"The IPCC report makes crystal clear that time is of the essence," said World Bank Group Vice President and Special Envoy for Climate Change Rachel Kyte, who joined the discussion. "The sooner we start to tackle the problem, the better our chance of fixing it and, importantly, the lower the cost. As we can see, that sense of urgency is increasingly shared by key decision-makers."

Mr. Chris Field discusses the role of risk management in climate change.

The Big Emitters

The announcement this week by the U.S. EPA and the comments from the advisor to China's government show the world that the two largest emitters are engaged in the issue. That political will is important as countries prepare for the UN Secretary-General's Climate Summit in September and work toward a new international agreement at the UN Framework Convention on Climate Change Conference of Parties in Paris next year.

The proposed U.S. regulations, which still require review and formal approval, are designed to cut carbon emissions from the power sector by 30 percent below 2005 levels by 2030. According to EPA figures, the move would provide up to $93 billion in climate and public health benefits and avoid up to 6,600 premature deaths and 490,000 days of missed work or school. The power sector accounts for roughly 40 percent of the US' emissions.

Shortly after the U.S. announcement, He Jiankun, chairman of China's Advisory Committee on Climate Change, told a conference in Beijing that China was considering absolute controls on its CO2 emissions after its next five-year plan starts in 2016. He said such controls would help China's emissions to peak around 2030 and non-fossil fuels in the energy mix to reach 20 to 25 percent, according to Reuters. China already has six active local carbon markets, with a seventh planned, and it recently approved amendments to its environmental protection law to crack down on pollution. *World Bank Report* ■

Bringing clean water to millions

An ADB-supported project worked with private companies to provide clean water to cities in the People's Republic of China.

Liu Lanxiu and her family used to have difficulty getting clean water to the building where they live in Mushan village in the southeastern People's Republic of China (PRC) province of Jiangxi.

Water pressure was low. Only the first few floors of the building had water, making the top floors less fit for occupancy.

"Now, everything has changed," says Lanxiu, with a steady supply of water now available throughout the building. "Our family is able to run a guest house with more than 10 rooms. We offer meals and lodging to our guests."

"We could not imagine having this kind of family business a couple of years ago without a stable water supply."

Their business, like many others, has benefited from an overhaul of their town's water system by the [People's Republic of] China Water Affairs (CWA) Group, under a private sector operation funded by ADB. The project upgraded water treatment plants and water piping systems to bring clean, affordable water to millions of people in the PRC.

Rising demand in urban areas

Throughout the PRC, people are moving from the countryside to cities looking for a better life. Since the country began its reforms in 1978, nearly 500 million people have migrated to cities. Another 200 million people are expected to make the move by 2020.

As a result, urban areas throughout the country need massive investments to ensure basic services are delivered to hundreds of millions of new residents. The most basic of all services - the provision of clean water - has been particularly challenging. An estimated 100 million people in urban areas do not have water piped into their homes.

According to a recent study, one in four water utilities in the country is unable to efficiently distribute water to more than 40% of the area it services. A significant amount of treated water is lost and contaminated during distribution due to old and decrepit pipes. When water is contaminated, it impacts the poor most because they struggle to pay for bottled water and medical care.

Upgrading the distribution network

In response to the problem, the ADB project upgraded local government-owned water distribution pipeline networks across the country with new investments, technology, and management expertise.

To reach more cities, ADB partnered with 12 international banks to provide the CWA with $200 million in loans.

The CWA worked with local regulators to conduct cost-of-living surveys, and engaged consumer advocacy groups to keep water prices affordable. Subsidies helped the poorest customers pay their bills for basic water consumption.

In Ji'an City, the CWA upgraded two local water plants and helped train staff to improve water distribution by reducing leakage and installing meters. It also helped improve consumer services, by providing 24-hour hotlines and flexible bill payment schemes.

"Before the CWA started operating the water supply service in Ji'an, we used other supply plants, but the water quality was not good and the capacity could not meet the citizen's water demand," says Du Xiangming, deputy bureau chief of the city's Urban Planning and Development Bureau.

"We believe, with the cooperation of [the CWA], we can reach our goal of providing water for more than 1 million people in Ji'an's urban and rural areas by 2030," he says.

Tapping the private sector

"Water distribution is a new frontier for private participation. ADB has been instrumental in increasing access to safe water and improving water distribution efficiency in small cities across the country," says Hisaka Kimura, a principal investment specialist in ADB's Private Sector Operations Department.

The result of this dynamic partnership has been reliable, convenient access to safe drinking water for millions of people. The project is expected to benefit at least 5 million people in the target small and medium-sized cities. Already, people in areas served by improved water systems are

continued on page 9

Energizing green cities: Solutions to meet demand and spark economic growth

Cities in Southeast Asia (SEA) are growing twice as fast as the rest of the world and by 2030, it is expected that 70 percent of SEA population will live in cities. Worldwide, cities account for around two-thirds of global energy demand and greenhouse gas (GHG) emissions. While cities have always been the engines of economic growth, now they also hold the key to a sustainable development in SEA. Given their size and dynamic growth, SEA cities today have a unique opportunity to also become global engines of green growth by choosing energy-efficient solutions for their infrastructure needs.

Improving energy efficiency isn't just good for the environment; it's good for economic growth, says a World Bank report, "Energizing Green Cities in Southeast Asia – Applying Sustainable Urban Energy and Emissions Planning." According to the report, there is a clear correlation between investments in energy efficient solutions in infrastructure and economic growth, based on a study of three cities – Da Nang in Vietnam, Surabaya in Indonesia and Cebu City in the Philippines. By improving energy efficiency and reducing GHG emissions, cities not only help the global environment, but they also support local economic development through productivity gains, reduced pollution, and more efficient use of resources.

In Da Nang, the city's development plan has sustainability and efficient resource use at its core. The city is also pursuing a wastewater management strategy, an energy efficiency and conservation program, and looking at ways to use renewable energy technologies and public transport development. Surabaya is developing plans for a mass transportation system and looking at ways to harness energy from landfills. In Cebu City, the city government is cutting fuel use in the transportation sector by 15 percent simply by using an ethanol additive in its motorized vehicle fleet. The city has also worked to improve the energy performance of city buildings by using more efficient lighting technologies and smarter air conditioning schedules. To improve household efficiency the city has partnered with a paint company to provide homeowners with materials to create "cool roofs" for their homes.

> "Improving energy efficiency isn't just good for the environment; it's good for economic growth." -*World Bank*

While these Southeast Asian cities are making inroads towards greater energy efficiency, planning for a more energy efficient development path is by no means easy. Cities face a number of hurdles including lack of coordination and planning across agencies and sectors and lack of technical know-how and funding, just to name a few.

Sustainable Urban Energy and Emissions Planning or SUEEP can help cities get on the green growth path by facilitating the development of comprehensive urban energy policies and investment strategies to enhance energy efficiency. The SUEEP framework helps identify the principle energy and emissions issues a city faces; establish a road map for city government to maximize energy efficiency outcomes; integrate energy efficiency into wider city planning processes; coordinate across sectors to prevent duplication or conflicts (for example in land use planning and transportation development planning); work with stakeholders; and establish the monitoring and reporting processes that are essential for good management of energy and are prerequisites for attracting financing.

Applying the SUEEP process helps city leaders evaluate potential infrastructure investments comprehensively across sectors and against financial, social and environmental returns. The result of this assessment and analysis is a well-defined high-quality pipeline of bankable green investment that can be readily presented to potential investors and financiers.

Decisions made today will define the region's energy use and its greenhouse gas footprint well into the future. Given the scale of energy demand and emissions growth in East Asian cities, city governments' decisions to enhance energy efficiency not only contribute to their economic development, but also bring benefits beyond the region.

Cities can improve energy efficiency to increase investments, jobs creation and productivity improvements, all of which generate economic growth. So cities can pursue resource efficient, cleaner and more resilient growth path and still be engines of growth. ■

World Bank Feature Story

Bringing clean... from page 8

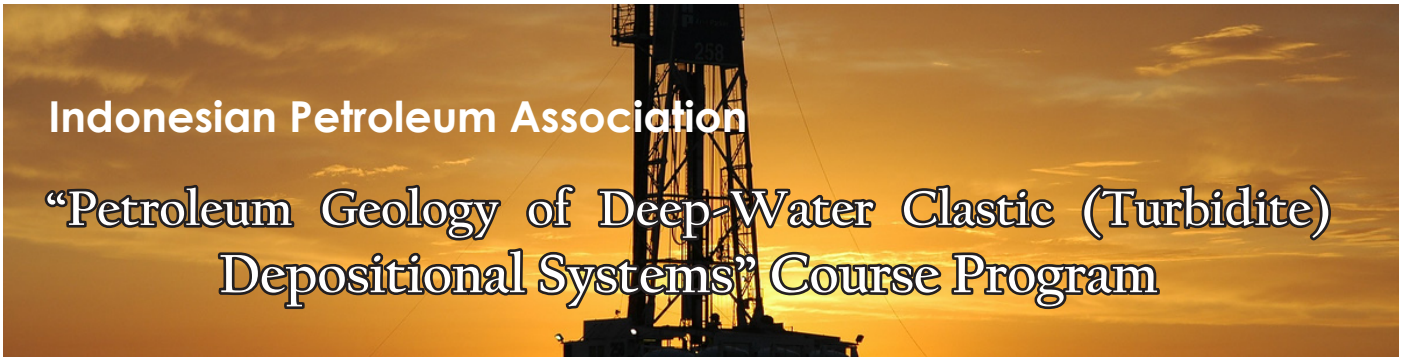
getting sick less often and are saving money, because they no longer have to buy bottled water.

Eliminating water outages and having steady water pressure improved the delivery of public services by hospitals and schools as well as commercial services. The project is also helping conserve water, one of the most precious resources in the PRC's booming economy.

By 2015, the project is expected to deliver at least 2 million cubic meters of water per day and cut wastage by about 40%.

This article is an excerpt from a longer piece originally published in Together We Deliver, a publication highlighting successful ADB projects across Asia and the Pacific that demonstrated development impacts, best practice, and innovation. ■

ADB Feature Story



Indonesian Petroleum Association

"Petroleum Geology of Deep-Water Clastic (Turbidite) Depositional Systems" Course Program

The Indonesian Petroleum Association (IPA) held the "Petroleum Geology of Deep-Water Clastic (Turbidite) Depositional Systems" course program on June 16-20 at the Novotel Bali Nusa Dua, Bali Indonesia.

Dr. David Pyles, currently a research professor and director of the Chevron Center of Research Excellence at the Colorado School of Mines will be the instructor.

Introduction to the Course Program

The significance of deep-water deposits to global oil and gas exploration and production was presented along with the unique business challenges posed by these giant reservoirs. Distinction is made between the engineering and geological definitions of 'deep-water'. The major global areas of deep-water interest were provided along with current exploration and production statistics. Key issues related to exploration and development were introduced and were addressed during the course. The principle deep-water reservoir types were outlined, along with reservoir characteristics and recognition criterion.

Deep-Water Sediment-Transport Processes and Products

Debate on the origin of deep-water deposits over the past few years has generated significant new research that has shed considerable light on the spectrum of transport and depositional processes, and their resulting deposits. The various processes by which sediment is transported to, and deposited in deep-water settings was discussed from the perspective of historical concepts, outcrop studies, and experimental modeling. Exercises focus on the recognition criterion for sediment gravity-flow processes and products (from core and outcrop images) and how depositional processes relate to porosity and permeability.

Introduction to Deep-Water Architectural Elements

The key deepwater architectural elements of deep-water depositional systems were introduced (submarine channels, levees, lobes, mass transport deposits). Exercises focused on the recognition criterion of each architectural element using (e.g. outcrop photographs, core, borehole image logs, dipmeter logs, gamma and resistivity). The importance of being able to identify the different elements was stressed within the context of variations in volumetrics, continuity of sandstone beds and reservoir performance.

Reservoir Types

Four deep-water reservoir types were documented: (1) confined channel systems, (2) weakly confined channel systems, and (3) unconfined distributary channel-lobe systems. Each is distinctive in terms of its position on the slope-to-basin profile and the distributions of architectural elements within them. Exercises and case studies focused on: (1) subsurface examples of each reservoir type; (2) recognition criterion of each using subsurface data including seismic images, well logs and borehole images; and (3) reservoir volumetrics, heterogeneity, connectivity and continuity.

Sequence stratigraphy; tectonics-sedimentation, condensed sections

Large-scale statigraphic stacking patterns result from the interplay of changes in eustacy, tectonics, and sediment supply. Principles of sequence statigraphy of deep-water deposits were outlined, and the timing and spatial location of deposition of different deep-water reservoir types are discussed. Identification and significance of condensed sections within deep-water strata are mentioned. Seismic and well log exercises were presented to instill these principles and sharpen one's ability to document sequence boundaries and systems tracts in deepwater settings.

High frequency biostratigraphy

The importance of developing a biostratigraphic framework for exploration was discussed, and some long-distance biostratigraphic correlation techniques were presented. An exercise was provided to illustrate the significance of high frequency biostratigraphy to correlations within a reservoir.

Trap Types and Tectono-Stratigraphic Settings

A brief summary of the occurrence of structural, stratigraphic, and combination traps was presented, along with a general outline of the variability of deep-water deposits related to tectono-stratigraphic settings. Exercises focused on interpreting trap styles from seismic images.

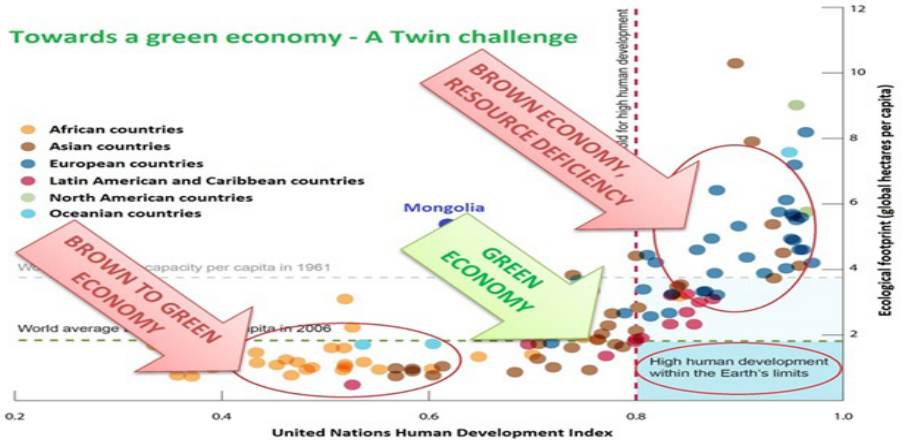
Participants

The program was intended for exploration and production geologists, geophysicists, and engineers who are beginning deep-water work and/ or who are seeking the latest information on deep-water depositional systems, their exploration potential, reservoir architecture, and production characteristics.

For more detailed information on the program, please contact the IPA Secretariat at 62-21 515-5959 or email:
Anna.Sulistiyaningsih@ipa.or.id
Nevi.Septianti@ipa.or.id
Maydy.Rahmadani@ipa.or.id ■

From "Brown" to "Green" Economy: "5x20" Program Initiative

The National Program on Climate change which was adopted by the Mongolian Parliament in 2011, states that,



• Greenhouse gas emission is 7.5 t CO2-eq/ml. $ GDP, which is 10 times higher than the world average (UNDP Asia –Pacific Human Development Report One Planet to Share)
• Energy intensity is 7 times higher than world average (3.04 kg.coal eq./$ vs 0.39 kg c.e./$), (UNIDO 2011)
• The renewable energy sources count only 4.52 % of total installed energy capacity and the 95.48% is the coal burning power stations.

The industrialization program and the rapid growth of the mining sector announced by the Mongolian Government as priorities for economic development, will potentially lead to more environmental degradation and pollution.

Therefore with the aim to ensure low-carbon economic growth model, reducing vulnerability and risks of eco systems, the Mongolian National Chamber of Commerce and Industry (MNCCI) is carrying out nationwide green activities in different sectors of the economy including "5x20" Program initiative. The program is a strategy for Mongolia to transform from "Brown to Green Economy".

The "5x20" initiative lists five targets for the Mongolian economy to reach by 2020:
• Decrease greenhouse gas emissions by 20% per unit of GDP;
• Increase energy efficient by 20%;
• Increase renewable energy sources up to 20% of total installed capacity;
• Increase investment in natural capital by 20%; and
• Increase "Green procurement" up to 20% of government and local government' procurement

There are six strategic objectives under the planning order to reach the above targets, which are:
•Move to low-carbon development model
•Develop resource efficient, pollution preventing sustainable production and consumption patterns
•Renovation of wealth distribution, investment to move for investment in natural capital
•To instill a green lifestyle
•Establish eco-efficiency tools and indicators for measuring greening of economy.
•Development of green financing mechanism.

The strategy calls for not less than 2% of GDP in Green investment every year. The first three years from 2013 to 2015 should be the transition period from brown to green economy, while 2016-2020 will be the stage for sustaining and developing a low-carbon green growth model. *Contributed by the Mongolian National Chamber of Commerce and Industry (MNCCI).*

About CACCI

Established in 1966, the Confederation of Asia-Pacific Chambers of Commerce and Industry (CACCI) (www.cacci.org.tw) is a regional grouping of apex national chambers of commerce and industry, business associations and business enterprises from 26 Asian countries.

About ACWEE

Organized under the CACCI umbrella, the Asian Council on Water, Energy and Environment (ACWEE) aims to serve as a grassroots vehicle for encouraging a regular exchange of information and promoting regional cooperation among businessmen in the water, energy and environment sector and help contribute to the economic development of the region as a whole.

Prospects for Regional Energy Cooperation: SAARC Case

By Gyanendra Lal Pradhan
Chairman, SAARC CCI Council on Climate Change, Energy and Water Resources

The SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION (SAARC) – an economic and political organization of eight countries in Southern Asia – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal Pakistan and Sir Lanka – is home to more than 1.5 billion people and with a grand vibrant economy. Enhancement of trade and investment are inevitable for economic integration among the SAARC members, where enormous potential already exists in areas of trade, investment, natural resources and services for the prosperity in the region. The biological, physical and cultural diversity makes SAARC the most fascinating tourist destination/Zone in the world.

As the climate changes, and in the context of rapid demographic growth in the region, the importance of clean renewable power and clean water in the coming 10-30 years will be immense in the future (both at the domestic and regional front) which would need augmentation of the storage capacity for the available clean water. Clean water has already become a scarce resource in the region. The projected water scarcity by 2025 is very daunting and needs a serious thought.

As FAO has already prognosised that there is a serious risk of water becoming a casus belli in some of the arid parts of the world as populations expand, economies grow, and the competition for limited water supplies intensifies. SAARC is no different.

South Asia, endowed with the world's greatest water towers and with its resplendent biological diversity, has unimaginable potential for Asia's food and water security if it is effectively mobilized and used. For example, glaciers of the Himalaya Mountain Range are an enormous reservoir of fresh water and their melt water is an important resource for much of SAARC region. Due to global warming the storage capacity of clean water needs to be augmented. Let alone the cumulative potential of the SAARC Countries, Nepal alone has a storage capacity of over 140 bil. m3.

If 'health for all' and 'education for all' are valid approaches to striking at the root causes of poverty so also we need, as SAARC, seek 'electricity for all' and 'sanitation and irrigation for all' as well as 'drinking water for all' by 2020. None of this can be imagined without electricity. And energy is the underbelly of SAARC progress with lack of water a real threat to regional peace and security. Energy is a top priority, and no economy can grow to their full strength due to lack of substantial energy resources. The region is immensely rich with this natural gift, ***continued on page 13***

Prospects... ***from page 12***

with Nepal's clean water and renewable hydropower energy potential alone being adequate to meet the regional water and energy demand.

About 84% of hydro under construction is in Asia (mainly in China, Vietnam) but this does not lend enough reasons for the SAARC countries to be happy about. Energy per capita is low in the countries where energy is surplus. For a two digit growth economies like India, the energy needs are ever increasingand a substantial hefty amount of national resources is used to buy energy and fuels from the Gulf countries making domestic energy very expensive. Presently, energy crisis has been a major problem faced by the SAARC countries. As per a tentative calculation, 10,000 MW of electricity generated can stop ~2.5 billion dollar equivalent of oil import in the country. If we analyse the hydro potential of three countries- Nepal, India and Bhutan, 4 lakh MW of commercially viable energy can be generated. With this generation capacity, every year, 100 billion dollar worth of oil import can be restricted, immensely helping the domestic as well as the regional economy to thrive and grow.

The increased rate of deforestation in the SAARC region is also attributed to no increased use of environment friendly compatible clean sustainable renewable form of energy like hydropower thereby resulting to serious environmental degradation and unsustainable practices.

A substantial amount of water during the flood months in the SAARC Countries goes into the sea, gets polluted and remain unused.

If this water is properly stored and used during the dry season when the water level recedes considerably due to low water flow, water can be significantly regulated to increase dry production. This is also associated with other multiple benefits, such as flood control in the country and adjoining states, increased regulated flow facilitating navigation and increased area under irrigation in lean season that open up the possibility of ushering in a new cycle of economic growth in the poverty stricken areas of the neighboring basins. For example, Nepal by using its storage capacity to contain glacial melt water due to Global warming can help in flood control in Bangladesh.

Nepal needs a special mention here. In the area of regional clean – water supply and hydropower energy Nepal is the only potent place where the storage capacity of the clean water can be affectively augmented. Nepal is immensely rich in hydropower with annual 224 billion cubic meter of surface run – off and over 20,000 liters of water available to a person per day. As per Hydro Solutions' estimate, the total hydropower potential of Nepal stands at around 200,000 MW against the popularly assumed figure of 83,000MW. With more than 6000 rivers and rivulets, around one million GW hour of electricity can be generated. This potential is adequate to meet the total domestic and part of the regional energy demands for many years. Nepal- the fourth richest hydroelectric rich country in the world and the second in Asia after China is golden investment gateway to enter the huge energy craving and emerging power market with the highest market price.

As energy is a prime mover of almost all economic and technological advancement, and water and energy security a strategic challenge in the SAARC region, to help realize the full potential of SAARC in the Water and energy security theme, there is a need to seriously discuss and advocate for issues related to energy security and the imminent agenda for increased use of clean sustainable renewable form of energy, now made even important due to the global warming menace.

SAARC should therefore dialogue to enhance, preserve and protect environmental, energy and water security to all through regional cooperation and integration. It should promote and address South Asia's collective water security interests by adopting a common position in promoting the development of hydropower and clean sustainable renewable form of energy in view of the ecological unity of South Asia as one region bound by one civilization facing akin problems. ■