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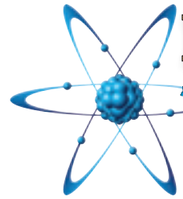
COVER STORY



Nanotechnology in Asia

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GROWING NANOTECH SECTOR IN ASIA-PACIFIC REGION

High-resolution 3D computer rendering of Fullerene (C60), a spherical molecule
Eugen Andreiadis | Dreamstime.com

BY ANURADHA SHUKLA

In the 20th Century, the West was at the forefront of scientific breakthroughs, innovations and inventions that have helped sh ape the world we live in today.

The Asia-Pacific region now seeks to become a major player in this regard.

The immense growth in the region can be attributed to state of the art research institutes as well as world-class graduates - all out to cater to the demands of the technology-hungry populace.

And they are hungry for more.

One of the emerging technologies making waves in the Asia-Pacific region is nanotechnology and is considered as the next big thing that would spur further economic development for the region at hyperbolic speeds. Experts have pointed to this technology as vital to the economic success of the region and countries within this area should invest well in manpower, research and infrastructure to get the most from this technology.

What are It's Benefits?

Contrary to what many people may think, nanotech is not a new technology, but was conceptualized as early as 1959, although global focus started in the 1980s when the European Union started its aggressive pursuit and heavy investment in the research and development of nanomaterials. The United States eventually followed suit.

So, what is nanotech and why are economies in the West and the Asia-Pacific heavily investing in this field. Nanotechnology focuses on controlling matter on a molecular or nanoscale level. The term "nano" means one billionth, so a nanometer means one billionth of a meter. In relative terms, a nanometer is smaller than the wavelength of visible light and if you try to measure it against a human hair, a nanometer would be no larger than a hundred-thousandth of it.

Going down to this molecular level, nanotechnology provides more precise and controlled manipulation or assembly of various atoms and molecules resulting in unique materials with properties that were previously unattainable using standard means. Products and materials produced through nanotech are lighter, cleaner, stronger, more precise, smaller, thinner and less expensive. Such materials can find several applications for consumer, industrial and military use – from sunscreen, cosmetics, guitar strings, manufacturing machines, monitoring devices and protective coatings for military vehicles.

COVER STORY

The emergence of nanotech, particularly in the Asia-Pacific region, allows the further development and advances in various technologies and industries that were previously stagnated or cut short due to limitations in existing materials manufactured through conventional means. The precise control and molecular manipulation presented by nanotechnologies has created new and exciting materials that will bring several industries in the Asia-Pacific region to the next level.

Emerging Nanotechnologies in Asia-Pacific

The development of nanotechnologies in the Asia-Pacific region has grown tremendously during the last couple of years and has come head-to-head with recent developments in the field from Western countries. Nanotechnology has a very wide reach and can be applied in various fields and areas of studies: from pharmaceuticals to biotechnology and from infrastructure construction to military use.

Various economies in the region have invested heavily in nanotech development and would continue to do so in the next several years to ensure economic sustainability and stability in the region. One example is the BASF nanotechnology research center located in Singapore, manned by staff of scientists and technicians all dedicated to the research and development of nanotechnology. The company is known to have several development facilities in the Asia-Pacific region but this is the first time that a new facility will be focused only in nanotechnology, backed by funding and capital expenditures of over 13 million euros.

Some of the latest trends in the development of nanotech include the use of nanotech developed paint that can extend the life and change the way railway coaches in India will look. What makes this paint unique from conventional materials is that its nanotech-developed molecular structure makes it more durable from corrosion. Nanotechnology allows minimal gaps in between the molecules of the paint's nano particles, making them structurally defect-free as well as a more robust finished surface, making it more durable and reliable in performance. Aside from that, the superior adhesion of the nano paints to the surface of walls,, makes them more resistant and durable against dirt, fungi, blistering and ultraviolet rays.

The use of nanotechnologies also improved the processes and equipment of manufacturing plants and facilities, just like the resin materials filled with non-crystalline nanoparticles used to create injection moulding and stereolithography tools and inserts. The material is ceramic like when cured but the intrinsic material properties are much more superior than conventional materials used for these toolings. These make the material suitable for use in rapid precision prototyping requirements for both thermoplastic and cast metal parts and components including thermoplastic elastomers, ABS, glass-filled nylo, high-impact polysterene, polypropylene, polyethylene and polypropylene.

Nanotechnology can also be used to produce composite materials that can create parts and components that have the same characteristics and even better durability than die cast components - only at a fraction of the cost. Components made from these materials have already been developed and tested successfully and will soon be commercialized.

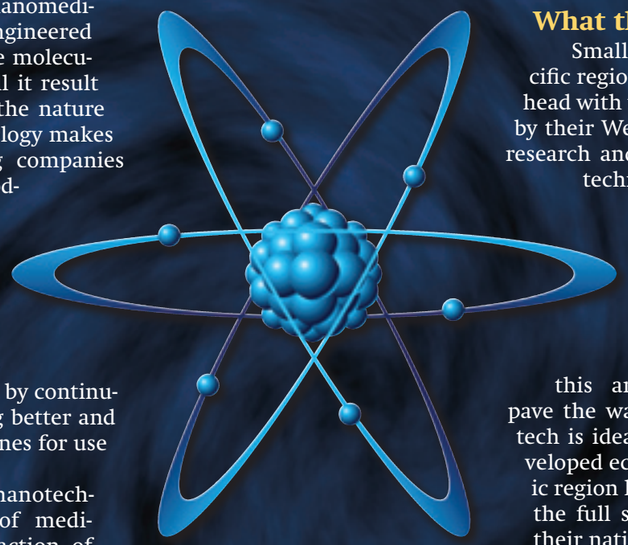
Applications of nanotechnology in the medicine and the pharmaceutical field are promising. But the nature of how nanomedicine is produced poses a different kind of

Going down to this molecular level, nanotechnology provides more precise and controlled manipulation or assembly of various atoms and molecules resulting in unique materials with properties that were previously unattainable using standard means.

The forecast for nanotech products is very promising indeed, with turnover rates expected to hit the $1.5 trillion mark by the year 2015 with an annual growth of over 30.6 percent.

challenge for the industry.

Each molecule in nanomedicine is designed and engineered according to its minute molecular detail. Not only will it result in shorter life cycles, the nature of the assembly technology makes it easy for competing companies to create better products with additional characteristics and features that could enhance the nanomedicine's benefits. However, such predicament can be countered by continuous education, creating better and more beneficial medicines for use by the populace.



Other advances in nanotechnology in the field of medicine include the extraction of naturally-occurring substances to be used as an alternative for chemical-based medications. One such example is the extraction and administration using nanotech of the highly lethal venom produced by cone snails in coastal waters near coral reefs. This venom can be used as a safe and even better alternative to medications based on morphine that is both harmful and addictive.

The development of nanotech materials has improved the construction of tools and equipments that can be used by disease researchers paving new avenues for better treatment technologies as well as cancer therapies. Researchers are able to use enhanced and more powerful electron microscopes that can accurately pinpoint cancer cells without the risk of damaging healthy cells. These equipments can also be used to study other diseases more in depth such as Alzheimer's and other debilitating diseases.

The military in the Asia-Pacific region is also dipping into the benefits and advances of this technology.

The Indian Army is looking at nanotechnology to develop defense-related products such as micro audio bugs and video surveillance devices in its bid to combat terrorists. These products would also be used to develop more superior nano security devices for military, commercial and private use.

What the Future Holds

Small economies in the Asia-Pacific region cannot compete head to head with the investments poured in by their Western counterparts in the research and development of various technologies and industries. This is why such economies should focus on investing their limited resources to technologies that would result in superb economic returns, and in this area nanotechnology can pave the way. Development in nanotech is ideal for smaller and less developed economies in the Asia-Pacific region however; it should include the full support and assistance by their national governments.

Nanotechnology is so diverse that it can spur next-level developments in the fields of communications, energy production, health care, manufacturing and defense – all areas needed by small and developing economies in the Asia-Pacific region. The introduction of nanotechnologies in these fields will not only revolutionize various systems but will ensure economic stability for the nation in the long run.

The forecast for nanotech products is very promising indeed, with turnover rates expected to hit the $1.5 trillion mark by the year 2015 with an annual growth of over 30.6 percent. Governments in the Western world have poured in billions in investments in nanotechnology, and this is matched by their Asia-Pacific counterparts such as Japan, Taiwan, Korea and Singapore. However, the focus in the Asia-Pacific is leaning towards nanotech research in the electronics field, which has far more economically viable output products for practical use. A-P

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Amnesty International Condemns N. Korean Rights Violations

Protesters attend Anti-North Korea protest in downtow Seoul, South Korea — warpress@dreamstime.com

BY DONALD KIRK

A devastating report by Amnesty International exposes the horrors of medical care for North Korea's 24 million people on top of all the gnawing hunger and malnutrition that are central to their lives.

While the North Korean government maintains that it's committed to "providing for the basic needs of its people and satisfying their right to food and a proper standard of health," says the report, testimonies of those interviewed "suggest otherwise." North Koreans "suffer significant deprivation in their enjoyment of the right to adequate health care," the report goes on, blaming "failed or counterproductive government policies" for "systematic failure to provide sufficient resources for basic health care." One shocking statistic is that the North spends an average of $1 a year per capita on health care – "one of the lowest levels" recorded by the World Health Organization.

Amnesty documents how widespread and chronic malnutrition, by suppressing the immune system, has triggered epidemics and mass outbreaks of illnesses related to poor diet. The interviews cited in the report "depict a country that professes to have a universal health care system, but in reality struggles to provide even the most basic service to the population." Typically, hospitals and clinics operate "with frequent power cuts and no heat," the report reveals, while medical workers "often do not receive salaries, and many hospitals function without medicines and other essentials." In a society where health care is meant to be entirely free of charge, doctors "have begun charging for their services." Thus "the poor cannot access full medical care, especially medicines and surgery" despite empty promises of universal health care.

The North Korean government, Amnesty charges, "has also failed its obligation to provide adequate public health information" so most people are "unaware of the importance of seeking proper medical diagnoses or completing a course of medication. " And, since "many hospitals no longer supply free services or medicines," says the report, "many people normally do not visit doctors even when they are ill."

Amnesty makes a number of specific recommendations beginning with the plea for the North Korean government, "as a matter of priority, ensure that food shortages are acknowledged and effective steps taken to address these shortages, including acceptance of needed international humanitarian assistance." Amnesty also calls on North Korea to "ensure the need-based and equitable distribution of health facilities, goods and services throughout the country;" to "cooperate with the World Food Program and donors," to "allow unrestricted access to independent monitors, and ensure non-discrimination, transparency and openness in the distribution of food aid," to "ensure that medical personnel are paid adequately and regularly so that they may carry out their duties properly," to "undertake information and education campaigns to provide accurate and comprehensive information on prevalent infections and diseases, their causes, symptoms and treatment; and the importance of medical diagnosis and effective use of medicines."

Moreover, Amnesty "recommends to the international community, and in particular, major donors and neighboring countries such as China, Japan, Russian Federation, South Korea and the U.S. to ensure that the provision of humanitarian assistance in North Korea is based on need and is not subject to political conditions." That plea seems particularly timely in a period in which the major powers with the most to do with the Korean Peninsula have had quite different responses to the sense of rising confrontation in the aftermath of the sinking of the South Korean navy corvette the Cheonan with a loss of 46 lives in March.

The bottom line, however, is that no one seems willing to pour in the aid needed to meet North Korea's needs. North Korea's ally and benefactor, China, has provided far more than any other country, but the World Food Program paints a bleak picture of the North's outlook. The Amnesty report notes that the World Food Program, in its 2010 plan to assist 6.2 million North Koreans, "was only able to raise 10 to 15 per cent of the funds "covering merely 1.5 million people."

The assessment by the World Food Program belies the victorious tone of North Korean rhetoric since the United Nations Security Council issued a watered-down statement that avoided holding the North responsible for the torpedo attack on the Cheonan in disputed waters in the Yellow Sea.

One shocking statistic is that the North spends an average of $1 a year per capita on health care – "one of the lowest levels" recorded by the World Health Organization.

"The progressive improvement in food security" in the first half of this decade "has been reversed in recent years," says the World Food Program, as quoted by Amnesty, "and the country's reliance on external food supplies is again increasing."

As evidence of the North's dire straits, Amnesty cites a report by the Korea Rural Economic Institute, a South Korean research group, that found that " due to bad weather and lack of fertilizer, North Korea's estimated shortfall" for 2010 is 1.29 million tons of grain, "equivalent to nearly four months of food supply." The U.N. special rapporteur on the human rights in North Korea, says Amnesty, has said that "potential donors resisted contributions out of concern that the aid would not reach those most in need."

Despite all the publicity surrounding the Amnesty report, North Korea has shown no signs of acknowledging it, much less acting on any of it. Thus the fear persists that North Korea, behind brave blasts of bombast and bluster, is now on the verge of its worst famine since the mid-1990s when 2 million people are believed to have died of starvation and disease. "Food shortages and a more general economic crisis have persisted to this day," according to the report. The North's "delayed and inadequate response to the food crisis has significantly affected people's health."

The question, as always, is where to find the food, and one answer, as far as North Korea is concerned, is to undo some of the damage done by the cutoff of trade and aid from South Korea, from U.N. sanctions imposed after the long-range missile and nuclear tests of 2007 – and, above all, to get the nations in the six-party talks to approve a tremendous aid package in return for another promise to stop the nuclear program.

Recovering the ground lost over the past year or two of worsening recriminations will be difficult, but the Amnesty report, focusing on "the crumbling state of health care in North Korea," offers dramatic proof of why and how North Korea has again plunged into such a desperate condition.

"The government has resolutely maintained that it is committed to, and capable of, providing for the basic needs of its people and satisfying their right to food and a proper standard of health," according to the report, finding that "food insecurity remains a critical concern for millions of North Koreans." The problem is exacerbated, the report alleges, "by the government's reluctance to seek international cooperation and assistance" and "its restrictions on the delivery of humanitarian assistance."

The Amnesty report confirms and synthesizes the horrifying evidence of dozens of North Korean defectors as well as the sensational revelations of Dr. Norbert Vollertsen, a German doctor who worked in North Korea for more than a year in the late 1990s before the North Koreans expelled him. Vollertsen, now back in Germany, crusaded for years in South Korea on the topic of North Korean abuses, citing extreme shortages of medicine and unspeakably cruel treatments in hospitals and clinics.

Against this background, North Korea by now would like to return to six-party talks on abandoning its nuclear program in hopes of a deal that would include a huge aid package for giving up its nuclear weapons. More immediately, North Korea would also like somehow to persuade South Korea to resume trade and aid and to get the U.N. Security Council to do away with sanctions imposed after its second nuclear test in May of last year. At the same time, North Korea's goals remains where they have always been – to replace the Korean War armistice with a peace treaty, to call for a peace regime over the Korean Peninsula and withdrawal of U.S. troops and to press for denuclearization of the entire peninsula without actually giving up its nukes.

Difficult though it may be for

Continued on Page 33

A Peek Into Kim Jong-il's Piggy Bank

BY LEE JONG-HEON

Dictators have one thing in common: They rig their economies to funnel profits into regime hands, some of which are stashed in secret bank accounts overseas.

They accumulate the slush funds to maintain power and spend on luxuries. Ferdinand Marcos of the Philippines stashed $624 million in Swiss accounts, and Slobodan Milosevic of Yugoslavia reportedly had $3 million in a secret Swiss account.

North Korean leader Kim Jong-il may rank as the world's worst, with $4 billion stashed away in secret bank accounts in Switzerland, Luxembourg and Liechtenstein. Kim is a true entrepreneur in the fields of illicit arms trading, currency counterfeiting, cigarette smuggling and the smuggling of anything that can be smuggled.Kim, who rules the hermit kingdom on the basis of a strong personality cult, has used the funds to finance his lavish lifestyle and buy the loyalty of high-ranking officials.

North Korea is estimated to have imported more than $100 million worth of high-quality liquor, cars and other luxury goods in 2008 alone for personal consumption for Kim and his loyalists, according to South Korea's largest newspaper the Chosun Ilbo. Last April, the deeply impoverished state imported 200 high-end cars from China, worth $5 million, most likely for Kim to give to his loyal officials.

Office 39 (also known as Room 39 or Bureau 39) of the ruling Workers' Party is the nerve center of country's slush fund-raising operations. Established in 1974, Office 39 has been in charge of national efforts to raise private funds for Kim's family through business ventures.

It has been involved in some legitimate business, such as exports of sand, fish, mushrooms and natural resources. But most of its profits come from illicit activities, including the sale of arms, narcotics, and tobacco as well as counterfeit $100 "supernotes." That's why Office 39 is described as the headquarters of a worldwide criminal enterprise that is owned, overseen and operated by Kim's regime.

Office 39 oversees 120 trade firms, banks and mines with 17 offices in foreign nations, such as Macao, Beijing, Hong Kong and Singapore.

Daesong Bank, which received money from South Korea for a joint tour program, is also controlled by Office 39. It earned $538 million in cash from the joint tour program to Mount Geumgang over the past decade.

Office 39 earns about $200 to 300 million every year, accounting for 20-30 percent of North Korea's total trade, which stood at just $1.06 billion in 2009, according to Seoul's intelligence sources and the Central Bank of Korea. A 2007 report published by the Millennium Project of the World Federation of United Nations Associations said North Korea makes an estimated $500 million to $1 billion annually from criminal enterprises.

Kim Kwang-jin, who had worked at North Korea's bank before defecting to Seoul, said Kim Jong-il has $2 billion stashed in secret bank accounts overseas and another $2 billion elsewhere. South Korea's spy agency estimates Kim's offshore funds at $4 billion.

"Overseas banks have been used as a conduit for slush funds for the North Korean leader," Kim said.

Last year, Office 39 absorbed Office 38 that runs hotels, shops and restaurants for foreigners in an apparent move to expand ruling funds for Kim, and Chun Jon-il, Kim's highschool classmate and one of Kim's closet aides, has been named to head the expanded Office 39. A-P

Sanctions Starve N. Korean Chain of Restaurants

BY BRYAN KAY

It is the shady money-making arm of the North Korean government – reportedly dealing in such illicit trade as the manufacture and trafficking of drugs such as heroin, the peddling of fake U.S. dollars and the sale of arms.

Known as Bureau 39, once described as leader Kim Jong-il's personal slush fund, and part of the North Korean Workers Party, it could feel the brunt of any damaging effects wrought by the stiffer U.S. sanctions unveiled in the late summer.

But one of the spidery network's more legitimate front ventures, an incongruous restaurant chain that until recent times boasted branches across large chunks of Asia, faces an uncertain fate of a different kind – and could fall victim to the tougher economic sanctions.

The Pyongyang group of eateries boasts known spots in Phnom Penh, Cambodia, Chinese capital Beijing, Kathmandu, the capital of Nepal, and Vientiane in Laos, though there could be as many as 100 North Korea-themed restaurants across the region, according to some reports – how many are controlled by the government remains unclear.

For a country obsessed with self-reliance and secrecy, it is a capitalist endeavor that offers a seldom available glimpse behind its tightly shut off borders.

Serving such delicacies as dog meat (dangogi), cold buckwheat noodle soup (naengmyeon) and ubiquitous Korean favorite kimchi (pickled cabbage), they have attracted an eclectic clientele including South Korean tourists, Chinese businessmen and, to a lesser extent, curious westerners. Diners are served by pretty North Korean waitresses who can sing and dance – with some even said to speak English.

However, the North's alliance with culinary capitalism overseas appears to be foundering. It has emerged that since the collapse of the global economy, the chain has started to feel the pinch. The restaurants – at one time confined to the regions of China that hug the North Korean border – grew out of a cash crisis in the early 1990s when the North's communist allies, Russia and China, started to demand payment for goods in cash rather than through barter, say experts. As the regime grew more desperate for cash, they spread into Southeast Asia and other parts of the continent, the first in Siem Reap, Cambodia, in 2002.

With the global downturn biting, some have already shut down, says Bertil Lintner, the Bangkok-based author of "Great Leader, Dear Leader: Demystifying North Korea Under the Kim Clan."

"Several have been closed down including those in Thailand," he explained. While some remain open, he said, "generally speaking, it seems that North Korea's idea of running restaurants in Southeast Asia and elsewhere is on the wane."

But there is another threat. In early August, it emerged that a trio of key North Korean figures and other entities connected to the Pyongyang regime were set to be blacklisted as part of efforts to punish the country for the sinking of a South Korean warship and to coax it back to denuclearization talks.

As Washington tightened the screw, companies or individuals involved in illicit activities with the North faced having their assets frozen, while third countries were to be prohibited from dealing with them.

As news of the sanctions broke, South Korean newspaper the JoongAng Daily said interest was intensifying among local experts about whether the US sanctions would put a squeeze on Bureau 39 and Kim's estimated $4 billion in overseas funds.

Though the restaurant chain had yet to be fingered as a target, the fact it has been linked to alleged money laundering activities in the past could spell trouble.

Like other North Korean front companies, Pyongyang is controlled by Bureau 39. Lintner says there have been rumors the chain has been used to clean the regime's ill-gotten gains.

"Restaurants and other cash-intensive enterprises are commonly used as conduits for wads of bills, which banks otherwise would not accept as deposits," he wrote in a commentary last year.

The Daily NK, a Seoul-based online newspaper focused on the North, reported in 2007 that the restaurants must send home between $10,000 and $30,000.

An April report by the U.S. Army War College's Strategic Studies Institute described how North Korea uses "criminal sovereignty" to protect itself

Continued on Page 24

It's More Than Asia's Biggest Slum - It's Home

BY JAI CS

Dharavi is one of the largest slums in Asia, located in the suburbs of Mumbai, India, surrounded by Sion, Bandra, Kurla, and Kalina. Some call this place a shanty town; others see entrepreneurial business opportunities. Still, others believe that there is a hidden irony that depicts the life of people living in informal housing; a sort of perseverance, combating resilience.

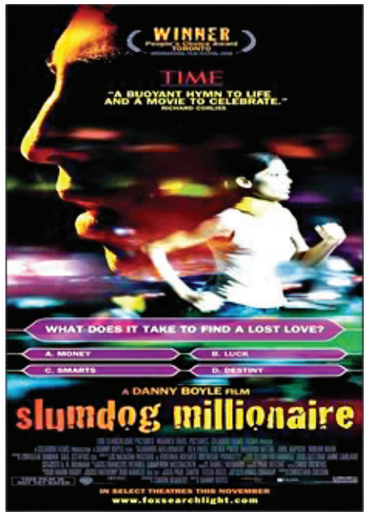
However it is described today, the fact is that it is home for people who live here.

Hottest real estate in Mumbai

Dharavi, made famous by Oscar-winning film "Slumdog Millionaire," is home to an estimated 700,000 people living on just 551 acres. Positioned between the city's two main suburban railway lines and the one connecting the eastern and western parts of the city, Dharavi is believed to have great economic value with heavy pressure to free up the land for commercial developments.

Till late 19th century, Dharavi was a mangrove swamp, mostly occupied by fishermen who belong to the family of Koli. Later, when Kolis were deprived of their fishing grounds, the place started becoming residents for others too. The Kumbhars came from Gujarat moved in to establish their skill. Tamilians arrived from the southern part of India and implemented their tannery business. Several hundreds of people traveled from Uttar Pradesh to establish their talents in the booming textile industry.

Life in Dharavi never sleeps. People who live here are fighting for a chance and fate. Studies have shown that it is not merely a residential colony; it is an economic hub representing the city's enormous informal sector. Recycling, leather tanneries, metal work, woodwork, machinery manufacturing, printing, garment finishing factories, food production, and other small scale factories, everything happens here. Even garbage is turned into a economic item.



Dharavi, made famous by Oscar-winning film "Slumdog Millionaire," is home to an estimated 700,000 people living on just 551 acres.

The subject of a Harvard Business School case study, Dharavi is fighting to retain its look as there is an ongoing effort for redevelopment. "The basic idea is that the slum dwellers are living on very valuable land in one or two-story shacks. If you build multi-story buildings, you can give them accommodation and still have space to sell, so that it will be a for-profit project," said Lakshmi Iyer, assistant profession at HBS India Research said.

However, the slum is now seen as a place where there is inadequate access to safe water and sanitation, badly constructed housing, overcrowding and insecure residential status.

Despite Mumbai efforts to redevelop this plot of land, including the Dharavi Redevelopment Project, Dharavi will remain as it is form some time to come.

Nobody knows what is in store for the people here, but it's only a matter of time before this place is designated a commercial zone. A-P

Aftermath of the Battle of Bangkok

BY VINTI VAID

The charred remnants of burned-down buildings flash across TV screens across the globe as people watched the aftermath of Thailand's worst political crisis in 18 years. Shops and other business establishments have started to reopen as gridlock once again fills the roads.

It was the 19th of May when Thai police and military personnel swept into the commercial areas at the Ratchaprasong Intersection occupied by the Red Shirts for almost two months. The Red Shirts had been clamoring for new elections in a movement they claimed was a fight for democracy. The resulting clash left 89 people dead and more than 1,800 wounded in a government crackdown against the protesters that began a few weeks earlier. After the leaders surrendered and the mobs, dispersed,, life in downtown Bangkok and the rest of Thailand slowly regains normality– so it seems.

Following is a brief overview of the events that lead to Thailand's worst political unrest in more than a decade as well as a brief analysis of the resulting aftermath. Although signs of recovery and reconstruction are imminent as the country builds itself up from the ashes, several sectors are still wary of what the future may hold on Thailand's political and economic stability.

Impact on Thailand's Economy

With international attention focused on Thailand's raging political crisis, the global business and commercial community expressed grave concern for the country's battered economy, which Thai Finance Minister Korn Chatikavanij projected could cost $1.5 billion in damages. Thailand's very important tourism industry dropped to an all-time low during the second quarter, where mass protests where at their peak.

Recovery and Restoration

As cleaning crews wash away the

Events Leading to Thailand's Political Crisis

Thailand's problems began when democratically elected Prime Minister Thaksin Shinawatra was ousted in a military coup.

2006

A bloodless military coup led by General Sonthi Boonyaratglin ousted Thaksin Shinawatra's government from power while Thaksin was still outside the country. The Council of National Security took over command of the government.

2007

Thaksin Shinawatra's Thai Rak Thai party was disbanded by the Constitution Tribunal, accused of violating election laws and stripping them with the right to vote and hold political office for at least 5 years. The Thai Rak Thai eventually evolved into the People Power Party, which won the majority of seats in the General Election that occurred after the New Constitution was implemented. The Democratic Party stood as the opposition for Thaksin's party.

2008

The Yellow Shirts movement of the People's Alliance for Democracy (PAD) staged several street rallies to protest government policy and blocking the new Prime Minister Somchai Wongsawat from entry into the Parliament. Clashes with the police left two protesters dead and several others wounded. The Yellow Shirts continued with their protests, occupying and closing down Bangkok's International Suvarnabhumi Airport and creating another major international crisis with stranded tourists.

The Yellow Shirts only ceased their protest safter Somchai

soot and debris from Bangkok's commercial district, Thailand's Ministry of Tourism is optimistic that figures would start to recover. In fact, the first half of 2010 registered a higher number of arrivals compared to the same period last year, despite the bloody clashes that gripped the nation. Aside from that, while Bangkok arrivals were affected in a major way, tourist arrivals in other areas like Phuket remained as strong as ever.

As part of the recovery plan to put Thailand's economy back on track, the Pacific Asia Travel Association announced that hotel operators will slash prices and package deals up to 50 percent in a bid to attract tourists back to the country. Aside from that, the Tourism Authority of Thailand has organized the Amazing Grand Sale 2010.

The Amazing Grand Sale 2010 features a wide variety of products on sale from 10 percent to up to 80 percent. Aside from that, special offers from airlines, restaurants, spas, hotels, jewelry and duty-free shops will provide more eye candy to lure international shoppers back into Thai stores. On top of that, the export market looks promising in the wake of recovery and restoration efforts for Thailand's economy, with shipments already increasing 35.2 percent from the previous year.

What the Future Holds

As recovery and restoration efforts take shape to bring Thailand's economic and social order back to normal, an uneasy calm sweeps across the opposing political forces as the underlying political differences that fueled this crisis remains unresolved. Even though the smoke and fires have abated, an internal battle still rages that involves opposing sectors,up to the highest levels of government.

Analysts point out that problems lie not just between the Red and Yellow Shirts, but in the overall social structure in Thailand. It is a clash between those who want to embrace new democratic policies and a populist approach to government and those who have come in opposition to it. Many have seen and supported the new policies that Thaksin Shinawatra have put forward as pro-people that would benefit the masses, only to face opposition from those who are against such policy changes.

Much is yet to be done in restoring Thailand's tarnished image in the international community and strengthening the country's economic backbone, but efforts should also be put forward to focus on bridging the gap between the opposing social classes. This would begin by pursuing comprehensive dialogs with the Red Shirts as well as other political parties, in a bid to formulate and carry out effective and acceptable political reforms. The final solution may take some time and what the government can do now is mitigate the flames from combusting once more. A-P

Wongsawat stepped down as Prime Minister, while the People Power Party, Chart Thai and Matchima Thipataya political parties were disbanded by the Constitution Court. Wongsawat was replaced by Democratic Party leader Abhisit Vejjajiva. In another arena, the Criminal Division for Political Office Holders of the Supreme Court sentenced the absent Thaksin Shinawatra guilty of abusing power in a land purchase deal.

2009

Red Shirt supporters of Thaksin began protesting,urged on by Thaksin's phone-in addresses. Protesters stormed and disrupted the ASEAN Summit, causing even more international embarrassment, prompting the government to declare a national state of emergency. Major riots occurred throughout Bangkok with soldiers eventually restoring peace and order as Red Shirt leaders called an end to the protests.

2010

The Red Shirts started widespread protests once more after Thailand's Supreme Court seized $1.4 billion from Thaksin's frozen assets, which they claimed were obtained through a conflict of interest while Thaksin was in power. Red Shirts demanded the resignation of Prime Minister Abhisit Vejjajiva with large-scale but relatively peaceful demonstrations of up to 100,000 participants.

But when the Red Shirts entered the Thai Parliamentary grounds after months of protests and occupied Ratchadamnoen Road as well as the Ratchaprasong Intersection at Bangkok's premiere shopping district, the government declared a state of emergency and mobilized the police and military to counter these intrusions. A bloody battle ensued as soldiers tried to recover Ratchadamnoen Road from the protesters, leaving 21 soldiers and protesters wounded and scores of others wounded.

The government finally stepped in on May 14 as the police and military were mobilized to recover Red Shirts-controlled areas. Another bloody encounter ensued, which ended with protest leaders surrendering and protesters scattered, but leaving several buildings in the commercial area ablaze, including CentralWorld, the biggest mall in the country. Curfews were set after the bloody encounters which prolonged for several days.

COMPANIES MENTIONED IN THIS ARTICLE

VISA International (Thailand)
Financial Services
San Francisco, California
http://www.visa-asia.com

Airports of Thailand Public Company Ltd.
Commercial aviation
Bangkok, Thailand
www.airportthai.co.th

CentralWorld
Shopping center
Bangkok, Thailand
www.centralworld.co.th

ON THE WEB

Tourism Authority of Thailand
www.tourismthailand.org

ASEAN
www.aseansec.org

Pacific Asia Travel Association (PATA)
www.pata.org

Q&A

JEFFREY WASSERSTROM

Professor Jeffrey Wasserstrom attended the University of California, Santa Cruz, and as an undergraduate in history studied Chinese. After graduating with honors in history in 1982, he earned a Master's in East Asian Studies at Harvard and published his first academic article on the resistance to the one-child family policy in the journal Modern China. His first trip to China lasted from August 1986 until July 1987, mostly at Shanghai's elite Fudan University. He earned his Ph.D. in 1989 examining Shanghai republican period (1912-1949) student movements. He has taught at the University of Kentucky, Indiana University in Bloomington and the University of California, Irvine, where he has been a Professor of History since 2006.

In an exclusive interview with Victor Fic of the Asia Pacific Business and Technology Report, he shares past experiences and future plans in working in China.

BY VICTOR FIC

CHINA RISING

Although you are a professional historian, you wrote a China book for mass readership. Is this a trend in Chinese studies reflecting the public thirst for applied ideas?

Thirty or 40 years ago, professional historians routinely wrote for general readers, then this became less common during a period of specialization and professionalization. Now we see a small swing back toward more acceptance of popular writing, perhaps especially for countries attracting much interest and generating Western concern like China. But many historians still never do any popular writing, so I do feel that my effort is a bit unusual, although there are other China specialist who have made similar moves. Jonathan Spence, a Yale historian on China whom I've always admired, has targeted a mass readership throughout his career. Among mid-career historians a bit older or younger than I am, Geremie Barmé, Timothy Brook, and Rana Mitter all aim at that elusive generally educated reader.

Is it true that the Western interest in China is primarily economic?

No. For example, a lot of Western curiosity focuses on Chinese religion and philosophy. Now, China's rapid economic development means Western interest in the country's economy - and worry about the impact of China's growth on the world- is particularly striking.

You write that Confucius denigrated merchants, placing them far below the scholar-bureaucrats. How to explain China's obsession with economic growth and wealth? Really, does culture matter?

Ironically, for a time, some Western observers, German sociologist Max Weber being the most famous, thought that Confucianism would prevent capitalist development, while now some claim that the familial and educational focus of Confucius can aid capitalism. Cultural factors are important but more complicated than this, and it's important to remember that Confucianism has never been the only ideology in the mix in China.".

What aspects of Kongzi are most important for a Western businessmen in China to know about local norms and actions or what he should do?

For Americans especially, the general respect for education in China, linked to Kongzi's thought, is significant as there is a strong anti-intellectual tradition in the United States.

As for the reform and modernization program there, when did this become unstoppable, e.g. the radical left could not revive Maoist economics?

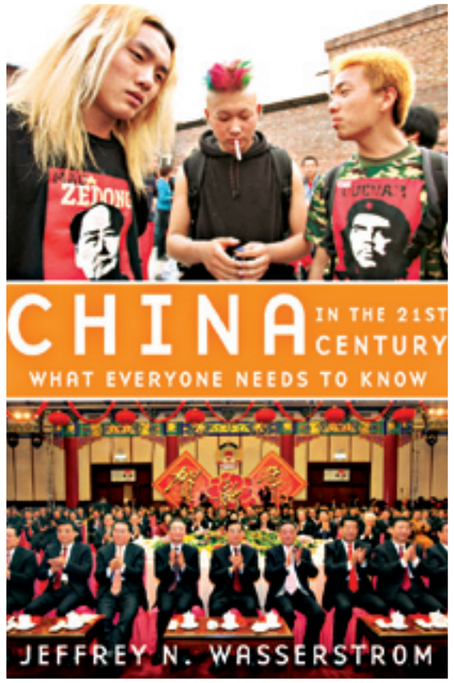
The 1990s stand out as a particularly important period, partly because after the Eastern and Central European communists fell, the Chinese authorities emphasized the PRC being different because of its economic successes and ability to modernize rapidly.

Doesn't the idea of private land and incentives actually date to Deng Xiao Ping and Liu Shao Qi instituting them in the early 1960s after Mao Ze Dong's failed great leap forward?

Some reform policies definitely do echo smaller experiments from the early 1960s, but something different began in the 1980s when using incentives widely gained steam. One continual theme in PRC (People's Republic of China) history, as scholars like political scientist Elizabeth Perry stress, experimentation and adaptability. Mao's day had many experiments that broke from orthodox Marxism, then after his death many experiments that broke with both Marxist and Maoist orthodoxies.

The Google flap pitted a Western company against Beijing. Some claim tensions arose because the former bucked censorship. But others insist that China designates Baidu the leading server and wanted to harass and marginalize Google – your take?

I may oversimplify, but the Google controversy seems as significant a business story as a censorship of political story. The question is whether other companies will likewise oppose China when they get frustrated, as Google was not just by censorship but by hacking attacks on Gmail accounts. It's unclear that others will resist if being in China is central to their economic well-being. Google could exit or risk that because it isn't dependent on producing goods in China and wasn't making much profit there.



I may oversimplify, but the Google controversy is as significant a business story as a censorship or political story.

General Electric CEO Jeff Immelts controversially complains that foreign firms struggle for win-win situations in China. Others warn that Chinese regard business as zero-sum war. Investing means copy right violations, demands for technology transfer and other mercantilist "sharp practices." How do you respond?

This is complicated, but for some companies, being in China without necessarily turning a profit can be a plus, e.g. there's a cache to saying that you have offices in London, Paris, New York and Shanghai.

Western experts predicted that economic liberalization means democratization. But China remains politically Leninist. How to explain that?

The notion that economic liberalization automatically leads to democratization is flawed and not that simple. As for China remaining Leninist, several factors are important, as my book details. One, while Westerners think in terms of a 1989-1991 abandonment of Leninism, the countries where Communist organizations came to power during independence struggles, eg. Cuba, North Korea, Vietnam, and China are still Leninist. Also, the Chinese Communist Party has spent much time and energy studying how other authoritarian governments, Leninist and non-Leninist alike, lost power and is trying to keep from making the same mistakes.

The China threat camp warns that partly because of this, the rising superpower is dangerous. They also cite its escalating defense budget, the so called middle kingdom complex and now global ambitions for power. Where do you fall on the spectrum?

I am not in the China threat camp. I worry about China, but mostly about the environmental impact of its rapid development. But this is a global problem that needs global solutions.

Recently, Beijing claimed ownership of the South China Sea as a core interest. It could control the vital trade sea lanes of Japan, South Korea, south east Asian states, the EU, US and Australia. How to avoid seeing this as China's middle kingdom complex risking confrontation with others?

Continued on Page 41

HIGH POTENTIAL FOR E-READERS IN ASIA PACIFIC

BY RAJANI BABURAJAN

The e-reader market in the Asia Pacific region is dynamic with leading players like Sony, Acer, and Hanwang Science and Technology introducing new devices with updated features. A Sony spokesperson stated that Sony would be making its e-book reader available to Asia-Pacific countries such as Japan, China and Australia as it expands its business to new markets.

E-readers from the company were previously available only in the markets of North America and Europe. Sony in the near future shall be extending its relationship with local retailers, publishers and distributors.

These companies are constantly paying attention to trends in all markets of Asia Pacific and are tracking the demand of e-readers in the region. Presently, the e-reader market might be on a strong growth curve, but this sector will encounter strong competition coming from a wide range of other devices having more advanced features in the same field.

China

Recent research conducted by Display Search says that China contributes about 20 percent of the global e-reader market. In China, the sales of e-readers have risen from 800,000 in the year 2009 to 3 million in 2010. The company has forecast that China will even surpass the U.S. and become the world's largest e-reader market by 2015.

According to Zhang Yanan, an analyst from Beijing-based research firm Analysys International "It's still too early to talk about the market scale, but the China market is highly potential one due to the large user base."

However, the Chinese market is challenging. Most e-readers in China are manufactured by local players, and can be expensive for average Chinese customers. While barebones models costs about 1,000 Yuan ($150), more advanced models having better features like hand writing recognition, card readers, Wi-Fi and greater access to online libraries can cost about 3,000 Yuan.

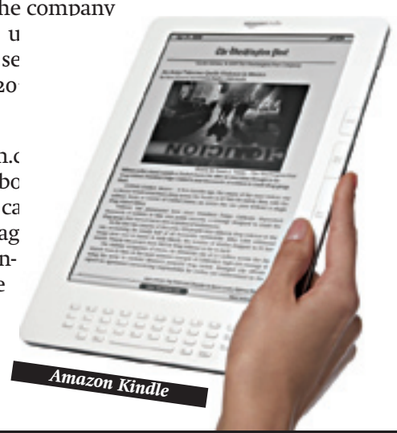
In the U.S., Amazon.com Inc.'s Kindle reader and Barnes & Noble's Nook cost $150-$260 and Sony's smallest e-book reader costs about $200. Amazon sells books in China through its Amazon.cn site, but doesn't offer the Kindle reader in China. Sony also doesn't sell its devices in China. China is a daunting market for outside companies because of its piracy and revenue-sharing issues. Beijing has strict regulations and licensing process in e-businesses.

Because of rampant piracy, providing content is a difficult business in Beijing. "Almost 95 percent of China's digital reader downloads (are) unauthorized work from the Web," says China e-book Market Development Report. Because the content is still lacking in China, some manufactures load up device with books at an added cost. E-book content sale remains small in China, worth only about 226 million Yuan or about $33 million, according to the report.

In China, local manufacturers dominate the market for e-book readers and more are expected to join the race in the coming years. Beijing-based Hanwang Science and Technology is on the lead and is expected to rise in sales to about 2 million in the coming years. The company has sold 200,000 e-readers since its inception in September 2008. Last year, the company sold about 500,000 u year and expects to se than two million in 20

India

In India, Infibeam.c has brought an e-bc reader called Pi that ca display Indian languag es like Hindi and Sanskrit. With a price tag of 10,000 rupees ($214) Pi has no backlight display and uses an electronic ink screen that is easier to read than traditional backlit screens. However, as domestic digitalization of the content is not available in the country, people depend on international e-books, which becomes a costlier affair for them.



Amazon Kindle

The market in India is still in a nascent stage. Infibeam, in association with the National Council of Educational Research and Training (NCERT), is also planning to bring textbooks available in digital formats.

Japan

Japan's Sharp Corp. is willing to enter the electronic reader and book markets, hoping to grab a big slice of the hot cake hogged by Apple and Amazon.com. This year, the company plans to offer an e-book distribution service and launch a compatible reader service. Sharp Corp. has support from various publishers in Japan and overseas. In Japan, companies like Sony and mobile phones operator KDDI Corp. are distributing e-books and seek to break the resistance from publishers to digital contents.

South Korea

According to market researchers, prospects for the e-book market in Korea are not as promising as in Western countries. Though Amazon entered the market much earlier than expected, it has sold less than 3 million Kindle e-book reading devices, which is approximately less than 1 percent of U.S. sales.

The current e-book market here, which is worth less than 100 billion won, is quite negligible in view of the massive initial investments.

According to Kyobo, the largest bookstore franchise in Korea, e-books are popular among men, with popularity at the highest among men in their 30s, followed by those in their 20s. Despite the uncertainty prevailing in the market, big bookstores are taking initiatives through collaboration with hardware makers and mobile carriers in the country, Kyobo said.

Content, according to Kyobo, is the most important factor for e-book devices. Since its entry in the e-book market in 2004, the company has collected more than 65,000 items so far. However, the number is still low compared to overseas services.

Since the launch of Kindle in 2007, e-readers in the country were categorized among the hottest consumer products. The company has dropped the price of Kindle in the country to compete with the price cuts from Barnes & Noble on its Nook e-reader.

Overview of leading e-readers

Amazon Kindle: Kindle is the most popular e-book reader in the world. Developed by Amazon.com, Kindle was designed for the simple reading of e-books. The display screen measures 6 inches diagonally. The device is provided with a keyboard for other functions such as word processing. The device is comparatively smaller than laptops. It has3G capability.

Amazon buyers can read books on their e-readers in their proprietary format or the AZW format. The Kindle hardware works without a computer connection, and it allows users to access Amazon Whispernet without a monthly charge or wireless subscription. It weighs less than a paper bag. Electronic paper technology has made its readability similar to reading a book. Other important features of the Kindle include an adjustable text size feature. Supporting file formats include HTML, TXT, MOBI, partial PDF support and image formats, even though the display is 4-color monochrome.

Kindle software applications are available for Microsoft Windows, iOS, Blackberry, Mac OS X and Android. "Whispersync" technology helps people incorporate the reading progress, bookmarks and other information across Kindle hardware devices and other mobile devices. Kindle, Kindle 2, Kindle 3 and Kindle DX are the four hardware devices that support this platform. All of them have a redesigned keyboard, thinner design, text-to-speech features and a better grey screen display. Kindle DX features much higher capacity at 4 GB, a larger 9.7-inch display and accelerometer for smooth transition between portrait and landscape modes.

Sony Reader

Sony E-book Readers

Sony E-book Readers use electronic paper display methods. They feature 166 dpi resolution and eight levels of gray-scale. They are highly affordable and compact. These displays are also known as the Reader book edition. Its primary function is to read Sony LRF format e-books. It can be viewed in direct sunlight, and can be used in landscape and portrait orientation.

The Sony Connect e-book store features an iTunes Store-like interface for book buyers. Users can get the books in Sony Reader in various formats including Adobe-PDFs, ePUB format, RSS newsfeeds, JPEGs, and Sony's proprietary BBeB. Another attractive feature of this device is that it can play MP3 and ACC audio files. The digital risk management in the reader allows the e-books to be read on up to six devices, one of which should be a personal computer running Windows or Mac OSX. It allows five readers to be registered in a single account and share the book accordingly.

Reader Touch Editions are another line-up of Sony e-book readers. These are slightly bigger at 6 inches, and have a touch screen instead of a keyboard. These models have a card slot that reads the Sony Memory Stick Pro DUO format or SDHC format.

- Barnes & Noble Nook
- Cybook by Bookeen
- BeBook by Endless Ideas BV
- The Kobo eReader
- iRex iLiad
- Jinke Hanlin eReader

Scope of e-readers

With increasing demand for e-readers worldwide, the market has gathered momentum and has attracted many leading players to foray

into this emerging technology arena. Manufactures are introducing innovative e-reader devices with advanced features, which further increase competition in the market. For the past few years, Amazon has been monopolizing the e-reader market globally. With the arrival of companies like Sony, Barnes & Noble, Plastic logic, Asus and Samsung, Amazon's success in the market is being challenged.

To survive in this highly competitive e-market, manufacturers are forced to adopt significant steps that would differentiate their products among their competitions. As an example, the market has witnessed the emergence of low-cost e-readers with minimum features, as well as the new models which can be used in conjunction with a PC or USB dongle to access additional content. The current market of e-books is taken up by early adopters of the technology. In the coming years, mainstream book buyers are expected to contribute to this market.

Global e-reader market

According to Amazon sales data released for the second quarter of the year, e-books are outselling hard covers 143 to 100. Worldwide, about 4 million electronic book reading devices were sold last year. ISuppli Corp., a U.S.- based market research firm suggests that this market will rise to about 12 million by 2012.

Going forward

Despite the adversities, e-readers will see rapid adoption among bibliophilic customers. The devices allow them to order and read their favorite authors whenever and wherever they are. It also facilitates moving from one book to another book by the same writer or to books with the same topic in an easy way. It represents an entire mobile library in a highly portable and eco-friendly form.

The cost factor has been the jor roadblock preventing a gre scale adoption of e-readers in d oping markets in the Asia Pa region. If manufacturers are abl come up with a cost-efficient model, it will boost customer interests and bring greater economies of scale. A-P

Barnes & Noble Nook

ON THE WEB

The Sony Connect e-book store
http://ebookstore.sony.com

COMPANIES MENTIONED IN THIS ARTICLE

Sony
Conglomerate
Tokyo, Japan
www.sony.net

Acer
Computers. IT, electronics
Xizhi, Taiwan
www.acer.com

Hanwang Science and Technology
E-reader manufacturer
Beijing, China
www.hanwang.com.cn

Infibeam
Online shopping
Gujarat, India
www.Infibeam.com

KDDI Corp.
Telecommunications business
Tokyo, Japan
www.kddi.com

Sharp Corp.
Consumer electronics
Tokyo, Japan
www.Sharp-world.com

Kyobo Book Center
Bookstore chain
Seoul, Korea
www.kyobobook.co.kr

NORTH KOREA

Continued from Page 15

self while "carrying out illicit international activities in defiance of international law and the domestic law of numerous other nations". It said the proceeds were funneled to members of the country's elite, used to support leader Kim's lifestyle and invested in the military.

As far as dining goes, the culinary experience at Pyongyang has been described as relatively expensive but friendly. The destination of cash spent in the restaurants, however, does not faze some. Don Douglas, an American NGO worker, recently ate at a branch in Kathmandu, but dismisses any ethical issues associated with his visit. He says it was a one-time endeavor to satisfy his curiosity, adding: "I did not object to paying for my meal, or feel that I was supporting a tyrant."

While the restaurants are usually set inside gated compounds – with staff barred from leaving the premises – Douglas said the waitresses seemed remarkably curious. "We just chatted about everyday matters as they were intrigued that we live in Seoul, but we did not cross over into political topics as that would have seemed to cross a line."

But crossing the line is exactly what some staff members are reported to have done. The temporary shutdown of two restaurants was down to incidences where staff members fled, a defector identified as Kim Myung-ho, the former manager of a Pyongyang branch, told the Daily NK. According to another source, a branch in Cambodia was closed for a time when a local diner attempted to coax a waitress off the premises.

The chain's reported struggles and the possible ripple effect of sanctions aside, this appears to be a franchise with a captive audience, made up, at least in part, of those curious for a peek behind the North's tightly drawn curtain. A-P

FURTHER READING

"Great Leader, Dear Leader: Demystifying North Korea Under the Kim Clan" — By Bertil Lintner,

CHINA'S GROWING ONLINE GAMING INDUSTRY

BY REENA SAXENA

The online gaming industry in China is booming. Even in a country whose economic performance has been little short of spectacular over the past decade, the online gaming industry stands out.

In 2009 the Chinese online gaming industry earned a whopping $4 billion - a 39.5 percent increase from 2008. There are currently a little less than 400 million Chinese netizens,, fully two-thirds of whom play computer games online. Many of these enthusiasts sit in front of computers, whether their own or at net cafes, for hours on end, day after day.

The success of established firms, which have traditionally hailed from the United States, South Korea and Japan, has led to the development of local companies and competencies.

The success of established firms, which have traditionally hailed from the United States, South Korea and Japan, has led to the development of local companies and competencies. On the mainland, says the People's Daily Online, software of Chinese origin has an impressive market share of 65 percent. Games such as Fantasy Westward Journey, from Netease — currently the most popular online game in China with a peak count of nearly 2 million users online at the same time — Zhengtu Online from Giant, and games from other top companies such as Shanda Games, are proving exceedingly popular with the current crop of Chinese gamers.

In addition to these established online games, social online games are now coming to the fore. These games are in a sense even more popular than established online games because unlike the latter, they can be played even if one only has a few minutes to play. In addition, they are far less memory- and processor-speed intensive than established online games, and as such can be played even on older and simpler computing platforms. From simple gardening games such as Happy Farm to parking-related games such as Qiang Chewei, these simple and fun games are popular among casual and "lunchtime" gamers — and thus allow for the further expansion of the online gaming market.

The pace of life in China is increasing, and Chinese citizens of all ages are increasingly turning to online gaming to help them cope with the increasing demands of their lives. Students of all ages and from every demographic — from those desperate for a break from their arduous lessons to those struggling mightily to pass college entrance exams — are traditionally thought of as typical gamers, in China as in many other countries. However, given the changing nature and character of online games, the demographic of gamer has been expanded to include the middle-aged and even retirees.

In addition, the ongoing development and introduction of such technology as 3G and the growing market for smartphones — and the increases in network capability that service providers are beginning to effect in order to be able to provide enough bandwidth and compatible services for these power users — are also serving to deepen and develop the market further. Mobile gaming applications are being developed that will allow gaming on the go from platforms such as iPhones and other powerful smartphones.

Developments such as these mean that the future of online gaming in China may very soon be about to exceed even the wildest dreams of its most ardent proponents. A-P

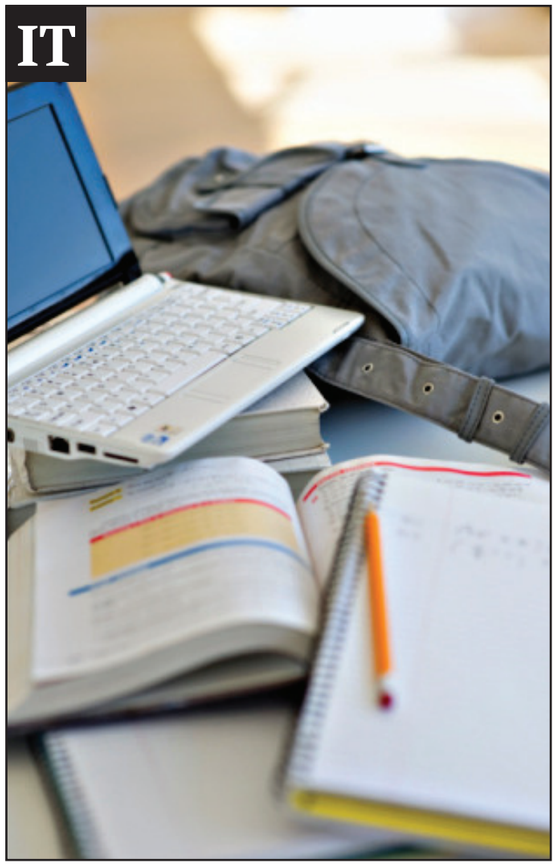
ON THE WEB

The People's Daily Online
www.english.peopledaily.com.cn

COMPANIES IN THIS ARTICLE

NetEase
Social networking
Beijing, China
http://corp.163.com

Shanda Games
Online game developer
Beijing, China
http://ir.shandagames.com



THE FUTURE OF NETBOOKS IN ASIA

BY ANURAG SHUKLA

Asustek delivered the notebook to Asia for the first time in 2007. ASUS Eee PC was its first model. Netbooks owe their popularity to the convenience they bring. Netbooks are lightweight, small and most especially, affordable.

During their earlier days, they were powered by Atom N270 processor on the Intel 945 chip set. This was enough to power Web surfing and basic productivity tasks such as e-mailing and writing.

There have been modifications made.

Today, standard features include six-cell batteries and 3.5G/HSDPA connectivity. The newer models posses the new Atom N280 processor. Buyers will normally get a comfortable keyboard and the 16:9 aspect ratios for 10.2-inch screens.

Netbook Growth Sags

According to ABI Research, about 60 million netbooks are expected to be produced just this year. They further project that this number will double by 2013. The market for netbooks has been progressing steadily. This is lead by two giant companies, Asus and Acer. However, ABI Research also predicts that the progress that netbooks sales and production are experiencing will decline in 2014 to 2015.

Principal analyst for ABI Research Jeff Orr said that ASUS Eee PC and Acer products dominated the netbook market in 2008; ASUS lost one half of its market share in 2009. Orr further discussed that other vendors have increased their market share in 2009. Examples of these companies are HP, Dell and Lenovo. He stressed that netbooks for most consumers are bought as a companion device and not a replacement for other computer products.

"Over time I expect what will be driving shipments around the world will be the emerging markets," Orr observes.

In the computer markets of China and India, netbooks with a classic clamshell design, are perceived to be the first computing devices in homes mainly because of their affordability. Orr believed that ABI Research shows netbooks will flourish in the years to come and will rise above speculation that its rise is only due to the recession.

Netbook production is still projected to grow by 33.6 percent this year. However, this is significantly lower compared to the 872percent made in 2009.

"Everyone tried to make these mini-notebooks out to be a different category, or different type of device," Shim added "In fact, people think of them as just another type of PC," IDC analyst Richard Shim commented.

"With the market recovery, I think end-users are going to be looking for more value than just low-cost devices. This is an opportunity for higher-end mobile PCs, for example, that have better performance, bigger screens [and] bigger hard drives," another IDC analyst, Shane Rau, said.

In a report made by DigiTimes, the production for liquid crystal display panels for netbooks is slowing due to declining orders.

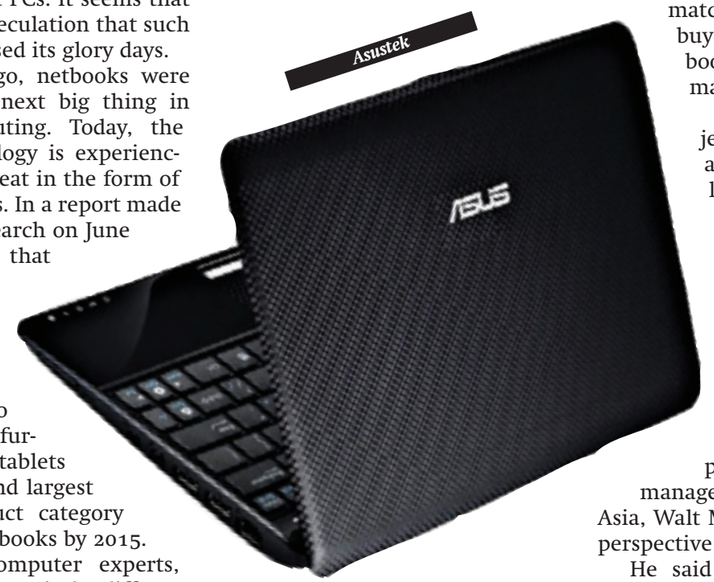
Jerry Shen, AsusTek Computer CEO and President also confirmed that the shipments for Atom processors will eventually decline in number. However, in his interview with Digitimes, he said that, even if Atom chip shipments will decline in the future, shipments in this year will still rise from 32 million units in 2009 to 35-40 million in 2010.

Two years ago, netbooks were considered the next big thing in personal computing. Today, the netbook technology is experiencing a serious threat in the form of tablet computers.

An Emerging Threat

The debate on the popularity and relevance of netbooks has become more intense since the introduction of tablet PCs. It seems that there is more speculation that such a device has passed its glory days.

Two years ago, netbooks were considered the next big thing in personal computing. Today, the netbook technology is experiencing a serious threat in the form of tablet computers. In a report made by Forrester research on June 2010, tablets that which include Apple's iPad are projected to overtake netbooks in sales in next two years. Forester further added that tablets will be the second largest computer product category just behind notebooks by 2015.



For some computer experts, tablet PC is an entirely different category because it does not have to traditional keyboard and mouse interface. Forester argues that tablets like iPad should still be classified as a form all personal computers. This category is anticipated to grow at a compound annual rate of 42% from 2010 2015 Forrester. analyst Sarah Rotman Epps commented that the growth in tablet sales will hurt netbooks' sales.

In a heated battle between netbooks and tablets, it seems like tablets is getting an edge. Even Asustek is coming up with their own tablet models to rival the very popular iPad.

Positive Outlook

In an interview by ZDNET Asia with Springboard senior analyst Sameer Bhatnagar, he reveals that netbooks are not facing their end. He believed that if there is a continuous flow of improvements in the technological features that cater to the needs of certain demographics like the student population, then the netbook technology will still flourish. There is still a clamor for lightweight and portable devices, and there is plenty of room for netbooks in the PC world.

"There will be a continuous growth of netbooks in emerging economies, such as India, for specific groups like people looking for a secondary device and students. We don't believe that laptops will replace netbooks completely," Bahtnagar said.

Eugene Liew, Lenovo Singapore's country manager for home and small business, shared the same view. He believes that there is an emerging market for first-time buyers of PCs. Netbooks are appealing to this type of market because these devices have an attractive entry price and features that match the needs of such buyers. Liew said that netbooks would make a good machine for PC starters.

In addition, he projected that netbooks will a undergo constant evolution that will produce better performance and functions. These improvements will suit the elderly and young users.

A Different Perspective

In an email to ZDNet Asia, the vice president and general manager of Dell Consumer Asia, Walt Mayoin, gave a different perspective on this issue.

He said "(The real debate revolves around) consumer demand for computing solutions that balance portability, performance and battery longevity at the desired levels of affordability."

Mayo added: "Different users will have different requirements and performance ... (and) technology vendors need to continue to deliver products that enhance and fit into consumers' lifestyles, however vast and different their needs may be."

Intel's Stand

In a CNET News report, Intel CEO Paul Otellini said: "I think we suggested that netbooks seem to be settling out at about 20 percent of the mobile form factors, and on an annual basis, that looks to be about right."

Intel has plans to improve its Atom processor products. These plans include the launching of a du

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$35 LAPTOP REVOLUTIONIZES THE CLASSROOM IN INDIA

BY RAJANI BABURAJAN

A small laptop designed by a team of engineers is creating news in India and around the world. In July, HRD minister Kapil Sibal unleashed the new computing device priced at only $35, initially designed for students in higher educational institutes, but which can ultimately benefit the entire student community, including the primary education sector in rural India.

A cross between the iPad and tablet PC, the mini laptop is charged by a sleek solar panel, reducing the need for a traditional power supply.

"We have reached a stage that today, the motherboard, its chip, the processing, connectivity, all of them cumulatively cost around $35, including memory, display, everything," Sibal proudly said in a news conference announcing the launch of the laptop.

The device is designed by experts from the Indian Institute of Technology (IIT) Kanpur, Kharagpur, Madras; and Indian Institute of Science, Bangalore. Currently the price of the laptop is fixed as $35, approximately Rs.1500. HRD ministry has invited leading companies to come up with additional versions of the laptop fulfilling the specifications. With economies of scale, in the coming months the price may come down to $20.

"This is part of the national initiative to take forward inclusive education. The solutions for tomorrow will emerge from India," Sibal said.

The $35 laptop works on solar power and is equipped with an Internet browser, video-conferencing capability and a media player. This low cost computing device measures just 5 x 7 x 9 inches. This technology will surely transform classroom education across India. The device has a small amount of memory and no hard disk, but it certainly is sufficient to meet the needs of students.

Cutting down on the cost of solar panels will significantly reduce the cost of the device. The ministry is in talks with a Taiwanese company to manufacture low-cost solar panels for the new laptop. The government will offer a 50 percent subsidy to educational institutions, bringing the price of the device down. The major beneficiaries will be the hundreds of thousands of aided and unaided schools in the primary and secondary sector and university students throughout the country.

Based on an open source, the device does not have a hard drive. However, it has a number of enhanced features like video Web conferencing facility, multimedia content viewer, searchable PDF reader, and unzip tools. It also includes capabilities such as Open Office, SciLab for printing support,, USB port, etc. Sibal hopes that the Linux based computing device will be introduced in higher education institutions from 2011.

After Independence, the government of India felt that education alone could bring cultural and social revolution in the country. To achieve this goal, the government initiated the "Sarva Shiksha Abhiyan" or "Education for All" to make modern education available to millions of students located in rural India. Technologies like the $35 laptop could help the government realize this dream.

Rural education in India faces tremendous challenges. While poverty and ignorance block the educational progress at one end, lack of government funds cripples the academic activities in the educational institutions. Scarcity of qualified staff and basic amenities results in poor standards of education in these schools. With modern technologies like the mini laptop, the government hopes, to a great extent, to overcome these obstacles. A-P

ON THE WEB

Indian Institute of Science, Bangalore
www.iisc.ernet.in

ANDROID ELBOWS ITS WAY INTO ASIA

BY SHAMILA JANAKIRAMAN

When Google launched the Android Operating System, it was immediately considered an arch rival for the Apple iPhone OS.

Based on the ARM architecture, the Android OS includes middleware and key applications using a modified version of the Linux kernel. The Android's power comes from 12 million lines of code including 3 million lines of XML, 2.8 million lines of C and 2.1 million lines of Java. Android phones, however, lack app numbers, which makes the Apple's iPhone more attractive.

Quite popular in the U.S. and Europe, Android phones are making their presence felt in Asia. Aimed at pushing aside Apple and Nokia phones, Google is introducing the Android platform on lower-priced phones targeting markets in China and India. The phones are to be made by Huawei Technologies of China and LG Electronics of South Korea.

Although most Android powered phones are launched in the U.S., there are some popular phones in Asia also.

The HTC Hero sports a customizable interface using HTC Sense technology; multitouch facility in browser; good battery life and it comes with a 3.5 mm audio connector. However HTC apps are slow and the device cannot accept video calls. The design makes the HTC Hero a good looking smartphone.

The HTC Magic comes with a compact form factor, sharp touchscreen display and Microsoft Exchange support. A touch screen numeric keypad allows one-hand typing. The Android Marketplace provides various apps and widgets. But the QWERTY keypad is fully not optimized and the camera lacks a flash.

The Samsung Galaxy i7500 features a vibrant AMOLED touchscreen display with a huge onboard memory and 5-megapixel camera with LED flash and a slim design. The responsive user interface and support for some good apps are the phone's plus points. It also features a haptic feedback support on the touchscreen. Talking about minus points, the Samsung phone lacks multitouch and custom widgets.

The HTC Tattoo is an affordable Android phone for those desirous of possessing one. The features include Sense User Interface, a 3.5 mm audio jack, HSDPA connectivity and good battery life. However the 2.8 inch QVGA display is small.

Most suitable for browsing enthusiasts, the HTC Dream has a good browser, stable OS and is enhanced further with Google integration and a good QWERTY keyboard. The device responds well for apps from the Android Marketplace. Onscreen keyboard, video recording and Exchange support are features missing on this phone.

Among the Android device users, about 67 percent live in North America, followed by China with 13 percent user penetration. The top three Android devices in the U.S. are the Motorola Droid, the HTC G1 and the Motorola CLIQ. Although the devices run different versions of Android the common feature is that they all have keyboards.

The favorite Android phone in the US is the Motorola Droid which has a tough look and feel. The QWERTY keyboard slider is smooth but makes the phone thicker. The screen resolution at 480 x 854 pixels gives sharp and bright pictures. The phone can support multiple user accounts and setting up Gmail, Calendar, Google Talk and Bluetooth device pairing are also easy. GPS and e-mail synching are other attractive features in the device.

Google is making forays into new markets such as that of Korea. Such attempts have helped increase sales of Android devices. Gartner research reports also say that in a few years time, Android powered devices will become more popular compared to iPhones. Some Chinese manufacturers are launching Android-based phones at lower prices. Taiwan-based MediaTek supplies chips making these phones possible and suitable for the Asian market. A-P

COMPANIES MENTIONED IN THIS ARTICLE

Google
Internet, Computer software
Mountain View,California
www.google.com

Apple
Computer hardware, computer software, consumer electronics
Cupertino, California
www.apple.com

HTC Corp.
Telecommunications
Taiwan
www.htc.com

Samsung Electronics
Consumer electronics, telecommunication, semiconductor
Seoul, Korea
www.samsung.com

Motorola
Telecommunications
Schaumburg, Illinois
www.motorola.com

MediaTek Inc.
Wireless communications solutions
Hsinchu, Taiwan
http://www.mtk.com.tw

Q&A

RAVI S. SAXENA

The Asia-Pacific Business and Technology Report had the opportunity to meet Ravi S. Saxena, additional chief secretary of the Department of Science and Technology of the government of Gujarat, one of the fastest-growing states in India. With over 30 years in service in government, Mr. Saxena, has served in many roles, both in state government and in the central government. He was in Seoul in August leading an official delegation promoting Vibrant Gujrat - an investment summit that will be held in January of next year.

Following are excerpts from his meeting with Dr. Lakhvinder Singh and Matthew Weigand – Ed.

BY MATTHEW WEIGAND

VIBRANT GUJARAT

Mr. Ravi S. Saxena, (right) additional chief secretary of the Department of Science and Technology of the Government of Gujarat with Dr. Lakhvinder Singh in Seoul

Can you tell us a little bit about the Gujarat Vibrant Project? What are the main incentives being offered under the program?

Mr. SaxenVibrant Gujarat is institutionalized as a global investors' summit, which is being held on a bi-annual basis. The fifth edition of this summit is being held on the 12th and 13th of January 2011. Over a period of time, this has now become a well-established global summit. Delegations, both political and corporate, participate from more than 50 countries. In the year 2009 the summit ended up producing MOUs worth $240 billion, which are now on the way to implementation. There is a mechanism installed to essentially monitor the progress of the MOUs. We have been monitoring the implementation of the percentage of the MOUs signed from the year 2003, because the MOUs take some time to be crystallized into actual investment projects. But, the realization of the projects has been the highest in Gujarat among the fast-moving states in the country. Gujarat is the fastest-moving state in India. In the next Gujarat Summit we expect about $250 billionin MOUs, even though there is an economic downturn.

Korean companies have already invested in Gujarat. What are the main sectors where Korean companies have invested? And which companies have invested?

The companies are on the smaller scale. Most of them are there as part of some kind of contract. The largest one is Samsung Engineering, which has a $1.1 billion contract for setting up OBAL Engineering Petroleum Limited which is the largest petrochemical project in that part of the world. Major consumer goods companies, Samsung and LG, are not located in Gujarat but are looking seriously at Gujarat, particularly for mobile and display manufacturing.

What is the experience that they have had?

Most of the companies presented here have had interaction with India and Gujarat in particular. There were companies that have told us that they want to come to Gujarat. At least three companies were represented at the COO or CEO level, have a presence in other parts of the country, and are seriously looking at Gujarat. They have obviously looked at India, have been in India, and are now concluding that Gujarat is a more appropriate location for their projects. Mr. Rattan Tata a famous Indian industrialist has said in the first year he came to the Gujarat Summit, he understood that you are stupid if you are not in Gujarat. He said, "I am here to say that I am no longer stupid. I am very deeply in Gujarat and I am very happy about the Nano rolling out ahead of expectations." Many people up to the prime minster level have participated in this event from Africa, Latin America, and from Europe.

Another important area in where your team is looking for investment is port development. What are the port development projects and what is the significance to Korean companies?

Gujarat has the longest coastline of 1,600 kilometers. This has been a traditional coastline for ports for 2,000 years. In fact the glory of India, which wrongly sent Columbus to America, was based on the legends of the port that existed at the places called Okha and Baruch. It was known as Barukacha in mythological times, in the first century AD, when India's wealth was the talk of the world. They all thought that it was a very very rich area. That's how all these Spanish and Portuguese explorers set out to find India. My point is that most of the trade that brought fame to India in the 1st century AD were ports from this area. And what I'm very fond of telling people is that when you have such famous ports, what is the society that you grow in that? Like Bombay. The best traders, exporters, shipping agents, they all come and stay there. So today's Gujarat is the progeny of thousands of years of commercial excellence.

Today, Gujarat has 42 ports on its coastline, and out of that is one major port, which is Kandla. Kandla is the major port, and amongst India's ports, Kandla can handle the maximum cargo. Amongst the other 41 ports, there is a private port, Mundara port. Mundara is the only private state-of-the-art port for containers and other cargo in India. It's increasing its handling of both types of cargo at a very fast pace. There are other ports at Azira and Madala,which are all handling different kinds of commodities. In addition we have the only liquid chemical port terminal of India, which is located at Dahej.

Additionally, Gujarat's coastline caters to 40 percent of India's population and 40 percent of the geographical area on a logistical basis. With the Delhi-Mumbai industrial corridor, of which 40 percent falls in Gujarat, and the special investment regions based on that becoming operational, the utility of the ports in Gujarat's coastline will become even more significant.

Gujarat has a very flourishing education system. What opportunities exist for cooperation in the education sector?

That is a very interesting question. Academic collaboration is among our highest goals. Today's society is a knowledge-based society and innovation alone can reap benefits in the future. In fact, innovation cities which will have academic institutions, research laboratories, incubators and industry together are being planned. There are three proposals which are already in our hands for such academic cooperation that has already been proposed, but university to university collaboration was intended in my delegation only. I requested three vice chancellors to join our delegation, but they were unable to come at this time. We have Gujarat Technical University, and we are going to request their vice chancellor to look at Korean universities and we would welcome Korean universities to take steps in this direction.

What are the possibilities of cooperation in IT sector?

The IT delegate was not here today, so the IT presentation was not given today, although we planned it. But we are more interested in electronics. IT in the far east has not really caught our attention, but in the electronics industry we are interested in developments from Samsung, LG, and other electronics companies. We have talked to them about setting up manufacturing facilities in Gujarat directly. It's a more focused and directed kind of effort that Gujarat is making for electronics.

When foreign companies invest in India in general there are concerns about power generation and land acquisition issues. How are they being taken care of in Gujrat?

Gujarat is self-sufficient in power, and as most investors are looking at SEZs, we are comfortable in powering SEZs because we have one SEZ which is dedicated to only generating power. So this power can be given to other SEZs through the infrastructure of Gujarat. So on the power front we are comfortable in terms of reliability as well as quality. In the land issues, also, we have almost sixty SEZs which have been notified. That means that they have been legally approved by the government of India. Many of those have yet to be fully occupied. Because of the downturn, the pace of occupancy became a little slowed. So many investors of SEZs did slow down their pace of full development waiting for export markets to turn around. But the results of 2009 and 2010 have been very positive and promising. So the entire industry has been moving very fast again, and I hope these SEZs will come into full operations soon. A-P

COMPANIES MENTIONED IN THIS ARTICLE

Samsung Engineering
Engineering, procurement,construction
Seoul, Korea
www.samsungengineering.co.k

GREEN

WHO'S GREENER, SAMSUNG OR LG?

BY AMANDA MIN CHUNG

The two most famous Korean conglomerate-sates, Samsung and LG, compete with each other over almost everything: Desktop computers, laptops, mobile phones, refrigerators, air conditioners, washing machines and TVs. **Now we can add "Green Management."**

Samsung Electronics

About a year ago, Samsung Electronics announced a new green management initiative that aimed to become a leading "eco-friendly enterprise." Samsung established a comprehensive set of goals intended to materialize the vision and make Samsung a leading eco-friendly company by 2013.

Samsung stated the company would focus on achieving low-carbon growth, laying out four core green management objectives as part of its "Eco-Management 2013" plan. The objectives included reducing greenhouse gas emissionsfrom manufacturing facilities by 50 percent; cutting indirect greenhouse gas emissions from all products by 84 million tons over a five year period through 2013; ensuring 100 percent of Samsung's products are eco-friendly and exceed global eco-mark standards;invest 5.4 trillion won in eco-management initiatives; and enhancing green partnerships with suppliers and partners.

"As a leading global technology company, Samsung Electronics has always taken our environmental responsibilities very seriously, but today we are committing to becoming a truly green enterprise that places eco-management at the very heart of our business decision-making and growth," said Lee Yoon-Woo, Samsung Electronics' vice chairman and CEO.

"This eco-management initiative will encompass all of our global operations, supply chain, and the complete lifecycle of Samsung products, and by achieving these goals we aim to lead the way in tackling the environmental problems that are facing our planet," he explained.

One year after announcing the new green management initiative, Samsung Electronics announced its accomplishments. Samsung has reduced greenhouse gas emissions from manufacturing facilities by 31 percent to 5.1 tons of carbon dioxide per 100 million won compared to 2008. Its LCD line got certified a CDM (Clean Development Mechanism). Through this project, the company achieved up to 7.7 million tons of CERs (Certified Emission Reduction) for the next 10 years, which is worth 92.4 million Euro.

Also to reduce indirect greenhouse gas emissions from Samsung products, the company enhanced energy efficiency itsproducts including TVs, refrigerators and air conditioning systems by 16 percent compared to 2008. Samsung Electronics has reduced 9.6 million tons of greenhouse gas emissions from Samsung products sold between Januarys to June 2009.

Samsung Electronics is actively involved in eco-friendly products development and its expansion. The company aims to exceed Good Eco-Product criteria for 100 percent of Samsung's products compared to the 50 percent as of 2008. The number exceeded the initial goal of 80 percent as of 2009 by 11 percent. "Good Eco-Product" is Samsung Electronics' own criteria for eco-friendly products. Samsung assigns each newly developed product an eco-rating (Eco-product, Good Eco-product or Premium Eco-product) based on internal evaluation criteria.

In order to be considered a Good Eco-Product, products must exceed basic industry requirements, exhibit differentiating eco-friendly features and satisfy global eco-mark standards. As the company's 2,134 product models got credited Global Eco-Marks, Samsung has been a global leader in eco-friendly products . Samsung Electronics also focused on increasing the use of recyclable and eco-friendly materials. In 2009, the company collected and recycled 240,000 tons of waste electronic goods from 60 countries.

Samsung also unveiled on May 2010 a plan to invest big in environmental and related businesses. The company announced a long-term plan to invest 23.3 trillion won through 2020 in new businesses in the environmental and health-care industries. Five major new areas of investment outlined include solar cells, rechargeable cells for hybrid electric vehicles, Light Emitting Diode technologies, biopharmaceuticals and medical devices. Samsung Electronics announced that the five new growth businesses are expected to create around 45,000 jobs and generate 50 trillion won in annual revenue for affiliate companies by 2020.

The investment plan was agreed on during a Samsung Council of Presidents' meeting on May 10, 2010 attended by Samsung Electronics chairman Lee Kun-Hee and heads of related affiliates and business units. Attending executives received presentations on market and technology trends in the new business areas and discussed the investment plans.

For the last one year alone, Samsung invested 1.01 trillion won in eco-friendly product development and "green manufacturing."

As Samsung Electronics has been taking the lead in industry efforts to reduce greenhouse gas emissions, the company has been awarded as one of global top 10 companies in the Carbon Disclosure Leadership Index (CDLI). Samsung Electronics was the only Asian company among top 10 companies. As well, Samsung is listed in Dow Jones Sustainability Index (DJSI).

LG Electronics

LG Electronics has not fallen a step behind Samsung Electronics in terms of green management. LG Electronics unveiled its green management initiative under the "green vision 2012" in December 2009 at its Changwon plant. The company announced that it will slash 10 million tons of carbon dioxide by 2012. For the early half of this year, LG Electronics reduced 0.1 million tons of carbon dioxide in the production process, and 2 million tons of greenhouse gas emissions in the process of using those products. The total 2.1 million greenhouse gas emissions cut by LG Electronics is equal to planting 700 million trees.

LG Electronics also aims to enhance energy efficiency of its products 15 percent by 2012 comparing to 2007 to reduce greenhouse gas emission in the use of products.

The company announced its "Life is Good when it is Green" initiative, the foundation of its global sustainability program in Las Vegas, January 2009. The worldwide program focuses on sustainability through eco-design and eco-products, reduction of greenhouse gas emissions, responsible electronics recycling and addressing global climate change.

"With Life is Good when it is Green, we are focusing on environmentally sustainable solutions, developing Eco-Designs and distributing Eco-Products to help create a safer, cleaner world," an LG representative said.

LG's eco-design strategy works to reduce the environmental impact of a product's development, production, and circulation while improving efficiency of resources, recycling, and reducing hazardous materials, according to the company.

Meanwhile, LG Electronics launched "LG Green Consultants" and "LG Green Volunteers" to help employees understand the importance of green management and reduce green house gas emissions in plants and offices. Each team is organized into 50-person teams.

LG also set up the "Life's Green Class" with Hanyang University and the University of Pune in India to educate junior high and high school students on the importance of the environment and how to preserve it. The company expects about 50,000 students will get environmental education through the program.

Life's Green Class was originally designed as a scientific drama for Korean elementary and middle high school students in 2006. As climate change has gotten more attention, the program is made up with environmental education. The vehicles carry new technologies as well as audio-visual equipment to visit each school in the nation. LG Electronics and the University of Pune have been developing contents focused on Indian students since last March with Indian schools visitingKorean Life's Green Class sites. This customized program will start in September in Pune with financial support of LG Electronics and Pune University with Hanyang University's contents. LG Electronics intends to expand the program to other provinces depending on the response in Pune. The Life's Green Class was held 50 times in Korea last year for more than 300,000 students.

Kim Young-ki, vice-president and chief relations officer said: "We are very pleased to introduce Korean environmental education programs overseas. We hope this program helps students learn the importance of the environment." A-P

COMPANIES MENTIONED IN THIS ARTICLE

Samsung Electronics
Consumer electronics, telecommunication, semiconductor
Seoul, Korea
www.samsung.com

LG Electronics
Consumer electronics, mobile devices, home appliances
Seoul, Korea
www.lge.co.kr

NORTH KOREA

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North Korea to attain those goals, the fact that the North wants to talk represents a shift. The latest Amnesty report helps explain why. Conditions in North Korea, said Norma Kang Muico, releasing the report in Seoul, have worsened while the isolationist regime has spurned foreign intervention. She called on North Korea to begin "to address these shortages, including acceptance of needed international humanitarian assistance."

The report includes numerous sensational examples of cruel treatment to which North Koreans in need of medical care are routinely subjected. In one case, said the report, a man, aged 24, had part of a leg amputated without anesthesia. The report quotes him as saying that five people "held my arms and legs down to keep me from moving" as "I screamed and eventually fainted from the pain."

The fact is North Korea "has failed to adequately address the country's ongoing food shortages since the 1990s," says the report. By now, the question of adequate nutrition and medicine is reaching the elite, adding to the urgency of seeing about wangling donations from South Korea and the West. China, as the North's only real ally, is no doubt filling part of the gap, keeping the regime on life support, but not much more. A-P

ON THE WEB

Amnesty International Korea
www.amnesty.org/en/region/south-korea

The World Food Program (North Korea)
www.wfp.org/countries/korea-democratic-peoples-republic-dprk

LESSONS FROM JAPAN'S FIRST ECO-TOWN PROJECT

BY ANURAG AGNIHOTRI

Kitakyushu is renowned the world over for being the first of Japan's eco-town projects, having gained the approval of the government to set up its eco-town in 1997. The eco-towns are Japanese cities adhering to exemplary environmental standards, pursuing their differing environmental visions.

Kitakyushu is a 485-square kilometer city in the south of Japan with a population of under 1 million. The city is located in the northern part of the region of Kyushu and is within Fukuoka Prefecture.

To this end, the United Nations Industrial Development Organization is to exemplify Kitakyushu and the success it has had, in order to help developing countries learn important lessons regarding environmental management.

Birds'-Eye View of the Eco-Town Project

Eco-towns, in a nutshell, are places in which strict adherence to international clean standards is not only enforced, but is a way of life. This means that all citizens, enterprises and industries living and operating in these towns can be seen (and do in fact see themselves) as stakeholders - they see that it is in their personal and professional interest to ensure compliance with clean standards.

The Global Environment Center Foundation says that eco-towns in Japan were developed through the cooperation and coordination of regional industries and technologies. The concept of an eco-town came to be in 1997, itself based on the concept of zero emissions. The eco-town project was a key project of Japan's Ministry of Economy, Trade and Industry, and it originated through a system of subsidies that was first established by the Ministry of Economy, Trade and Industry and the Ministry of Environment. The Japanese government established the eco-towns to counter the then-pervasive problem of waste management and to stimulate domestic growth in a sustainable manner that would not prove harmful to the environment.

Zero emissions has as its basic aims the reduction of waste produced, including greenhouse gases, to nearly zero; the promotion of energy-saving measures; and close collaboration between different industries and administrative districts. The facets of zero emissions that are incorporated into the eco-town concept include environmental management, resource recycling and urban planning, all of which can be carried out thanks to synergies between the aforementioned collaborative parties.

As such, the Foundation says that existing eco-towns have many key features in common. Some of these are an abiding focus on environmentally friendly technologies and methods such as integrated waste management, the 3R methods (Reduce, Reuse and Recycle), industrial ecology, green consumerism and energy conservation; location in and/or close linkages with a large and growing eco-business market that is well developed domestically and extends internationally; a strong focus on research and development that extends to both public and private sectors, and which is focused on crafting cutting-edge solutions for environmental problems; and the abiding interest of both local and national governmental bodies to craft policy in support of these initiatives.

Lastly, the establishment of eco-towns can also satisfy developmental objectives, as was touched on earlier. The establishment of eco-towns can aid in stimulating the economy - at both a local and a national level - as well as bring about significant research and development thrusts and provide employment for particular areas. Thus it can be seen that setting up eco-towns is truly an initiative that works for the benefit of all concerned - even from a pure policy perspective.

Kitakyushu: an Overview

Kitakyushu is a recognized pioneer in the worldwide environmental arena, having received key awards and distinctions for its environmental prowess, such as the Earth Summit 2002 Sustainable Development Award and inclusion in the U.N. Global 500. The key drivers behind the city's success at its eco-town project are the unwavering focus of its leadership and administrators, its close ties and cooperation with research institutions, and similar ties with companies and industries.

The city aspires to become "Asia's international resource-recycling and environmental industry base city." In order to reach this goal, it has delineated several priority areas, including the creation of next-generation environmental industries that utilize such advanced technologies as nanotechnology; the further development of experimental study areas and R&D; and to strengthen capacity building among its various stakeholders.

After Kitakyushu, several other cities have followed in its stead and have also become eco-towns , such as Kawasaki, Minamata and Naoshima.

The establishment of the eco-town proceeded along various phases. In the first phase, says the Global Environment Center Foundation, a regional development measure designed to integrate industrial activity with environmental conservation took place. In this phase, Kitakyushu's Hibiki Recycling Complex, Eco-Town Center and Comprehensive Environmental Complex were the only sites targeted. In 2002, however, the city modified its plans to expand the coverage area to the 2,000-hectare Hibikinada area. Two years later, in 2004, the entire 48,500-hectare expanse of Kitakyushu City was formally covered by the project.

The Foundation says that Kitakyushu makes use of three distinct strategies through which it aims to promote environmental industries. The first is basic human resource development. The second is the organization of experimental studies. The third and last is commercialization. The foundation explains that these three thrusts are isolated at present, but collaboration between proponents of each thrust, as well as between concerned parties, is to materialize in the near future.

After Kitakyushu, several other cities have followed in its stead and have also become eco-towns , such as Kawasaki, Minamata and Naoshima. However, Kitakyushu's approach and thrust set it apart from the other eco-Ttwns in several key respects. One of these areas is the clustering of recycling and environmental industries, initiatives and firms within the eco-town area. The complex, as a consequence, contains the largest number of the kinds of recycling projects among all Japanese eco-towns. Secondly, the importance of thorough information disclosure is emphasized. Kitakyushu companies are required to allow the public to access their facilities freely in order to build public confidence in the project. Lastly, Kitakyushu has excelled at getting its myriad commercial industries and research institutions to collaborate and synergize.

Lessons from Kitakyushu's Experience

Given its exemplary experience and the success it has had in the environmental arena, the rest of the world has a great deal to learn from Kitakyushu. Here are some key lessons that cities and towns can benefit from should they wish to follow Kitakyushu's example.

Firstly, prior to its declaration as the first eco-town, Kitakyushu, similarly to many of its sister Japanese eco-towns, has boasted not only of an established system for the promotion of industrial infrastructure, but has also focused on capacity building. Kitakyushu has an established history as a base of production, and as such it has had industrial-level infrastructural elements in place for decades. However, it has also engaged in significant capacity building due to its clustering of industries to achieve synergies, its focus on the partnership between stakeholders, its aim to increase its citizens' environmental awareness, and so on. As a matter of fact, says the Global Environment Center Foundation, this capacity building served as the foundation for the formation of the eco-town.

Secondly, Kitakyushu's drive to ensure that its stakeholders synergize via joint research and development initiatives, and that they would all significantly benefit from their commitments to one another - from the national government down to the citizens themselves— - ave ensured that these stakeholders have remained committed to the eco-town project since its inception. Other countries that seek to establish eco-towns - or cities that wish to try to replicate Kitakyushu's successes - must be able to engage their local enterprises and citizens in such a manner in order to be successful. They cannot merely be interested parties; they must have either a professional or a personal stake in the success of such initiatives.

Thirdly, and in conjunction with the second point, the project had significant policy-level support from both local and national Japanese government, which came about in response to the recognized need to stimulate the local economy as well as initiate cleaner and greener industrial methods.

Lastly, it must be said that the prevailing conditions that bolstered and gave rise to the establishment of the Kitakyushu eco-town, as well as the resources available in Japan which made the formation and success of this eco-town possible, might not be shared by other nations, most especially developing nations. It may thus be hard to adopt the Kitakyushu process wholesale to another locale. However, developing countries can still benefit very significantly from Kitakyushu's example, and may thus be able to pinpoint problem areas and work around them. A-P

ON THE WEB

The Ministry of Economy, Trade and Industry
www.meti.go.jp

Ministry of Environment
www.env.go.jp

Global Environment Center Foundation
http://gec.jp

POWERING INDIA'S GROWTH WITH CLEAN ENERGY

BY ANURADHA SHUKLA

Indicative of the increasing importance of the clean energy industry in recent years, worldwide investment aimed at developing technologies and capacity only continue to increase.

Studies regarding global clean technology investments determined that they increased by a healthy 23 percent in 2009, or a whopping $381 billion - this despite the worldwide economic slump. The growth in this investment was apparently spurred by a spate of new energy and climate legislation undertaken by governments worldwide.

In addition, while as a consequence of the recession, the number of mergers and acquisitions dropped 24 percent to 2,176. The overall value of those mergers and acquisitions in 2009 rose to $86.5 billion from $80.1 billion in 2008. Additionally, clean technology investments taking place in 2009 in the Asia-Pacific region increased by approximately 126 percent from the previous year.

Current Status of Clean-Tech Industry in India

In 2008India ranked 5th in the world in terms of the capacity to generate energy from renewable sources. As of 2009 India had a total renewable energy capacity of 16.5 gigawatts. The country's clean technology sector had attracted $2.3 billion in private investments - tenth-best for the year in the G-20 - and $190 million in venture capital, down by 13 percent from 2008.

The relatively high output is directly attributable to investments made in previous years. In 2007, local and foreign venture capitalists invested approximately $3 billion in ventures aimed at establishing or promoting clean technology in India. This represented a considerable increase in such investments, which were up 43 percent over those made in India in 2006. Ten percent of this total figure went to clean technology startups, while the remaining 90 percent went to promoting and further developing already established clean technology ventures.

However, in the succeeding year, in stark contrast to the vibrant growth of venture capital investment in clean technology worldwide, this figure fell in India. It isn't a surprising drop, some analysts say, because venture capitalists are indeed expected to reduce the level of investments after initial periods of high investment, in order to maximize these investments and learn more about their performance before deciding to increase their shares.

Bada Bagh Cenotaph jaisalmer in rajasthan state in india
Pixattitude | Dreamstime.com

India's drive to increase its clean technology capacity has continued apace since then. Initiatives have been conceptualized and organized with the assistance of other countries and both foreign and local enterprises.

In 2009, for instance, a six-day trade mission from Ontario was organized, in which more than $200 million worth of agreements were signed between various Indian firms and clean-technology firms located in Ontario, Canada. At the signing ceremony, notable examples of coordination between Indian enterprises and firms in Ontario were announced. Examples include a joint venture agreement between Bhagawati Gases and Admira Distributed Hybrid Energy Systems to engineer renewable energy products, chemical process plants and green building projects; and the signing of a ,emorandum of understanding between Hero Electric and Electrovaya prior to conducting feasibility studies regarding a jointly constructed and run production plant, which would make lithium-ion batteries to power two-wheeled vehicles.

In addition, the Indian government is continuing to push for significant improvements in its clean technology capacity. The Union Budget for India has allocated 46 percent of its total budget for 2010-2011 to boost infrastructure - incorporating a 61 percent budget increase of $223.5 million aimed to benefit the Ministry of New and Renewable Energy - and has also invested in other significant projects such as its Nehru National Solar Mission (launched at the end of 2009), aimed at beefing up solar-power infrastructure.

Key Importance for India

Continuing this momentum is crucial for India as it prepares to vault into the top tier of the world's economies. Although India has done very well in recent years, its success has had deleterious effects on its environment. In addition, much of its infrastructure may not be able to support further continued growth at this level.

Currently the world's 11th-largest economy in terms of GDP, India is very rapidly becoming a formidable economic power, thanks to its increasing ability to leverage its growing supply of skilled professional labor and significant natural resources. The consensus among economists is that India is set to become a bona fide world economic power as early as 2020.

Part of the success India has enjoyed over the past few years is partly attributable to smart investments - those made in key industries and sectors that have become drivers for other sectors. The country's investments in clean technology are an excellent way to attract key investment and capital - while increasing its ability to efficiently craft positive economic outcomes with less environmental impact

The high rate of growth India has enjoyed has put tremendous pressure on the environment, most especially on local land and water resources.

Over the past 15 years, India's booming population has increased the country's energy demand by 3 percent, resulting in the quadrupling of local demand for coal and oil to generate power, and contributing to significant air, water and land pollution, according to 2point6billion.com. Currently, India generates as much as 3.3 billion liters of wastewater daily in its urban areas, but can only treat 20 percent of the waste its cities generate. Moreover, in the future, the pressure brought to bear by the Indian population is only anticipated to increase, given that current projections have India's population outnumbering China's by 2030.

Secondly, 2point6billion.com states that India is also struggling with a considerable annual energy deficit. The deficit ran at 9.8 percent from April to December of 2009, causing enterprises and factories all over the country to have to deal with hours-long blackouts during peak demand periods. As a consequence, the country was forced to import more coal and oil to compensate. Coal imports from April to December 2009 grew 16.7 percent, up from 9.7 percent in the same period in 2008 - significantly impacting Indian energy security.

Other analysts agree. A result published in the EE Times says that in order to sustain its stellar GDP growth rate of 8 percent, India has to be able to generate 500MW of power every week for the next 25 years. However, the country's economic planners have determined that this goal is unreachable given the country's current natural gas- and coal-fired power plants. In addition, the country uses 2.66 million barrels of oil daily - nearly all of which is imported - and energy demand is expected to double in two decades.

Clean technology may be able to provide long-term, sustainable solutions to these key strategic issues. Cleantech enterprises and solutions can provide cleaner, far more sustainable means of generating power that are far more efficient than the current technology the country's power sector is hobbled with.

Analysts like Mohanjit Jolly of Draper Fisher Jurvetson say that three factors are in favor of boosting the country's clean technology capacity. The country boasts a considerable and growing market where the demand for such sustainable solutions is very high. Secondly, the overall level of awareness regarding the importance of such sources of energy is considerable as well. Thirdly, the Indian government has provided incentives, subsidies and so on to bring in investors, which has had the effect of making the clean technology sector more capital efficient than it may otherwise have been in these initial stages. A-P

COMPANIES MENTIONED IN THIS ARTICLE

Cleantech Group
Clean technologies
San Francisco, California
http://cleantech.com

Dow Jones
Business information/ intelligence
New York, N.Y.
www.dowjones.com

Bhagawati Gases
Energy generation
Khetrinagar, India
www.bhagawatiinternational.com

Admira Distributed Hybrid Energy Systems
Energy generation
Mississauga, Ontario

Hero Electric
Vehicle manufacturing
New Delhi, India
www.heroelectric.in

Electrovaya
Battery design and manufacturing
Mississauga, Ontario
www.electrovaya.com

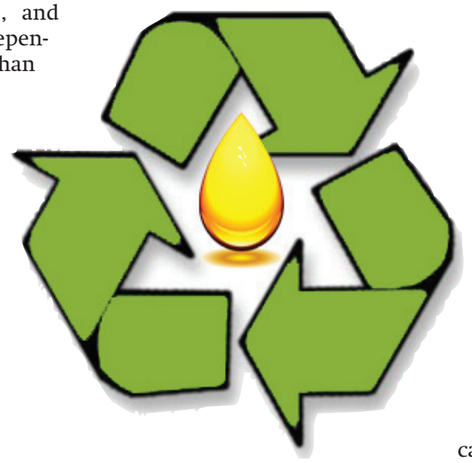
Draper Fisher Jurvetson
Emerging-technology investment
Menlo Park, California
www.dfj.com

CHINESE BIOFUEL INDUSTRY: AN OVERVIEW

BY KEVIN LIU

China's persistent economic growth has come at a cost. The country is saddled with a massive demand for sources of energy to power its growth. It is one of the world's top consumers of oil products - a significant amount of which have to be imported, as domestic petroleum production is not significant enough to meet current needs.

As the world knows all too well, dependence on oil can be problematic. An increase in the prices of both crude and developed petroleum products, increased environmental consciousness, various political issues, and other such problems make dependence on petroleum less than ideal. This is why China, as well as many nations throughout the world, has been engaged in programs aimed at the development of biofuels as alternative sources of energy, and other sources as well.



But the development and use of biofuels has not been without its own controversies.

Biofuel Basics

Biofuels are fuels that are produced, whether directly or indirectly, from organic material or biomass, which includes animal waste such as manure or plant materials like cassava, rice and corn. For the majority of human history to date, unprocessed biomass has served as the basic source of energy. Wood for fuel, coal and animal dung in various forms has accounted for most of the biomass used over the past millennia, and even today represents a major source of energy for people hailing from developing nations.

Over the decades, more efficient biofuel technologies have been crafted and perfected, such that biofuels can nowadays be derived more efficiently and cheaply than in past years, and from a wider range of materials as well. Some of these materials include municipal, food and agricultural waste, and crops.

Biofuels can be classified into primary biofuels, which are simply materials such as wood products that are unprocessed prior to being burned or otherwise used for energy (i.e. firewood); and secondary biofuels, which are derived when biomass is processed, resulting in such biofuels as biodiesel (which is currently derived from soybean oil) and ethanol (an alcohol derived from the starch contained in corn).

Proponents of biofuel use contend that thanks to its many advantages over petroleum-based energy sources as well as other alternative sources of energy, biofuels are the alternative energy source of choice. The use of biofuels results in the production of far less to no pollutants

Biofuels also have their critics, who point out that a shift to biofuels can have significant drawbacks. One of the most significant is in the area of food security. Since many biofuels are derived from crops such as corn or soybeans, critics say that using such crops as power sources can significantly impact agriculture, and can also have an impact on water usage, livestock and crop prices, land use, deforestation and pollution.

The Development of a Biofuel System in China

For the past two decades, China has been engaged in the development of the local biofuel industry. The study "Biofuels in China: Development Dynamics, Policy Imperatives, and Future Growth," by Caleb O'Kray and Kang Wu, shows that the Chinese efforts over the years have managed to pave the way for the expansion of biofuel use throughout the nation - an expansion, however, that has recently been impacted by significant concerns regarding food security.

According to O'Kray and Wu, the initial phase of biofuel research and development occurred from 1986 to 2001. China's economic planners and scientists focused on fermented methane gas, biodiesel and ethanol as having potential for biofuel production on a national scale. In support of this, China's National High Technology Research and Development Initiative, later known as Plan 863, allotted funds in order to undertake this research, and the Chinese Ministry of Science and Technology provided the necessary guidance. Of the three types of biofuels indicated earlier, ethanol and biodiesel were the ones that won the approval of the government.

Biofuels can be classified into primary biofuels, which are simply materials such as wood products that are unprocessed prior to being burned or otherwise used for energy; and secondary biofuels, which are derived when biomass is processed, resulting in such biofuels as biodiesel and ethanol.

The development of ethanol began with a demonstration period, during which the Tianguan Group, a company focused on the development of ethanol, launched a 200,000 metric ton testing project in its home base of Nanyang, Henan province. After the success of the demonstration project, pilot programs supervised by the Chinese National Development and Reform Commission and the China Petrochemical Corporation (Sinopec), which sought to combine ethanol with transportation gasoline, were organized in Nanyang and two other cities (Luoyang and Zhengzhou) in Henan.

Following these successful programs, a legislative phase ensued, during which regulations concerned with maintaining product standards, sales and other such concerns were issued. Beginning March 2002, the Chinese government began to enforce laws to launch the introduction of ethanol-blended gasoline into strategic areas of China.

As regards the development of biodiesel, O'Kray and Wu say that China produces more ethanol than biodiesel. This is due to several conditions. Firstly, China is forced to import all major edible vegetable oils — and is, as a matter of fact, the largest edible-oil importer in the world. Secondly, local livestock is expensive, accounting for a lack of fatty organic matter. Lastly, there is not much land upon which crops used in biodiesel production can be grown. However, steps have been taken to develop considerable biodiesel capacity — itself of considerable strategic importance for the Chinese market given that the local market for diesel is twice the size of that for gasoline.

In May 2006 the Chinese government established a fund that encourages research and development and production of biodiesel facilities. Another study, "China's Biofuel Industry: Future Development and Implications," by Informa Economics and the China National Grain and Oils Information Center, mentions that China produced between 110,000 and 120,000 metric tons of biodiesel from waste cooking oil, and 150,000 to 200,000 metric tons of biodiesel from palm oil in 2006.

Present Chinese Biofuel Use

Past Chinese investments in biodiesel have led to significant present-day capacity and increasingly widespread use and acceptance among Chinese customers.

In January 2009, the total capacity of the country's ethanol projects was 2.2 million metric tons (approximately 47,000 barrels a day) in Heilongjiang, Chongqing, Anhui, Guanxi and Henan. As a result, China is now the third largest ethanol producer in the world. The use of ethanol gasoline is promoted in five provinces and selected cities in other provinces, but by the end of 2010 it is expected to be in use throughout China (save for Tibet, Ningxia, Qinghai, Gansu and Shanxi provinces or autonomous regions).

Regarding biodiesel, despite the difficulties China has had with it, the country has still managed to establish a significant biodiesel-production capacity. O'Kray and Wu mention that as of January 2009, the total Chinese biodiesel capacity was approximately 2.1 million tons (approximately 41,000 barrels per day). However, by stark contrast to ethanol, Chinese biodiesel projects are scattered and small, and utilization rates are said to be lower.

Prospects for the Future

The future would appear to be bright for the biofuel market in China, given the Chinese government's interest in coming up with locally produced alternatives to imported petroleum products to improve energy security, as well as increasingly widespread usage of many biofuels across China. In support of this, capacity for both ethanol and biodiesel is to be increased further; the Informa-NGOIC study says that, for instance, the target is to ramp up production to 2 million tons of biodiesel by 2010, and O'Kray and Wu say that financial incentives will continue to be offered and more pilot ethanol projects (using new crops such as sweet sorghum, sweet potato and cassava) are to be launched in areas such as Northeast China, Chongqing and Shandong Province. The two Chinese state-run petroleum enterprises, Sinopec and CNPC, are to continue to purchase biofuel from private production plants.

Several challenges exist, however. Some of the most significant are food security issues brought about by the continuing use of the aforementioned food crops for biofuel purposes. For instance, research has established that the demand for such crops will lead to increases in the prices for those crops, as well as associated products such as livestock. In addition, there is limited arable land and water available for

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GREEN

CHINA'S QUEST FOR SUSTAINABLE BATTERY RECYCLING

BY LYNETTE WU

As one of the countries on the rise, China has a key role to play in the international economic arena. Having come a very long way from the economic disasters it has experienced in past decades, and thanks to its sheer size and vitality, the Chinese economy is currently one of the cornerstones of the world economy.

The country must grapple with some pressing issues and problems that have come to the fore in recent years - unavoidable consequences of its growth. Two of the most significant are the problems of environmental degradation - stemming from inefficient regulation, which in many cases is playing catch-up to the behavior of firms and individuals - and the country's hunger for resources necessary to fuel its continued growth.

One activity that can serve both needs is battery recycling. As will be seen, especially from the Chinese perspective, properly and efficiently recycling old batteries can have a significant effect in terms of both business and the environment. Indeed, China has already begun to try to establish a system of managing and regulating its local battery-recycling initiatives - efforts that have not been entirely successful. However, the country has been redoubling its efforts in this arena.

Battery Recycling Basics

In battery recycling, scrap and waste batteries of all sizes and from various sources are reprocessed in order to reclaim the various chemicals and materials within these batteries for reuse in other products.

There are many different battery recycling procedures. These run the gamut from those processes that physically separate each of the components first before actual chemical processing, and those that process old batteries in their entirety using special equipment such as sealed furnaces, which prevent no loss of any of these special materials to the environment.

Battery recycling is an important activity for two basic reasons. The first is that the list of components that can be reclaimed during recycling includes plastics, chemicals and metals such as nickel metal hydride, mercury, nickel cadmium and zinc. These are valuable substances that are much in demand not only for battery manufacturers but in many other industries as well. So from an economic perspective, battery recycling makes a great deal of sense - most especially for resource-hungry nations like China.

The second reason why battery recycling is significant is that most if not all of the materials and substances that make up batteries are toxic and can be harmful to the environment and/or people if simply disposed of in watercourses such as rivers or by being dumped in landfills. Reuse of these materials can ensure that few of these dangerous substances, if any at all, are released into the environment where they can wreak havoc.

Battery usage in China

As quoted in "Lead Batteries: Re-Charging China's E-Waste Disposal," a fact sheet that was produced as part of the China Environmental Health Project and written by Kimberly Go and Erika Scull, over 1,400 battery manufacturers operate in China. These companies produced no less than 30.5 billion batteries in 2005 - approximately one-third of the world's total output of batteries - 13.9 billion of which were used in China itself. Each citizen of China, therefore, used an average of 10.7 batteries a year.

Of all these batteries produced, a large and growing number are lead-based. A 2007 report by Research and Markets stated that China's lead-acid battery industry grows at approximately 30 percent every year. Driving factors behind this rapid growth rate include the growing usage of lead-acid batteries in the Chinese automobile market and the local electric-bicycle market. The local market for electric bicycles has itself been growing almost exponentially - in 2005, the report says, over 10 million e-bicycles were produced every year.

As the report further points out, the batteries that power e-bicycles have an extremely short lifespan, lasting no more than one or two years. Furthermore, they contain and give up approximately the same amount of lead as car batteries - both in the production process itself and when they decompose after use. This makes the proper disposal and recycling of these batteries an exceedingly significant concern.

Battery Recycling Programs in China

Battery recycling in China is still in its infancy and many existing processes used in the country to recycle batteries are rudimentary, inefficient and unsafe.

The nascent battery recycling industry in China can be split into two. Many cities, Beijing, Guangzhou and Shanghai among them, have been running their own battery recycling initiatives. Public battery collection boxes, part and parcel of campaigns aimed at getting the Chinese public to give up used batteries for recycling, have been installed in public areas.

However, reports have said that despite these efforts, battery recycling rates are very low as low as under 5 percent for Beijing and only 2 percent to 3 percent for Shanghai and Guangzhou, respectively. It has been determined that a major problem is that there are too few facilities that are properly equipped to recycle batteries. As a matter of fact, the report says, recycled batteries are far too often simply stacked in warehouses and not properly stored at all.

Secondly, there are also private battery-recycling initiatives. Battery recycling serves as a significant source of income for many rural families and scrap collectors.. These families and collectors collect e-waste, some locally sourced and some imported from other nations, from rubbish heaps and other such areas. A large amount of this e-waste contains used batteries. These collectors pick the valuable waste out from the rubbish, segregate what they collect, and sell this waste to small recycling plants. These workers' jobs are by and large unsupervised, and as a result many of them come into close contact with the dangerous chemicals that old and often leaking batteries contain - such as sulfuric acid and lead.

Chinese authorities have not been blind to these issues, and have crafted a set of initiatives designed to improve the country's battery recycling methods. For instance, the Occupational Diseases Prevention and Control Act of 2002 was enacted with the aim of revising existing Occupational Exposure Limits and creating new ones in order to improve the health of those working in the battery recycling industry and punish companies that fail to improve working conditions for their people. However, according to reports issued in 2006, this Act was found to have had little success in reducing lead exposure from such facilities as battery smelters and factories. For instance, average exposure levels for such contaminants as lead fumes and dust were found to remain considerably higher than before the Act came into being.

Also, despite these and other initiatives, many companies continue to flout the rules. For instance, the Chinese environmental NGO Green Anhui, which operates out of Hefei City in Anhui province, reported that there was an illegal stockpile of used batteries on the shore of a river located near the city. As a result of this expose, the local government sprang into action and removed the batteries.

Battery Recycling in the West

Battery recycling in Western nations is an established process. Programs to collect old used batteries for recycling have been in place for some time, and, thanks to both governmental support and widespread acceptance by citizens of many Western countries, they have met with a great deal of success in those parts of the world.

In stark contrast to the newer, less widespread and perhaps less aggressively pushed programs in countries such as China, the programs run in many Western countries, such as the United States and the United Kingdom, are almost comprehensive. For instance, the Battery Council International says that 97 percent of all Western battery lead is recycled using accepted lead-acid battery recycling procedures - batteries, as a matter of fact, are the most highly recycled of all consumer products used nowadays. In addition, much of the plastic and lead that can be found in a typical new battery (60 percent, according to several studies) has been recycled.

In addition, Western nations are not standing still in with their recycling technology; systems that work to reprocess more advanced kinds of batteries, such as those that incorporate nickel hydride and lithium, are currently being developed and may be in widespread usage within the next few years.

Looking to the Future

Chinese authorities are quite aware of the shortcomings of the existing processes and procedures, and are looking for ways to improve them. In addition, as reported in the Winter 2010 issue of the "Issues in Science and Technology" journal, China, along with South Korea and Japan, is investing heavily in certain key areas, such as infrastructure and research, which will enable it to become a major player in the clean technology industry.

Specific initiatives include the development of a new chemical disposal technique in 2001, one in which heavy-metal ions are purified before they are released, which was developed at the Beijing University of Science and Technology. More recently, in 2008, the largest plastic recycling plant in the world was constructed in Beijing, and at the fourth Sino-U.S. Strategic Economic Dialogue held in that year, China and the United States worked out an agreement regarding the proper disposal of hazardous materials, including lead-acid batteries. A-P

COMPANIES MENTIONED IN THIS ARTICLE

Green Anhui
Non-profit NGO
Hefei City, Anhui province, China
www.green-anhui.org

ON THE WEB

Issues in Science and Technology
www.issues.org

Q&A

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This is a very serious issue, but considering how often many countries, including mine, rigidly defend territorial claims, why cast this as a "middle kingdom complex," or as an exotic development?

How important is it to learn Chinese if one wants to do business there?

It is always an enormous help, no matter what your dealing with China is, to study the language and get a feel for how it works, even if you don't become fluent. Although a difficult language, it is fascinating. And for me, it isn't nearly as hard as Japanese. A-P

For more of Wasserstrom's views, see http://thechinabeat.org.

Indonesia Consumer Confidence Decreases

BY VIJAY ASHTHANA

A woman in a traditional kebaya holds colorful shopping bags
Szefei | Dreamstime.com

While some Asian countries witness rising consumer confidence, it is slightly different for Indonesia.

According to the MasterCard Worldwide Index of Consumer Confidence, the most comprehensive survey in the Asia-Pacific region, Indonesia's consumer confidence score for the second quarter of 2010 is 61.4. This is lower than the 67 that the country scored for the first quarter of the same year.

Mastercard analysts consider the score as fairly optimistic.

In 2009, the country's retail sales grew11 percent. This figure is impressive considering that an economic recession was affecting the global community during this period. The retail sales figure is expected to grow even stronger this year. Mastercard predicts that the increase will be around 15 to 20 percent.

However, 2009 was not a year for Indonesian consumers to be confident about their economy. Indonesia garnered an index score of only 38.5 in the first quarter of 2009. This score improved and was up to 49.2 for the second quarter. Clearly Indonesia's consumers welcome 2010 with much more optimism, which will help to speed up the process of recovering from the economic recession.

The MasterCard Worldwide Index of Consumer Confidence is managed by MasterCard Worldwide, an organization that focuses on global commerce ties of businesses, financial institutions, consumers and merchants. The Index is calculated based on a scale where numbers represent the magnitude of confidence. There are five economic factors measured in this scale. These factors are employment, the economy, regular income, stock market and quality of life. The data is collected through personal interviews, phone and computer aided communication.

It is not all bad news for Indonesia. The country's central bank showed a more positive result from their consumer confidence index survey. The Jakarta Globe reported Bank Indonesia's consumer confidence has significantly improved in April 2010. The optimism has increased in areas such as rising job opportunities and income. The Consumer Confidence Index increased by 3.3 points from March, which brings the total score for April at 110.7 points. The monthly index data is gathered from interviews of 4,600 households in 18 major cities.

The central bank stated that price pressures are expected to rise in the next three months as indicated by the rise in the Price Expectation Index. The index increased 3.5 points from the previous month.

The Price Expectation Index is a component of the CCI that measures the respondents' projection of goods and services prices.

Bank Indonesia added that consumers are mainly concerned about the government's plan to hike electricity tariffs by July. This fact is supplemented by the report of the Central Statistics Agency that showed a 3.91 percent increase of Consumer Price Index in the month of April. However, the Current Economic Condition Index, which is another CCI component, rose to 99.6 in April. The central bank attributes it to the respondents' belief that job opportunities are growing.

The retail sales figure is expected to grow even stronger this year. Mastercard predicts that the increase will be around 15 to 20 percent.

Overall, the CCI results reflected that positive expectations of consumers about economic development and improvement outweigh the concerns and issues of rising prices. "Respondents are optimistic that their income in the next six months will improve," Bank Indonesia concluded. A-P

ON THE WEB

Bank Indonesia
www.bi.go.id

The Jakarta Globe
www.thejakartaglobe.com

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al-core version, which is projected to be released in the third quarter of this year. This news will help maintain the demand of netbooks and other mobile products. The company is set to improve the performance of low-power chips that are also affordable.

During Intel's financial earnings call on April 13 this year, Otellini mentioned "The next innovation coming to Atom is on dual-core." The introduction of dual-core chips will provide faster processing time for netbooks, which is always criticized for their underperformance. Intel is positive that atom chips will eventually find ther way to mobile devices such as smartphones.

HP has already been advertising their new netbook called the Hewlett-Packard Mini 210. This product is running on Intel's upcoming N455 chip, which is part of the Atom series' processors. This particular Atom processor is quite the innovation as it supports DDR3 memory,allowing speedier data exchange between the memory and CPU. This leads to better netbook performance, a notch higher than the DDR2 memory present in mo st netbooks today.

"Intel has to upgrade the Atom processor in order to keep netbooks fresh. A netbook with a dual-core Atom processor with DDR3 memory will perform better, but it's hard to say by how much," said Jay Chou, research analyst at IDC. A-P

COMPANIES MENTIONED IN THIS ARTICLE

AsusTek
Computer industry
Taiwan
www.asus.com

ABI Research
Technology market research
Oyster Bay, N.Y.
www.abiresearch.com

Samsung Electronics Co. Ltd.

IDC
Technology market
Framingham, MA
http://www.idc.com

Apple
Computer, electronics industry
Cupertino, CA
www.apple.com

Hewlett Packard
Computer vendor
www.hp.com

ON THE WEB

ZDNet Asia
www.zdnetasia.com

CNet
www.cnet.com

Bullet Train of Japanese Economy Slows Toward Crisis

BY VICTOR FIC

Hark! Turn your ear eastward toward Japan – what is that crashing sound? Is a bullet train ramming into the end of the tracks? In a way, yes it is. The high speed train that was likened to the island nation's post war economy has crashed.

The days when the sound of many wheels humming metallically i.e. high growth, low unemployment, manageable debt, etc. are now a nostalgic memory. It is a complicated subject, one that requires a book to explicate for those unfamiliar with Japan, but a debrief – and cautionary tale – for Business and Technology readers follows below.

The Train Speeds Up in the Post-War Years:

By mid 1945, the US army air force's ferocious air war against Japan had reduced some of its 70 Japanese cities to a desolate landscape of ash, burned out buildings and fire-blackened office safes. After Tokyo surrendered on September 2, American analysts turned to detailed post-war era planning. They concluded that the Philippines had the best potential for regional prosperity while Japan was seen as borderline hopeless. In fact, President Dwight Eisenhower's secretary of state, namely John Foster Dulles, told the Japanese as late as the early 1950's that their country, once a proud empire and never to rise again, would have to get by making "cocktail napkins" and such.

Wasn't Dulles remarkably wrong? In truth, the Japanese economy's wheels started turning. One reason was the culture's ethic of hard work, wherein Japanese implore each other to "gambatte" or endure hardship for the long term, usually group pay off. Other factors included the so called Dodge line. In 1947, the Detroit banker Joseph P. Dodge, part of the American occupation program in Japan, set the yen to dollar exchange rate at 360 to one greenback. It permitted Japan's exports to soar. In addition, the far left's attempt to foment revolution failed. When General Douglas MacArthur learned that the leftists planned a general strike for 1947 to paralyze the economy, polarize society and win adherents for revolution, the warrior turned nation builder outlawed the strike. Along side the Dodge line, it stabilized – even saved – the Japanese economy and country.

The Korean War (1950-53) gave a huge boost to Japan because the UN forces used the country as an off shore staging and production base. For instance, Japanese industrialists built the trucks that rumbled over Korean battlefields, sparking the later day automobile industry.

By 1960, the country's foundation was large and stable enough for Prime Minister Hayato Ikeda to launch the income doubling program. Slated to take ten years, the busy beaver Japanese, enjoying almost unhindered access to Western markets and low defense spending under American tutelage, achieved it in eight years. In 1973, the Japanese exulted as their economy became the world's second largest.

Western scholars, policy wonks and businessmen realized that Japan was chugging out more than just cocktail napkins! As the Philippines stagnated, and as over 25 of all cars on American roads were Japanese by the mid 1980s, Japan's success really cried out for explanation.

Traditional neo-classical economists claimed that it succeeded largely because it is no different from other prosperous economies. However, trade tensions with the West started to climb. In the Nixon era, when Japan's surplus was in the low billions, Tokyo – broadly and ambiguously – pledged to "handle the issue." By the mid-1980s, however, the US's trade deficit was counted in the tens of billions. Various American attempts to penetrate the Japanese market, such as the Structural Impediment Talks, produced poor or middling results.

Therefore, in 1985, Tokyo's trade partners forced it to accept the Plaza Accord – named after the hotel where it was signed – that altered the Dodge line. Now the yen was strengthend to 180 to the dollar. Neo- classical economics predicts that this would render Japan's exports more expensive and Western imports cheaper, thereby solving trade tensions. But Japan's surplus continued sky ward.

The strange development encouraged the emergence of a new school on Japan sometimes dubbed the revisionists. They argued that Japan was not a Western style market economy. Instead, they insisted that its overall economic model hailed not from Adam Smith, but from German thinkers who emphasized the primary role of the strong state in strategically orchestrating growth. Politicians, elected or otherwise, held less power in real terms than elite bureaucrats. The latter worked at ministries dedicated to planning national industrial strategy and to finance that resembled the general staffs of military officers.

Generally, the bureaucrats did not let the play of market forces determine outcomes. Instead, they "picked winners" by targeting certain industries, e.g. textiles and steel for high speed growth, ensuring an easy supply of capital, permits and licenses. They guaranteed a protected home market that shielded the country's young industries from foreign competition through tariff and non tariff barriers.

Many predicted that Japan would eventually overtake Washington as the world's number one economy.

At the heart of the industrial machine were the keiretsu industrial cartels. Their pre-war counterparts, the zaibatsu, were vertically arranged groupings that could easily source capital from banks within the collective organization. Cross share holdings prevented outsiders from gaining control, i.e. buying shares and then demanding representation on a board of directors. MacArthur's reformers broke up the zaibatsu after charging them with fomenting militarism. The keiretsu that appeared after 1945 were horizontally structured with no clear top corporation or enterprise; however, they also possessed in house banks that provided easy credit and they practised the same cross share holding that blocked outsiders.

It was this Japanese national approach, argued the revisionists in often heated debates, that explained Japan's trade surpluses based on an import substitution, export led formula. Many predicted that Japan would eventually overtake Washington as the world's number one economy.

Then in the mid to late 1980s, Japan entered the so called bubble economy ear that inflated real estate assets, land speculation and too easy borrowing from banks with the land assets as collateral characterized. It lead to banks that held loads of toxic debts or non performing loans. The bubble burst in the early 1990s – and the train felt friction under its wheels.

Now Japan watchers are again asking, what happened, but this time the tone is negative.

The Train Slows to a Crawl:

As veteran East Asia correspondent Kevin Rafferty asserted in the Japan Times on July 8th, "belatedly, Japan's leading politicians are waking from their coma and realizing that the country's economy is in a massive mess hit by a triple whammy of low growth, heavy debts and an increasingly aging population." That summarizes how and why the bullet train has slowed to a crawl.

Part of that debt load comes from past stimulus packages that attempted to galvanize growth through public works spending. This was a common strategy among the post-war conservative politicians and mandarins, but more recently it has failed.

The demographic issue is also a break from past growth years. Its base is the refusal ot Japanese women to have more children because of the high cost and stress of education, cramped housing and poor public facilities for kids such as play grounds. In addition, Japanese women entering the work force – mimicking their sisters world wide – are marrying later or not at all, further dropping the birth rate below replacement. Experts predict that by 2025, the country's numbers will have fallen from a peak of about 130 million to as low as 90 million.

The few advantages are more land; cheaper real estate prices; additional space; diminished demand on resources; less ecological damage; fewer traffic jams and demand on public infrastructure; and smaller classroom populations, which means more teacher attention on each student.

However, it also results in fewer college aged students, cauing many schools to close – more jobless – or to lower admission standards to ensure tuition revenue. Untalented students are now filling university seats, a pessimistic development for the quality of the nation's future technocrats, business elites, educators, etc.

The whopping down side is that fewer Japanese will be working to earn the salaries that are taxed for the pensions and support services dedicated to the mass of elderly. As Japan greys demographically, it faces a shrinking national revenue base – but escalating demand.

The Japanese government has publicly bruited plans to solve this crucial aspect of its economic crisis. It will import about half a million or more immigrants every year until the populations shortfall is met. However, many in Japan – and certainly outside – doubt this will ever be implemented in such a xenophobic society. The foreigners are now less likely to hail from China, which is culturally somewhat compatible, now that 10% percent annual growth there makes its citizens optimistic home stayers. Most importees into Japan, therefore, would likely be sourced from countries such as Brazil, the Philippines or Pakistan – the values differences are evident.

As for where the issue now stands, before the July Upper House elections in Japan, Rafferty observes "a sort of Japanese-style consensus about the inevitability of doubling the [consumption] tax. The bad news is that 10 percent is not going to be sufficient to close the government deficit or get on top of the debts."

Rafferty is akin to a straight talking doctor examining the x-rays in front of a very sick patient. He adds that, "The worse news is that the tax will have to go to at least 20 percent and maybe as high as 37 percent if Japan wants to escape the debt trap." No, there is more..."The worst news of all is that Japan's leading politicians are still living in a make-believe world of their own [where] only one party is advocating an early rise, to 8 percent by 2012, in the consumption tax. Another party has a 2020 time horizon for the tax to go to 10 percent."

As for the new Prime Minister Naoto Kan, "having

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Big Changes on Chinese Government Contracts

BY VICTOR FIC

Beijing has told its trade partners that it has sent an upgraded plan to the World Trade Organization to participate in a program that might liberalize its half a billion dollar government contracts market to foreign bidders. American officials made the announcement in mid July

The issue in question is called government procurement (GPA) and focuses on lucrative public-sector purchases and investments. "We are still analyzing it, but we recognize that it includes significant improvements over its initial offer that was submitted at the end of 2007," said deputy U.S. trade representative Demetrios Marantis. The year 2007 was when China first handed in a plan. The new one is "better ... from a variety of respects, including coverage of central government entities," he said at a Washington forum.

To date, China's trade partners have often hammered it for forbidding foreign companies from having access to big state-backed projects. Marantis added that the new stance might be "a solid step toward ensuring China's huge government procurement market is open to U.S. companies" that are qualified to bid.

In fact, the U.S. and the European Union have teamed up to pressure China after it joined the WTO in 2001 to jump in on the procurement agreement. It is now limited to 41 of the WTO's 153 members, including the U.S., the EU's 27 members and Japan.

Taiwan stepped in last year. Considering the propaganda war that Beijing wages against the island that it deems a maverick trying to break away, the former may have followed suit to show the world it is as good a partner as the smaller China.

In December 2007, China's trade partners evaluated its initial application and found it wanting. In June, U.S. lawmakers mulled proscribing their government buying Chinese-made goods or services unless Beijing participated in the procurement agreement. It demands that countries do not discriminate against foreign bidders in non-defense contracts not vital to national security.

The lawmakers were three Democrats and Republican Senator Lindsey Graham, signaling bipartisan sentiment. They lamented that American firms cannot compete in China's government procurement market. All this while Washington purchases Chinese tires, ammunition, office equipment, food stuff, toys, etc.

Marantis added that, after "our analysis, including consulting with domestic stakeholders, we will work with China and other GPA members to ensure China terms of accession are comprehensive and comparable" to others.

Government procurement typically comprises 10 to 15 percent of a country's gross domestic product. Marantis added that China also concurred to hold "intensive" high-level bilateral discussions soon with all relevant government agencies over its controversial indigenous innovation policies that forbid foreign participation.

"This is progress, but indigenous innovation is a tremendous challenge. We have much more work to do to address it, both on winning Chinese support for non-discriminatory innovation policies overall and our short term concerns with pending measures," he predicted. The West charges that the policies threaten global intellectual property protections, fair government procurement policies, market competition, and innovators' freedom to decide how and when they transfer technology. A-P

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The World Trade Organization

GREEN

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use in biomass production — potentially bringing biofuel producers into conflict with producers of food.

The Chinese government must determine the best responses to these and other such challenges in order for biofuels to truly become bona fide substitutes for fossil fuels. A-P

COMPANIES MENTIONED IN THIS ARTICLE

Tianguan Group
Energy industry (ethanol production)
Nanyang City, Henan Province, China
www.tianguan.com.cn

China Petrochemical Corporation
Energy industry
Chaoyang District, Beijing, China
http://english.sinopec.com

China National Petroleum Corporation
Energy industry
Xicheng District, Beijing, China
www.cnpc.com.cn

ON THE WEB

Renewable energy resources in China
www.martinot.info/china.htm

WEATHER SATELLITE MARKET TO QUADRUPLE BY 2018

BY -SHAMILA JANAKIRAMAN

Tropical storm detection, positioning and monitoring of hurricanes and typhoons is enabled by satellites as conventional data over tropical oceans in unavailable.

Microwave sensors can study a hurricane's interior temperature which is an indication of the storm's strength.

Weather satellites are equipped with high-resolution radiometers, which can sense atmospheric moisture content, ground and sea surface temperatures, ocean winds and provide visual imagery. The cloud pattern images are in black and white and give enough details on weather systems to predict storms.

Quantitative information is provided by infrared sensors which can measure radiation at longer wavelengths from infrared to microwave. This data helps in detecting convective storm intensity. Geosynchronous satellites trace position of cloud elements over time which helps determine mid and high level winds over tropical ocean areas. Microwave remote sensing technology is used in Oceansat-1, ERS, DMSP and SSM/1 satellites.

The satellite-based earth observation market is growing rapidly and is a $1 billion market now. This figure is set to quadruple by 2018, indicating that the commercial Earth observation market is becoming a strong source of revenue growth for the global economy.

Also, forecasts indicate that about 260 earth observation and meteorology satellites will be launched in the next ten years worth $27.4 billion.

The scenario in Asia is fast changing with China, Japan and India leading other countries like Malaysia, Pakistan, Singapore, Thailand, Indonesia, Philippines and South Korea. Besides satellite meteorology, Asian countries have plans to include remote sensing and satellite communication. These countries have ground receiving stations near the equator. They also possess inexpensive computer hardware and software producing facilities as they have enough space to build factories and havehighly skilled manpower.

Regional cooperation in space applications is promoted by many organizations. The Asian Association of Remote Sensing and GIS initiated many activities like regional conferences, thematic seminars and meetings to build better relations between member countries. Japan has helped Mongolia in studying global meteorological phenomena and the effects of atmospheric processes on the ionosphere and in developing the satellite communication facilities in the country.

The FengYun-2 (FY-2) is the spin-stabilized geosynchronous meteorological satellite developed by Shanghai Academy of Space Flight Technology and China Academy of Space Technology. The Feng Yun series of satellites monitors the temperature and the clouds above China and neighboring areas and is able to provide meteorological information for the Asia-Pacific region. During the 2008 Olympics the FY-2D provided weather forecast services.

The Indian Space Research Organization has launched many meteorological satellites including the INSAT-3D and OCEANSAT for studying the oceans and their effects on weather and climate. The INSAT-3D provides quantitative outputs like vertical profiles of temperature, atmospheric motion vectors, sea surface temperature, snow cover and other related forecasts. It helps forecast floods and cyclones, which cause immense loss to life and property.

Forecasts indicate that about 260 earth observation and meteorology satellites will be launched in the next ten years worth $27.4 billion.

The Meteorological Satellite Center in Japan is in charge of geostationary meteorological satellite operations including satellite control, satellite image acquisition, further processing and analysis. The data collection platforms help in typhoon tracking and getting tsunami reports.

The Multifunctional Transport Satellite or MTSAT series of satellites in Japan also provide meteorological data. They form part of the World Meteorological Organization's activities. The World Weather Watch Program is supported by several geostationary and polar-orbiting meteorological satellites that can serve as an early warning system.

Indonesia and Thailand have developed the capacity through policies and strategies to leverage applications of space technology. They have produced highly skilled engineering personnel, launched research and development programs to implement a space application program including meteorology along with suitable infrastructure.

To further strengthen the satellite meteorology scene in Asia-Pacific Japan introduced the PARTNERS program. The ETS-V transmits earth observation data covering Thailand, Indonesia, Papua New Guinea, Fiji and Cambodia under this program. Japan also has cooperative projects such as the multi-country project known as DANA-Dynamics Adopted Network for Atmosphere. Undoubtedly this project encompassing satellite launches and other experiments will assist in meteorological needs of participating countries. A-P

ON THE WEB

The Asian Association of Remote Sensing and GIS
www.a-a-r-s.org

Shanghai Academy of Space Flight Technology
www.nti.org

China Academy of Space Technology
www.cast.cn/

The Indian Space Research Organization
www.isro.org

The Meteorological Satellite Center (MSC) in Japan
www.mscweb.kishou.go.jp

BUSINESS

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raised the specter of a Greek-style failure if Japan does
not get to grips with its deficits and debts, [he] has now backed away from setting a firm timetable for tackling them via a consumption tax increase."

Rafferty is correct to focus on the role – or lack of it – of Japanese politicians. For too many years, elite bureucratic mandarins dominated policy making, even writing answers for cabinet members to read during parliamentary questions. One result was the stunting of Japanese democracy, with the prime minister's office far too weak to provide national vision and strong leadership. In fact, the country has now witnessed five prime ministers in as many years, a revolving door style politics more usually seen in the third world and so crippling to the world's second largest economy.

Japan's seems to entering its third "lost decade."

The Chinese Train Speeds Up:

Looking to the future, the claim so oft heard in the mid to late 1980's, either with respect, fear or both that Japan would overtake the US still strikes the ears. However, this time, the subject of the prediction has changed – to China. Most experts expect that it will soon become the world's second largest economy, even if its per capita income lags behind Japan's and by the mid century leap over the US.

The Japanes public evinces a mixture of regret, resignation, anxiety and expectation as it watches China rise. The neighbours are often at odds; however, the growing Chinese market is a haven for Japanese exporters and its cheap exports to Japan benefit Japan's growing number of jobless or struggling workers.

The historical tracks now hum with the sound of the Chinese bullet train – but it is not perfect. That story will be told another day. A-P

EMERGING CHINA

High-Speed Rail Revolution

BY VINTI VAID

China's growing demand for mass transportation has triggered a high-speed rail system revolution that is set to double the country's intercity connections.

Not only could this system help China further its economic competitiveness, but it will steer the country's dependence on imported oil to support its public transportation system.

Such is the importance given by the government in increasing the speed of mass transport connecting its cities. Investments for the construction of this rail system will take up a huge chunk of China's economic stimulus plan.

An Overview of China's High-Speed Rail System

China's high speed rail system, the Wuhan-Guangzhou High-Speed Railway - more commonly known as the WuGuang Passenger Railway, which is operated by China Railways - clocks in as the world's fastest rail line, which will primarily link Guangzhou Province to central China's Wuhan through a dedicated 968-kilometer rail system. Normally, travel time by standard rail between these two areas would take up to 10.5 hours, but with WuGuang's speeds tipping 394 kilometers per hour travel time is cut down to justthree.

Designed asa variation of Germany's Deutsche Bahn AG InterCity Express and Japan's Shinkansen high-speed system, the WuGuang is faster than the current record holder, France's TGV operated by SNCF Voyages, which runs at 272 kph, and the 230 kph-averaging Beijing-Tianjin train that was China's first high speed rail. The new system is also faster than Shanghai's airport shuttle trains that are magnetically levitated and average speeds not more than 251 kph.

What's next for China's high-speed rail system?

China's Ministry of Railways initiated an ambitious high-speed intercity rail project in 2006 using $293 billion of government stimulus funds to complete 16,000 kilometers of dedicated high-speed routes by 2020 for mass transit routes and free up existing rail systems for freight and industrial use. However, the recent global financial crisis resulted in export-related factories to lay off workers, prompting China to demand a delay for the project's completion to 2012 and pouring in an additional $100 billion.

A total of 42 high-speed rail lines connecting most major cities and provinces across the country are expected to be completed by 2012. This includes an expansion of existing high-speed rail systems like the Beijin-Tianjin line's connection to Shanghai, and the WuGuang line's northern expansion to Beijing and the southern extension all the way to Hong Kong.

However, China's high-speed rail system revolution is not limited to locations within the country alone, but could expand all the way to Europe in a straight connection. China is already negotiating with an international network of 17 countries to allow passage of the world's fastest trains through their borders. This would further benefit China's economy by giving it access to readily available natural resources from other countries on this network. A-P

ON THE WEB

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www.technologyreview.com

China Digital Times
http://chinadigitaltimes.net

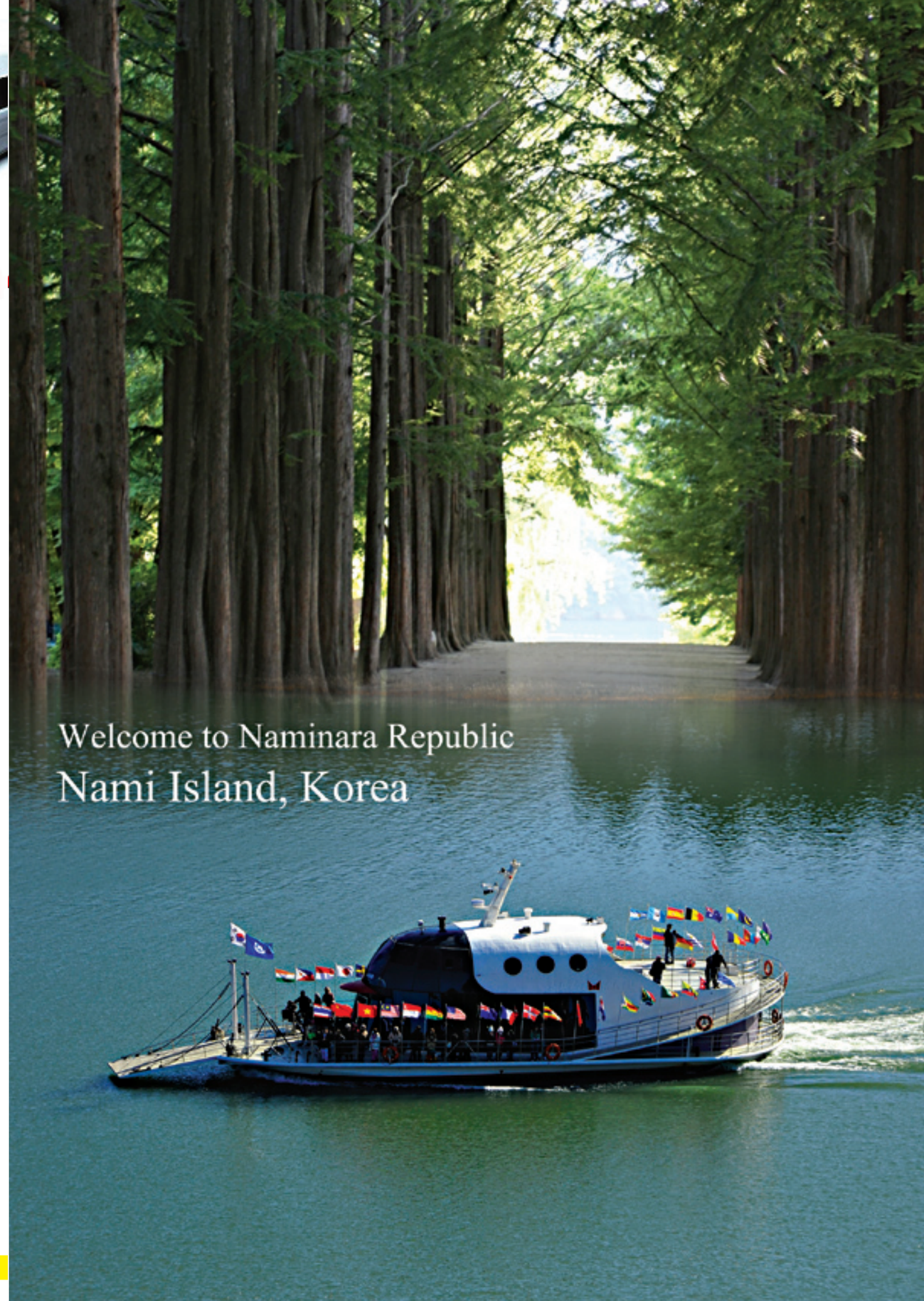
China's Ministry of Railways
http://www.china-mor.gov.cn

COMPANIES MENTIONED IN THIS ARTICLE

SNCF Voyages
French National Railway Corporation
Paris, France
www.sncf.com

ARC China
Investment company
Hong Kong
http://www.arcchina.cn

Deutsche Bahn AG
Rail transport
Berlin, Germany
www.deutschebahn.com



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