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Still Not a  
Hit in Asia**



SPECIAL FEATURE  
**Enchanting  
Tamilnadu**

**Taking the  
Focus Off  
the Hardware**

ASIA-PACIFIC  
**Business &  
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REPORT

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**3G**  
**in India:**

*Lifeline for  
Customers  
or Operators?*



**Automobile Industry:  
The Largest Beneficiary  
of the Changing  
Lifestyles in China**

**From Obscurity  
to Clarity: Getting  
Famous Online**

**Declining Shine of  
Mt. Paekdu Reserve**

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# Contents

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Cover Story

## 3G in India

Lifeline for Customers or Operators?  
Pages 6-9

**WORLD**

**18 View Across the DMZ on Korean Peninsula: Economic Needs Cool Tensions**  
BY DONALD KIRK

**IT**

**20 Emerging 3D TV Trends**  
BY RAJANI BABURAJAN

**24 From Obscurity to Clarity: Getting Famous Online**  
BY ZACH BARDON

**28 Taking the Focus Off the Hardware**  
BY MATTHEW WEIGAND

**31 Bridging the Gap in Technology Generation and Adoption in India**  
BY VINTI VAID

**34 Future of Indo-Korea Collaborative Activities in Nanotechnology**  
BY SIVARAM AREPALLI

**Q&A**

**38 Yozo Hasegawa**  
BY VICTOR FIC

**BUSINESS**

**40 Automobile Industry Boom Amid Changing Lifestyles in China**  
BY REENA SAXENA

**42 Carrefour Marches Ahead in China, Eyes Indian Market**  
BY ANURAG AGNIHOTRI

**44 Asia-Pacific Consumers Ready to Spend their Way Out of Recession**  
BY ANURADHA SHUKLA

**GREEN**

**46 Environment Friendly Mgt.**  
BY AMANDA MIN CHUNG HAN

**48 Green Cars Still Not Hit in Asia**  
BY VINTI VAID

**ECOLOGY**

**50 Declining Shine of Mount Paekdu Reserve**  
BY BRYAN KAY

**SPECIAL FEATURE**

**TAMILNADU**

**10 Top 10 Reasons to Visit Tamilnadu**

**14 New Travel Buzzwords: Medical Tourism in Tamilnadu**

**16 Q&A: Dr. A.C. Mohandoss**

# 3G in India



## Lifeline for Customers or Operators?

BY RAJANI BABURAJAN

**I**ndia's 550 million mobile customers have been waiting to enjoy live streaming videos, video conferencing, enterprise applications and mobile TV – all of which come with high speed.



Indian Telecom Minister A Raja

Even without the advent of 3G, Indians experienced the mobile Internet, but without good quality and less transparent pricing. Mobile Internet – whether it's on Vodafone Connect or Tata Teleservices' Photon – have not reached expectations. It so far ensured connectivity with a price. It ensured poor quality, unopened videos, bill shocks to users.

### Will 3G be different?

3G operators manage to earn decent revenue in developing countries. But India may prove to be different. Nevertheless, Indians are going to spend money to experience 3G – the question is, how much?

The game plan of operators reflects the fact there is an appetite among Indians to download their Bollywood icons, cricket stars, and share the downloaded content with their loved ones. That's why all leading operators in India put their bids at exorbitant prices. There's another school of thought that suggests these operators coughed up money to spruce up valuations at stock exchanges. Our news hungry stock market responded on each auction days. Beyond strategies to revive the dwindling ARPUs, the open fight is to correct market valuations.

### Powered by the mightier

India's 3G bid auction has drawn much interest among investors and leading telecom vendors. India, one of the largest playing grounds for leading telecommunications companies, is now getting ready for the 3G services launch. The service is expected to be launched in 2010-11.

Following the 3G auctions, all operators including the state-run BSNL and MTNL paid spectrum fee to the government. Thanks to the transparent way the telecom ministry managed the auction, there was no litigation to thwart the auction process.

Bharti Airtel paid the highest Rs 12,295 crore for 3G spectrum in 13 circles, followed by Vodafone (Rs 11,618 crore). State-owned BSNL and MTNL also paid Rs 10,187 crore and Rs 6,564 crore respectively for the radio waves. Anil Ambani-run Reliance Communications deposited Rs 8,585 crore. All the successful bidders will get spectrum in September this year after it gets vacated by the defense ministry.

Interestingly, all operators funded their 3G ventures. Vodafone is said to have secured long term loan from the State Bank of India to the tune of Rs 10,000 crore. Bharti Airtel is using their cash of Rs 8,000 crore. They

all look forward for a huge profit in order to compensate the amount they invested. What will be the main mechanism to compensate the spectrum fee?

**Bill shocks**

3G phone services allow users to download data, current videos on their mobile phone with just one touch.

**Will 3G offer bill shocks to customers?**

It will depend on how operators bill customers. A huge amount is being invested to get the 3G license. Operators will have different price points. 3G in India will re-define the pricing in India. Operators will address both low-end and high-end customers.

Bharti Airtel, Reliance Communications and Aircel won licenses for about thirteen circles. "We are expecting at least 25 percent of the post-paid customers to shift to us immediately after we offer service," said one of the bidders who won on two circles.

Promoting to 3G will be a pricy affair for all the telephone operators. When we are not sure that India will get 3G, the technology has moved to 4G. It is able to provide IP solutions in data, voice, and multimedia at anytime, anywhere at higher data rates compared to the previous generations. In order to improve the operators, they need to allocate the spectrum for 3G. The ultimate cost of distributing 3G networks might discourage the operators from rolling it out to the existing customer base, because some sections may not have immediate access to 3G. The cost of distributing the networks will impact the pricing schemes for service options offered. But the mobile users in India will feel a better experience after 3G turns to reality.

**Around the globe**

The wideband code division multiple access (WCDMA) technology reposed on the standards, wide range of multimedia possibilities, and possible economies came to support this technology under 3G spectrum. There are nearly about 60 3G networks all around the world. In the U.S., Europe, and in Asia the telecommunication firms use WCDMA techniques.



**Promoting to 3G will be a pricy affair for all the telephone operators. When we are not sure that India will get 3G, the technology has moved to 4G.**

thirteen circles which includes Delhi and Mumbai. The company plans to strongly leverage its media, gaming, cinema and broadcasting capabilities to offer its customers a unique 3G experience.

Tata Teleservices has dropped Delhi, Mumbai and taken three in category A and six in category B circles. In a statement TTSL said, "The company management is very delighted with the outcome of the 3G spectrum auction, especially as we have bagged the best telecom Circles from the perspective of their cumulative market potential, particularly so when we take into consideration overall spending. Significantly, we have covered the entire geography of prosperous India on

**Who won what?**

Bharti Airtel has successfully raised over certain states such as Delhi, Mumbai, Karnataka, Andhra Pradesh, and Tamilnadu, Uttar Pradesh, Rajasthan, West Bengal, Himachal Pradesh, Bihar, Andhra Pradesh, North East and Jammu & Kashmir, and Assam, where as Aircel has covered south India along with East region of India.

Aircel, another major operator in India, bagged a 3G license for its strong presence in the south and east of the country.

"We now cover the whole of Southern and Eastern India where we have our strong presence and in J&K, Punjab & UP (East) as well. With this we will be able to offer seamless connectivity and meaningful products and services to our consumers which will eventually change their life and open a world of possibilities," according to Gurdeep Singh, COO, Aircel.

Idea Cellular has grabbed 11 circles at a lower price compared to the other five big service suppliers in India. It won eleven circles with a cost of Rs 5769 crore. The 2.1 GHz (3G Spectrum) footprint of Idea Cellular covers a very high proportion (81 percent) of Idea's total national revenues. Idea believes it's bidding strategy and the Auction results significantly enhance Idea's competitive position in the market.

Reliance Communications has pocketed 3G spectrum in

**CURRENT POSITION IN THE CIRCLES ('Y' DENOTES COVERED)**

Circles	Bharti Airtel	Voda	Idea	R Com	TTSL	Aircel	STel	Win Price in Rs Cr
Delhi	Y	Y		Y				3316.93
Mumbai	Y	Y		Y				3247.07
Kolkata		Y		Y		Y		544.26
Maharashtra		Y	Y		Y			1257.82
Gujarat		Y	Y		Y			1076.06
Andhra Pradesh	Y		Y			Y		1373.14
Karnataka	Y				Y	Y		1579.91
Tamilnadu	Y	Y				Y		1464.94
Kerala			Y		Y	Y		312.48
Punjab			Y	Y	Y	Y		322.01
Haryana		Y	Y		Y			222.58
Utter Pradesh(East)		Y	Y			Y		364.57
Utter Pradesh(West)	Y		Y		Y			514.04
Rajasthan	Y			Y	Y			321.03
Madhya Pradesh			Y	Y	Y			258.36
West Bengal	Y	Y		Y		Y		123.63
Himachal Pradesh	Y		Y	Y			Y	37.23
Bihar	Y			Y		Y	Y	203.46
Orissa				Y		Y	Y	96.98
Assam	Y			Y		Y		41.48
Jammu and Kashmir	Y		Y	Y		Y		30.30
North East	Y			Y		Y		42.30
Total (Rs Cr)	12295	11618	5769	8585	5864	6499	338	16751

the Western side, while there is no entanglement with Category 'C' circles- therefore, this has proven to be a most capex-optimized bidding for us. Tata Teleservices did pursue the major metros in the country, but decided to drop out of the bidding when the sheer outlay made these a winner's curse."

**Speed to make the difference**

3G is the next big step in mobile communications in India. The higher speed that 3G provides will enable users to download data more quickly. Compared with an average speed of 70 kbps offered by the current Global System for Mobiles (GSM) networks, 3G will enable speed up to 1 Mbps. Of course, it will improve the quality of voice calls. To get the service, the user needs a 3G-enabled phone, which currently costs about Rs 6,000. There are two 3G technologies that are being deployed - Evolution Data Optimized (EVDO) and High-Speed Download Packet Access (HSDPA). While CDMA operators offer EVDO-based 3G services, GSM operators will roll out HSPA. One of the noticeable advantages of this technology is that you can watch television on your mobile and have video calls with any other person who has the same 3G technology. It also includes geo positioning. Multiplayer gaming, for the young sub-

scribers, is also supported. Lack of spectrum in India forced operators to bid at huge prices. The impact of the 3G bids will be felt on the industry for years to come. The industry is yet to recover from the price war that culminated in the one paisa per second plan. As a result, the industry has seen little revenue growth over the past six years.

However, the high bidding for 3G has not affected the bidding for BWA spectrum. Six of the 3G bidders are also in the race for BWA spectrum. The same operators will be aggressive in the BWA auctions as BWA complements their 3G strategies. The BWA spectrum auction is set to exceed the target of the government.

The private operators will face some problems, while the real losers will be state-owned operators BSNL and MTNL. Private operators always have the advantage of grabbing more customers than lackadaisical state-owned companies. MTNL will have to pay Rs 6,564 crore for 3G spectrum in Delhi and Mumbai alone. BSNL too will have to pay Rs 10,000 crore for spectrum in the other 20 circles, matching the high target set by the private players.

It will be a win-win situation for both customers and operators. Both will win the race if the operators price according to the need of the customer. **A-P**



TAMILNADU

# Top 10 Reasons to Visit TAMILNADU

BY ANURAG SHUKLA

India is a vast and wonderful country with over 4.7 million tourists from all over the globe visiting its shores on a yearly basis. For many people who have come to see Incredible India, their visit is worth reminiscing and many would like to go back and experience it all once more. And for those who have not gone there yet – a great deal would be dreaming of someday going and have the same experience.

## But where to go in this vast and incredible land?

If variety is what you seek, then Tamilnadu should be at the top of your list. This state is the embodiment of all the artistic, cultural and religious accomplishments that thousands of years of the Tamil civilization has achieved. With truly enchanting destinations and equally awe-inspiring tourist locations, Tamilnadu is a perfect destination for those who want to savor rich languages endowed with a natural beauty, and a cultural heritage filled with unique and colorful traditions, arts, crafts, architecture, festivals and religious celebrations.

## An Overview and Background of Tamilnadu

“Enchanting Tamilnadu”, is the tagline that was adopted by the Tamilnadu Tourism Development Corporation or TTDC for promoting the second largest tourism destination in India. The state draws tourists from both local and foreign visitors alike, with over 1.7 million from abroad and 50 million and more from the rest of India. This can be attributed to the strong government support in promoting the tourism agency, backed by considerable investments in establishing efficient transportation systems, road net-



works and a well-developed rail network system.

The road and rail networks interconnect the various urban, rural and agricultural regions of the state, as well as providing a link to the rest of India and the world. The well developed railway system connects to all the other cities in India, making Tamilnadu a very accessible destination for both local and foreign visitors. This land network is beefed up with domestic airports as well as a major international airport in Chennai, providing air facilities for commercial and industrial flights. On top of that, Tamilnadu is also accessible by sea through the major and minor ports that handle commercial and industrial traffic within Tamilnadu and the rest of the country and the world.

Tamilnadu is home to the ethnic Tamil people of India that has a rich cultural and historical heritage that dates back for two thousand years. Tamils are mostly Hindus but a significant number of Muslim and Christian Tamil communities are also in residence. People who would visit Tamilnadu can savor this rich cultural heritage as well as the other attractions that make this state one of the favorite destinations in India.

## 10 REASONS WHY TOURISTS VISIT TAMILNADU

Tourism is a major industry in Tamilnadu and the local government is making considerable investments in improving what the state has to offer catering to the diverse categories of both foreign and local visitors. The following are ten of the topmost reasons why visitors from both local and foreign origins should go forth and visit Tamilnadu.

### 1) Leisure Tourism

Tamilnadu is a prime destination for those whose primary purpose is to sit back, relax and enjoy the various leisure destinations in the state. The region is

blessed with a rich natural beauty made evident in the many beautiful hill resorts, bird sanctuaries, botanical and horticultural gardens, beach resorts, splendid waterfalls and zoological parks.

Known for its magnificent hills, visitors can stay at the many splendid hill resorts and stations at Coonoor, Kodaikanal, Top Slip, Udhagamandalam, Yelagiri and Yercaud. The hills in Tamilnadu are characterized by thick forests teeming with wildlife. Foremost among these hills is the Cardamom, Palani, Nilgiri and Shevaroy hills.

Tourists can also come and see the animals in the reserves, national parks and sanctuaries like the Mudumalai National Park, the Kalakkad Mundanthurai Tiger Reserve, the Gulf of Mannar Biosphere Reserve, the Indira Gandhi Wildlife Sanctuary, the Arignar Anna Zoological Park and the Nilgiri Biosphere Reserve which houses 10 percent of the endangered Nilgiri tahr species.

Visitors can witness a distinct and amazingly beautiful sunrise at the southernmost tip of India at the Kanyakumari. Or they can visit one of the longest beaches in the world at the Marina Beach in Chennai or the one in Mamallapuram, as well as the waterfalls, theme parks and resorts and savor the delectable delicacies in the culinary centers and eateries in the region.

### 2) Heritage Tourism

Visitors who would like to experience the rich historical legacy of Tamilnadu can go on tour at the various historical monuments and UNESCO World Heritage Sites including some of the grandest Dravidian architectural achievements found in the distinctive Hindu temples located in various areas in the state. This includes the Airavateswara temple in Darasuram and the Rajagopuram of Sri Ranganathaswamy Temple in Srirangam.



### 3) Adventure Tourism

Extreme sports enthusiasts in both air and water can quench their appetite for adventure and get an adrenaline rush from some of the sporting events and destinations in Tamilnadu. Or they can go on a trek at some of the animal sanctuaries and reserves that house a wide variety of birds, deer, bears and other animals and wildlife.

### 4) Business Tourism

Tamilnadu is also fast becoming a hub of cross-border business opportunities where top executives from around the world go for their business meetings, conferences, conventions, seminars and other business related matters. These are all wonderful opportunities to combine business with pleasure by integrating tourism with their business trips.

The state is seeing a convergence of new technologies, joint operations and productions that make Tamilnadu a viable destination for business dealings and opportunities that would create jobs for the more than 40,000 engineering students graduating each year.

### 5) Medical Tourism:

India has emerged as one of the top global destinations for medical tourism, offering cost-effective medical services and treatments using state-of-the art medical instruments and procedures at world class medical facilities and hospitals that are comparable with some of the best in the world. With healthcare services that can cost only a fraction of what such services would cost in developed countries, the number of medical tourists going to the country continues to grow exponentially.

Tamilnadu is one of the preferred destinations for healthcare tourism in the country and has been acknowledged in the fields of Eye Care, Oncology, Dialysis, Kidney Transplant and Orthopedics. Each year, a growing number of medical tourists are flocking towards Tamilnadu to avail of what medical tourism has in store for them in this state.

### 6) Fairs/Festivals Tourism

Tamilnadu has its share of festivals, art exhibitions, cultural fairs and other events that draws a great number of enthusiasts to its shores. Part of the deep cultural heritage from the Tamil people is the significant number of folk dances that are performed in various occasions including theaters. Some of these dances in-

clude the much celebrated karakattam, the very colorful Mayilattam and the Paraiyattam.

### 7) Religious Tourism

People who would like to have a deep religious experience in their visit to India can do so more conveniently by arranging tourism packages that involve visits and immersion to rich religious destinations and centers in Tamilnadu. The serene atmosphere of the state coupled with a vast array of age-old temples and monuments.

### 8) Academic Tourism

A growing number of foreign students are availing of the various cultural exchange programs between their schools and the educational institutions and universities in Tamilnadu. Not only will these students be immersed in the way of life at Tamilnadu's institutions, but they can also enjoy the combining tourism amenities in their exchange programs.

### 9) Rural Tourism

The government in Tamilnadu is exerting considerable efforts in promoting rural tourism in the state, particularly the lesser known tourist destinations in various rural regions in the state. Under such programs, tourists can experience life at these villages in their unadulterated form. These projects would involve the participation and partnership of the villagers themselves as a concrete step towards improving the local economy.

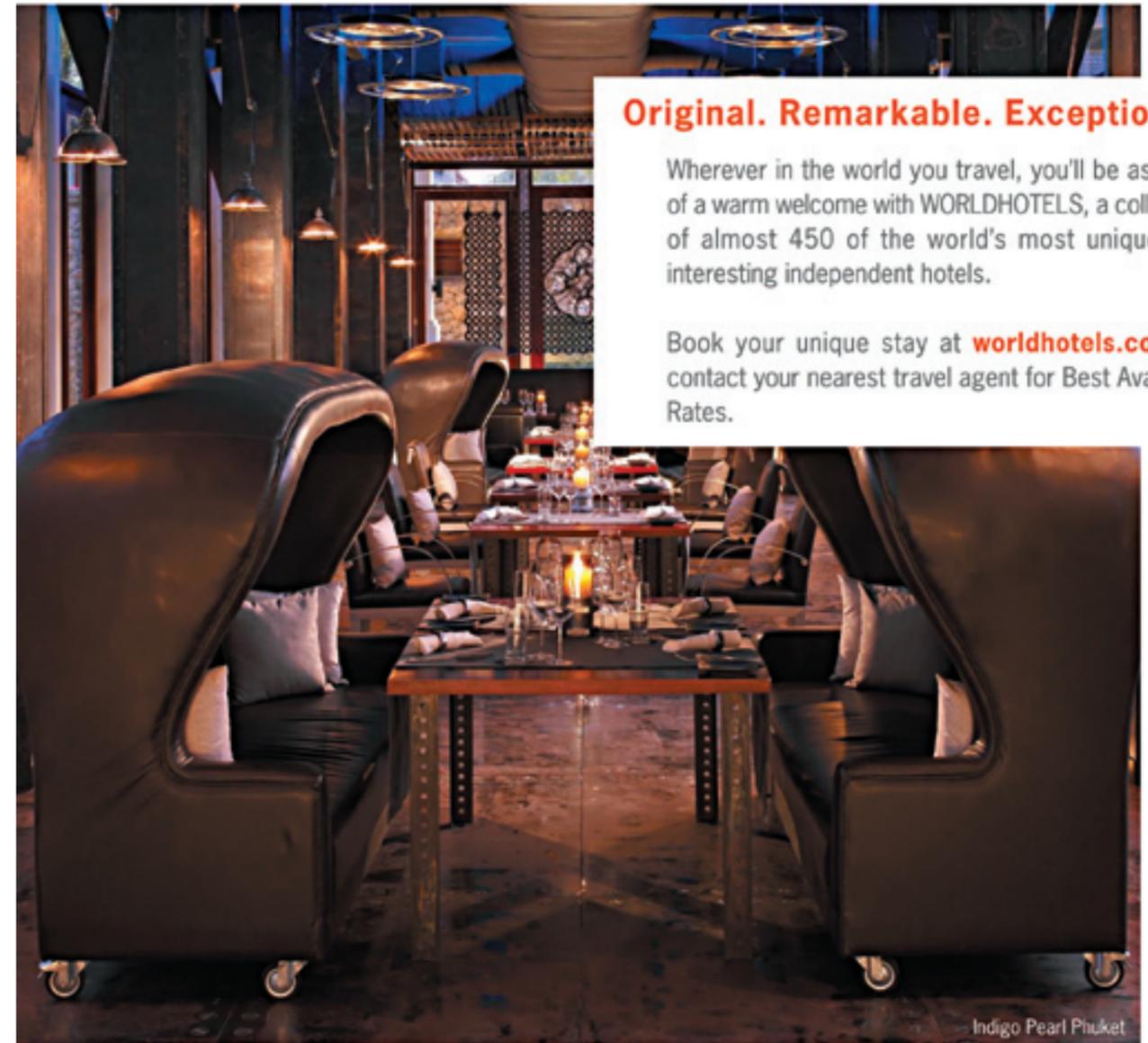
In these village tours, visitors can take part in the various agricultural activities, savor the delicious South India cuisine, get a massage and visit the temples. Aside from that, these villages will also feature other traditional tourist activities such a farm tours, camping, hiking, biking, agricultural activities, boating, fishing and of course – shopping.

### 10) Emerging Tourism Attractions

The government of India is continually seeking various ways of attracting international visitors to its states such as Tamilnadu. New markets in the tourism industry are being explored, including cruise tourism packages and helicopter tourism options where Tamilnadu, as well as India, has no significant market share. These, and some other innovative tourism packages will be in store for current and future visitors to Tamilnadu, and be enamored with what the region has to offer from its rich natural, cultural and historical heritage. A-P



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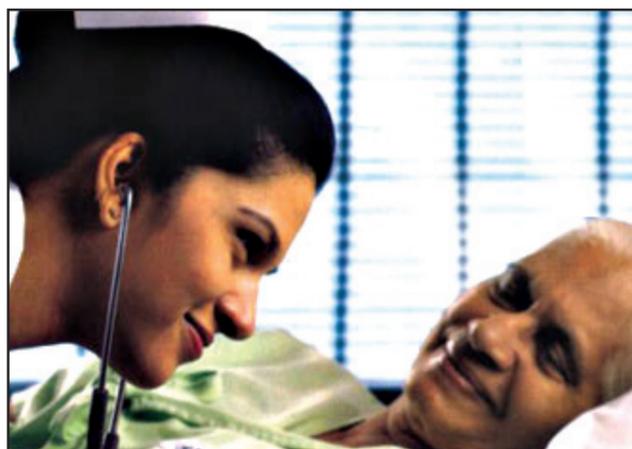
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# New Travel Buzzwords: MEDICAL TOURISM IN TAMILNADU

BY ANURAG AGNIHOTRI

One of the most important necessities that families and individuals across the globe prioritize above all is health and wellness. Careful consideration is given in getting sufficient healthcare for any medical, dental and other related needs that the individual or the family would need and most would prefer to get the best medical services available – as long as the costs fall within their allocated budget.



However, the atmospheric price tags for medical and dental services and procedures in developed countries like the United States, Canada, the United Kingdom and other countries in the West have made it difficult for individuals and their families in these countries to get proper healthcare. Unless the person is covered with a comprehensive medical insurance, many would not be able to afford availing of these services.

In recent years, a new buzzword has been making waves in the healthcare industry that has found medi-

cal tourists flocking towards destinations in Asia such as Thailand, Singapore, the Philippines and India. Patients requiring medical services and other healthcare procedures in developed countries are looking East, now fully aware of the high quality of services that these countries provide – as well as the excellent opportunity of throwing in a sightseeing tour in the process.

## What is medical tourism and why Tamilnadu?

The concept of Medical Tourism is not new, as the affluent patients in the ancient world have flocked to therapeutic baths in ancient Roman destinations in the West as well as Ayurvedic health centers and hot springs in the East. These patients proceed to these sites not only for health and medical purposes but basking in the natural beauty that the site has.

This practice has been revived in modern times, as prompted by the extremely cost-prohibitive medical procedures and services offered in developed countries like the United States. Exorbitant health insurance costs in these countries resulted in a great number of their citizenry opting not to get insurance or be under-insured.

Aside from that, those who can afford medical services in the United States and the United Kingdom often end up in long waiting lists, with queues running for as long as six months just to avail of simple medical procedures. One of the allures of Medical Tourism is the readily available high-quality services in world-class facilities such as the ones available in Tamilnadu. With doctors that are trained and certified to international standards, and health facilities that have international accreditation and affiliations with top facilities in the United States and the U.K., going on a Medical Tourism journey is a viable and preferable alternative for foreign patients seeking healthcare.

In destinations like Tamilnadu, medical tourists can avail of a wide variety of medical and healthcare services, from rejuvenating Ayurvedic and Yoga massages, to the latest in medical procedures using state-of-the-art facilities. These include services and procedures from dental, cardiac, infertility and cosmetic surgeries and treatments. No wonder there is an average of 6.65 lakh tourists visit Tamilnadu to avail not only of the prime medical services that the region offers, but also to enjoy the prime tourist and vacation destinations that made Tamilnadu the 2nd largest tourism industry in India.

What makes Tamilnadu a prime medical tourism destination is not only the cost-effective medical procedures and services that are offered in world-class facilities that are at par with the best in the world, but also due to the proactive stance and support that the government is giving medical tourism. With state government support, Tamilnadu is being promoted worldwide as a preferred medical tourism destination specializing in Eye Care, Dialysis and Kidney treatments and transplants, Oncology services and Orthopedics.

## World class medical services at a fraction of the cost

The exorbitant cost of medical procedures and services in developed countries have triggered the waves of medical tourists flocking to destinations like Tamilnadu. Who can blame them as medical services that cost an

arm and a leg at their home countries would only cost a fraction in India and other prime medical tourism destinations. For example, a heart bypass operation in the United States that usually has a \$175,000 price tag would only cost \$10,000 in Tamilnadu.

Aside from that, all the amenities and required services that going to a foreign country entails is readily provided in these medical tourism destinations. This includes transport, hotel accommodations, food and recuperation facilities. Not only that, medical staff members are well versed in the English language and can communicate well with foreign patients – and this is a critical element when undergoing medical procedures in a foreign country.

In terms of costs, India provides the cheapest and most cost-effective packages that any other medical tourism destinations and these are all provided without compromising the quality of healthcare procedures availed in prime accommodations likened to 5-star hotels. The following is a comparison between common medical procedures as they are priced in the United States and the UK as compared to India. (Chart available at [indiahealthvisit.com](http://indiahealthvisit.com))

Medical Procedure	U.S. (\$)	UK (U.S.\$)	India (U.S.\$)
Bone marrow transplant	250,000	175,000	69,000
Liver transplant	300,000	225,000	69,000
Angioplasty	57,000	25,000	12,000
Hip Replacement	43,000	14,500	4,500
Knee Surgery	40,000	17,000	4,500
Face Lift	9,000	12,000	5,000
Dental Implants	3,500	4,000	800

Cost is not only the reason why Tamilnadu and other medical tourism destinations in India are fast becoming the top favorite among tourists worldwide is the high success rates among medical procedures as compared to the rest of the world. An example is the 98.7 percent success rate in India for coronary bypass, as compared to the United States which only register 97.5 percent.

Aside from that, the medical facilities in Tamilnadu are comparable with the best of what the world has to offer. The hospitals in cities like Chennai are among the best in the world, and are renowned worldwide for medical advances in the field of eye care and cataract surgeries. Aside from that, these hospitals were designed to cater to an international repertoire of patients, offering top-of-the-line medical services at the fraction of the cost as offered elsewhere.

## Health and pleasure: Get the most from medical tourism

Medical tourism would not be complete without discussing the other part of the package – the tourism part and Tamilnadu definitely lives up to the expectation of healthcare tourists seeking to mix wellness with their holiday pleasures. The state is known worldwide as the “Land of Temples” and is bestowed with a natural beauty

**Continued on Page 33**

# Q&A



## DR. A.C. MOHANDOSS I.A.S., DIRECTOR OF TOURISM

BY STAFF REPORTER

**Question: Please let us know about the policies and initiatives taken by the government of Tamilnadu to promote tourism in the State.**

A: Tamilnadu Tourism has taken many initiatives to promote tourism in the State. Apart from marketing the core destinations like Chennai, Madurai, Thanjavur, Rameswaram and Kanniyakumari, we have identified 32 less known tourist centres which have high potential but lack infrastructure.

The rich cultural heritage, intricately carved handicrafts and hand woven silk are value additions. The hospitality of Tamilnadu has no parallel. We have realised that these positive factors can be highlighted. To make the stakeholders even more tourist friendly, we have a campaign titled "Virundinar Potruthum! Virundinar Potruthum!!" (Worshipful Guests).

Further, alternate tourism avenues like rural tourism, adventure tourism and medical tourism are being promoted in a big way. The world class medical facilities and expertise have now made Tamilnadu a medical tourism hub. These proactive measures have helped us to overcome the recessionary factors and achieve a phenomenal growth in tourist arrivals by 24.4 per cent during 2009.

**Q: Can you tell us about the important tourists attractions in Tamilnadu?**

A: Tamilnadu has abundant tourist attractions for a discerning tourist. To name a few, the beautified Marina Beach the second longest beach after Rio de Janeiro, world heritage attractions - Mamallapuram, Gangaikonda Cholapuram, Darasuram, Thanjavur and Nilgiri Mountain Railway, the grandeur of Madurai Meenakshi Temple, the towering Thiruvalluvar Statue at Kanniyakumari, the tri-sea confluence, long corridors of Rameswaram Temple, the tea gardens of the Nilgiris and Valparai, the greenery of Kodaikanal, sumptuous cuisine of Chettinad and the sprawling mansions there. The flora and fauna of the Nilgiris, Kalakkad, Mundanthurai, art, culture and architecture blend well to enchant tourists.

**Q: Tamilnadu is known to have the most beautiful hilly country in India. Can you please give us some glimpses of wildlife in**



**Tamilnadu?**

A: The wildlife sanctuaries, namely, Indira Gandhi Wildlife Sanctuary in Anamalais range, the Mudumalai Wildlife sanctuary in Nilgiris range, Mundanthurai, Kodiakkarai, Vedanthangal bird sanctuary, peacock sanctuary at Viralimalai, grizzled squirrel sanctuary at Srivilliputhur are some of the wildlife wealth Tamilnadu has. Elephants, Tigers, Panthers, Leopards, Jackals, Wild bear, varieties of birds are just a few. We have snake park and crocodile park in Chennai, which attract a large number of tourists.

**Q: Tamilnadu is also known as the most beautiful hilly country in India. Please let us know some of the hilly areas being promoted by the Department for summer tourists.**

A: Tamilnadu has many hill stations. Ooty, Kodaikanal and Yercaud are well known. We have established beautiful accommodation units in these hill stations. We have boat houses also in these hill stations. We are now aggressively promoting less known hill stations like Yelagiri, Valparai, Megamalai, Sirumalai etc. to ease the pressure on main centres.

**Q: Tamilnadu is a land of beautiful and historical temples. Please let us know the historical background and significance of important temples in Tamilnadu.**

A: Tamilnadu has more than 30,000 temples spread across the state. To name a few, Brahadewara Temple at Thanjavur is 1,000 years old, and Meenakshi Temple at Madurai is more than 2,500 years old, the corridor of Rameswaram Temple is the longest in Asia and the tower of Srirangam Temple is the highest at 236 feet. Apart from this, religious centres for Hindus, Muslims, Christians and other religious are also there. We have also developed the Jain circuit recently.

**Q: What are the important tours being offered to visitors by your department this summer season?**

A: Tamilnadu Tourism is offering numerous tours to make the tourists' visits Tamilnadu comfortably. Of the tours, one day Tirupathi tour, eight days Tamilnadu Tour and South India Tour are very popular among tourists, particularly in the East. This Summer, we offered cool holiday packages at our hill stations. All our tours are originating from Chennai. We also offer special packages to suit the unique taste of the tourists. The Hop-on Hop-off tours between Chennai and Mamallapuram and Chennai city is a great advantage for tourists. For those who could not make a visit to spas and Taj Mahal, we have created Courtallam waterfalls and Taj Mahal right on the Marina in the Island Grounds. We have the patronage of lakhs of satisfied visitors.

**Q: Please let us know about the medial tourism being developed in Tamilnadu.**

A: Tamilnadu is one of the leading medical destinations in India. A large number of corporate hospitals and specialised government hospitals make our State world-renowned for cost effective treatment and post-operative facilities.

Medical tourism has gained momentum in recent times. We have publicized the health care and expertise all over the world. At the cost of a medical check up at Singapore, Tokyo, Sydney, New York, Paris or London, one can come to Chennai, have the medical check up, treatment and also visit wonderful tourist

attractions. There are three important components that make Tamilnadu a favoured medical tourism spot. There is no waiting time for the patients. The cost of treatment is less compared to the West. The patients can convalesce at their convenience in the hospitals. We have trained hospital staff also to enable them to effectively handle medical tourism.

**Q: Can you please let us know about the accommodation available to tourists? What is the price range of luxury hotels?**

A: The speciality of Tamilnadu is that the state offers accommodation for all budgets from \$5 to \$250 a day. The luxury hotels have a price range of \$50 to \$60. Tamilnadu Tourism is having a chain of 55 hotels across the state serving the tourists at their ecstasy.

**Q: What is the best time to visit this beautiful state? Please tell us about some important festivals and other cultural and religious events.**

A: Tamilnadu is an all-time destination and has no seasonality. Similarly, every day is a festival day here. You don't have to plan for cultural or religious events, because, they happen frequently. Tourism Department conducts a major event - Indian Dance Festival at Mamallapuram during December - January every year. All forms of classical dance and folk dances of India are performed on one stage during the month long festival. Thousands

of foreign tourists are coming every year repeatedly to witness the enthralling event.

**Q: What is the ideal duration of a vacation in this state that will allow a tourist to cover all the hot spots in the region?**

A: As I have already mentioned that Tamilnadu has no seasonality, though December - January has very nice climate. If you really want to explore and experience the entire State it would take at least a few months. But, one can have the feel of the State if it takes a tour of about three weeks.

**Q: Are English speaking state guides available for tourists who come from foreign countries?**

A: In general, everybody speaks English ... We have sufficient number of English speaking guides for tourists. We can send a list of English speaking guides when it is required by tourists.

**Q: How do you plan to promote the various tourism sectors in the Republic of Korea?**

A: We are definitely planning to promote this in a very big way offering various incentives to tourists and also assigning an exclusive selling agent / organization of our packages who in turn will understand fully and promote it and carry out the activities with a flawless approach in order to give the tourist the best deal.

# View Across the DMZ on Korean Peninsula: Economic Needs Cool Tensions

BY DONALD KIRK

**O**n a brilliant sunny day, at an observation post atop a wooded hill called Dorasan, 40 miles north of Seoul, vehicles were seen moving along a two-lane highway across the Demilitarized Zone into North Korea.

The procession of cars and trucks, permitted to go up the road every hour during in day time, was carrying South Korean technicians and managers to factories in the Kaesong economic complex, whose gleaming new factories in clear weather are easily visible from Dorasan. “The transportation corridor is open,” said South Korean Sergeant Kwon Seok-ho, making certain that visitors did not step over a line beyond which photography of the sweeping view is banned.

A retired American army officer, Stephen M. Tharp, leading foreign visitors on a special tour sponsored by the U.S. military command in Seoul, was relaxed. “We’re not going to do tours if it’s too dangerous,” said Tharp, who has spent most of his career both in the army and in civilian life observing and advising on North Korean issues. As for what to expect in coming days and weeks, “You don’t get a breakthrough until you raise tensions real high.”

In the confrontation between North and South Korea, the standoff focuses on economic as well as military fronts. North Korea vowed to open fire against any South Korean vessel intruding in its waters in the West or Yellow Sea. One issue there is how to define which waters are North Korean. The North does not recognize the Northern Limit Line, set by the United Nations Command after the Korean War and challenged by North Korea in bloody gun battles in June 1999 and June 2002. A North Korean boat was sunk in the former, killing at least 40 sailors on board. Six sailors died on a South Ko-

rean patrol boat in the second battle.

The standoff is most acute in June. That’s the height of the crabbing season in the fish-rich seas and the month when the North is most likely to threaten South Korea’s defense of the Northern Limit Line and five small islands wrested from North Korean troops in the Korean War. The announcement by the North Korean command that it’s abrogating a safeguard agreement reached between North and South in 2004 to stop “accidental” exchanges of shots added to the rhetoric. The agreement was more or less meaningless anyway in the aftermath of the attack in which a torpedo sank the South Korean corvette Cheonan on March 26, killing 46 of its 104 crew members.

If the Yellow Sea is a potential flashpoint, however, almost anywhere along the 155-mile-long Demilitarized Zone that’s divided the Korean peninsula since the end of the Korean War could become a battleground. Neither side, however, is really eager to fight. South Korea cancelled plans for lofting balloons over the North bearing propaganda leaflets or switching on mega-loudspeakers capable of spewing forth music, news and views for tens of thousands of North Korean soldiers within shooting distance after North Korea said it would respond to verbal gunfire with live fire targeting the loudspeakers. The North Koreans presumably know where they are since they used to shout out propaganda until both sides agreed to stop the yakking six years ago. That was at the height of the decade of the Sunshine policy of North-South reconciliation initiated by the late president, Kim Dae-jung, in 1998.

In the wake of the Cheonan episode, South Korea’s conservative president, Lee Myung-bak, decided on economic rather than military retaliation. On May 24, he suspended North-South trade, cut off most humanitarian aid, and barred South Koreans from visiting the North. Those were substantive steps. Inter-Korean trade had risen to \$1.5 billion a year with North Korea enjoying a favorable balance of more than \$200 million, much of it in seafood, finished clothing and minerals such as zinc. At the same time, Lee opened a global diplomatic offensive in which he’s trying to get the rest of the world, notably China, to go along with condemnation of North Korea and strengthened sanctions. China, however, prefers stability and calm to any move that might carry the risks of more fighting. Just as Korean society is basking at all-time economic heights, no one wants the peninsu-

la to plunge again into chaos with thousands of lives at stake.

If it’s difficult actually to imagine that scenario, North Korea has another card to play. The North at the end of May expelled a handful of South Korean officials from the Kaesong complex and has the power to cut off access for nearly 1,000 technicians and engineers who run upwards of 100 factories owned by South Korean medium and small enterprises in the zone. More than 40,000 North Koreans toil at the assembly lines in a deal in which the South Koreans are paying the North Koreans upwards of \$50 million a year in salaries that the workers never see.

The fear is that North Korea, in a showdown, would hold the South Koreans inside the zone, keeping them as hostages until the South agreed to innumerable demands beginning with revision of the Northern Limit Line. That fear was enough to raise doubts about the wisdom of annoying North Korea’s leaders with unbridled propaganda assaults. Such concerns extend to the sacrosanct Joint Security Area in the truce village of Panmunjom that’s next to Kaesong. About 600 troops are responsible for rotating on guard duty at Kaesong in a largely ceremonial role. Among them are 40 Americans, the last of a much larger U.S. force that used to patrol all along the southern side of the Demilitarized Zone.

The sense has long been that the Americans are no longer needed. The South Koreans say they, not their American ally, would bear the brunt of a North Korean attack. The U.S. still has 28,500 troops in Korea, but the vanguard, one brigade of infantry and supporting units, are all that remain on the northern approaches to Seoul. The most formidable U.S. unit in South Korea undoubtedly is the Seventh Air Force, at Osan Air Base well south of the capital. Most of the other American forces, including the historic U.S. military headquarters in Seoul, are due to move to an expanding new base at the nearby west coast city of Pyongtaek.

A Korean-American tourist who has lived in New Jersey for 30 years recalled the tensions he experienced more than 30 years ago as a Korean army officer leading a platoon south of the Demilitarized Zone in mountains on the eastern side of the peninsula. “Everything will calm down in a few months,” said the businessman, with me on a typical tour to Panmunjom, where the truce ending the Korean War was signed in July 1953. “The first few weeks are the most dangerous, he said. “Then things slow down.” He worried enough, however, to have asked the travel agency that put him on the tour if it was safe. The agency assured him it was – unless South Korea resumed the loudspeaker barrage. “We ex-



pected them to invade in 1975 after the victory of the Communists in Vietnam,” he said. “Probably the soldiers on the DMZ today have the same feelings as we did then.”

Over the years Panmunjom, like Dorasan and a nearby North Korean infiltration tunnel, discovered in 1978, has become a standard tourist stop. Hundreds of tourists go there every day from Seoul, and tourists also come down from the northern side. They all have to remain on either side of a line that cuts through the middle of the Joint Security Area. A highlight of trips from the southern side is entry into a small one-room building astride the North-South line. At the end of one briefing for tourists, a South Korean lieutenant surprised us with an unusual reminder after tour guides had been telling us to behave properly and not make any offensive gestures that North Korean soldiers on the other side might see. “Tension is high,” said Lieutenant Han, not revealing his last name, as he faced an audience of mostly Japanese and Chinese tourists. “Please do as told.”

The visitors dutifully entered the single blue-roofed one-room structure on the line, walking around a burnished desk across which officers from both sides occasionally confront each other. They posed for photographs and then were whisked back the way they came on the promise of more sights to see in the enclave where the armistice was signed. No sooner had we returned to our bus in front of Freedom House, the imposing stone and concrete edifice that was completed in 1998 in hopes of staging reunions there between families separated by the Korean War, than we got another surprise. The tour bus would not swing by “the bridge of no return” across which prisoners had walked across the North-South line after their release under terms of the armistice. The view of the bridge, a standard stop on visits to Panmunjom, it seemed would expose us to the highly minimal chance of capture by the North Koreans.

It’s safe to assume South Korea would bar tours to Panmunjom if the risks actually seemed serious. For North Korea, though, the chance to seize tourists as hostages would conceivably be tempting in some unimagined showdown. “We just got word,” a young soldier, Private Shin Dong-hee, told me. “It is too dangerous.” An eerie silence hung over the truce village with tour leaders warning tourists on where and when to take photographs, reminding them that South Korean officers would confiscate cameras and notebooks if they broke the rules. “Most ordinary people do not feel so tense,” said Paek Soo-jin, a tour guide, “but I’m

**Continued on Page 30**

# EMERGING 3D TV TRENDS

BY RAJANI BABURAJAN

**A** 3D television applies techniques of three-dimensional presentation including stereoscopic capture, multi-view capture, or 2D plus depth, and a 3D display. 3D display is a special viewing technology used to visualize a television program into a naturalistic three-dimensional field. 3D sequences became popular in the late 1990s. It was first demonstrated when several exhibits in the United States used this technique to attract spectators and also increase their ratings.

## The Technology

There are several techniques to produce and display 3D moving pictures. Common 3D display technology includes the following:

- Anaglyphic 3D: which uses passive red-cyan lenses
- Polarization 3D: which uses passive polarized lenses
- Alternate-frame sequencing: which uses active shutter lenses
- Autostereoscopic displays: also known as Auto 3D, does not use lenses.

To understand the 3D image formation, we need to understand how our eyes work while watching an object. Our left eye and right eye are two separate lenses, which form two differently angled images of what we see, which are then sent to our brain. The brain then works as the image processor. Here, it puts the two images together to merge it as a three-dimensional picture in our mind.

A similar mechanism is used in making screens that show 3D pictures. There are two types of screens which enable 3D views: Stereoscopic TVs and Autostereoscopic TVs. Stereoscopic TVs need special glasses to watch 3D movies, whereas in Autostereoscopic TVs, the image is viewed without any special accessories.

In Stereoscopic TVs, companies like Panasonic, Sony and Nvidia are using "shutter

glass" technology. These are the glasses that alternately shut off the left eye and right eye, while the TV gives out individual images meant for each eye. This creates a 3D image in the viewer's mind.

Another stereoscopic technology, which is based on Polarized glasses, is currently used by large theaters. For this kind of 3D imaging, the movie being shown has to be shot using two cameras or a single camera with two lenses. Two projectors, one in the left and the other in the right fitted with polarizing filters then simultaneously show the movie on the same screen. In the viewer's special glasses, the left lens of the glasses is aligned with the same plane that the left projector is showing images and the right lens is aligned perpendicularly with the plane of the right projector. This creates a 3D effect.

Autostereoscopic 3D television sets work on the principle based on two main technologies: lenticular lenses and parallax barrier.



friendly technologies. It is the only technology which allows for regular 2D viewing along with 3D viewing. It uses a fine grating of liquid crystal placed in front of the screen. Certain columns of pixels of the TFT screen represent the slits in it. These positions are chipped at, so that it transmits alternating pictures to each eye of the viewer. When a little voltage is employed to the parallax barrier, its slits will direct light from each picture,

which is slightly different to the left and right eye. It creates a fantasy of depth and thus a 3D image in the brain.

The parallax barrier can be switched on and off easily with the help of one button on the remote, allowing the TV to be used for 2D or 3D viewing as required. The technology could also be implemented on computer monitors wherein a user could switch on the feature to play video games in 3D and then could be easily switched to 2D mode for work requirements.

**ESPN company officials said, "We will show at least 85 sports events this year on our new ESPN 3D channel. It will start with the first 2010 FIFA World Cup match on June 11, between South Africa and Mexico, and include up to 25 other World Cup matches."**

Single-view displays can project only one stereo pair at a time, while Multi-view displays use head tracking to change the view. It depends on the viewing angle, or at the same time projects multiple independent views of a scene for multiple viewers. These multiple views could be created quickly with the help of 2D plus depth format. In 3D-ready TV sets, they can operate in 3D mode in addition to regular 2D mode. With LCD shutter glasses, the TV tells the glasses which eye should see the image being presented at the moment that helps in creating a stereoscopic image. These TV sets usually support HDMI 1.4 and an input and output refresh rate of 120 Hz.

## Lenticular lenses

The lenticules are tiny cylindrical plastic lenses. These lenticules are glued in a layout on a transparent sheet. It is then stuck on the surface of the LCD screen. The cylindrical lenses magnify the image. When a viewer looks at the cylindrical image in the TV, his left and right eyes will form different 2D images. This is then combined by the brain to form one 3D image.

## Parallax barrier

Another method to offer autostereoscopic output uses the parallax barrier technology. The technology is implemented by popular TV manufacturers like Sharp and LG in their 3DTV, as it is one of the most user

### 3D TV worldwide

In November last year, Korea Communications Commission (KCC) announced its drive to start beaming 3D broadcasts in Full HD quality sometime in 2010. Licensing of the technology has already begun and 3D broadcast is expected soon. A significant difference in 3D broadcast in Korea is that unlike the 3D broadcasts tested in Japan and the U.K., Korea plans to deliver 3D content through terrestrial networks.

In Korea, LG announced a partnership with Korea Digital Satellite Broadcasting (SkyLife), one of the largest 3D content providers in the country, to deliver 3D technology. LG had announced Korea's first 3D LCD TV in August 2009 and SkyLife announced it will start broadcasting 3D sports in May this year. SkyLife is in talks with major players including Samsung, LG, Fuji Film, Disney and Dreamworks.

In Europe, there is heartening support for 3D TV. The European Union has formed a European research consortium named the multinational 3DTV network. The consortium consists of about 200 researchers from seven countries. The 3D consortium explores different types of 3D TV technologies. It also focuses on capturing 3D motion scenes, computerized representation of objects, their transmission and projection of 3D images. The consortium predicts that 3D TV will be part of home entertainment very soon.

In China, companies like Skyworth, Changhong, Sharp, Konka and TCL plan to launch 3D TV soon in addition to global leaders in 3D TV - Sony & Samsung.

In April 2008, Japan introduced the world's first 46-inch 3D stereoscopic television. Built by Hyundai, the 1,920 x 1,080 set requires users to wear glasses. The set, however, has limitations because it can be used only for special stereoscopic broadcasts. Sony has announced plans to introduce 3DTV in 2010 in Japan.

Discovery Communications and ESPN are planning to launch 3D television networks in the U.S. They hope to proceed with this technology from the theaters to the living room.

This was announced by the company at this year's Consumer Electronics Show (CES) held in Las Vegas, where 3D TV was



one of the hot topics.

Discovery said that it is going to form a joint venture with Sony and IMAX to deliver this service. It will be a 24-hour channel, which has movies, nature programs and other content that suits itself well to 3D.

ESPN company officials said, "We will show at least 85 sports events this year on our new ESPN 3D channel. It will start with the first 2010 FIFA World Cup match on June 11, between South Africa and Mexico, and include up to 25 other World Cup matches." The company has been testing the service for last two years."

Electronics vendors such as Sony, LG Electronics, Samsung, Panasonic are now delivering 3D-enabled TVs and Blu-ray players. The electronics manufactures are looking to 3D technology to encourage users to upgrade to new televisions. Now they are positioning it as a jump forward from the standard quality to high definition television.

Michael Stroud, CEO of the iHollywood Forum, in a panel discussion about 3D TV at the recent Digital Living Room conference in Silicon Valley, said, "It seems presumptuous to assume people are going to throw out their HDTVs to buy 3D TVs after only a year or two."

Some of the vendors need their consumers to wear special 3D glasses. This may prevent some users from adopting the technology at home. Still, the industry is moving forward with confidence that the viewing experience will be impressive.

Sony Chairman and CEO Howard Stringer said in a statement announcing the Discovery service, "It is clear to us that consumers will always migrate to a better and richer entertainment experience."

Discovery, which now owns the Discovery Channel and 12 other media networks in the U.S., will offer the joint venture's 3D channel. Sony and IMAX will acquire the license television rights to 3D movies and also for other content and provide advertising and sales support. IMAX will be encouraging this service in its theaters and provide "image enhancement and 3D technologies."

The Discovery service will first launch in the U.S., but the company officials said that they will explore taking it overseas. Yet they didn't furnish a launch date in

**Continued on Page 27**

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## FROM OBSCURITY TO CLARITY:

# GETTING FAMOUS ONLINE

BY ZACH BARDON

**L**ets say you have an amazing webpage, and you've gotten smart and created a good relationship with an ad network. If you want to get rich and famous online, you need visitors. Visitors are the only difference between earning \$0.25 a month and \$25,000 a month in ad revenue.

How do you get visitors? Well, if you've got good content, you need to let people know about it. The best and almost only way to actually do this on the Internet right now is through Google. Theoretically, if you just let your website sit around long enough, a Google spider bot will eventually find it and start crawling around indexing things. If you would like to speed up the process, you can create an account with Google Webmaster Tools. You can register your site with Google and submit a site map to let the nice friendly Google spiders know exactly where all the content is located. You can even get feedback reports telling you when and how often the Google bots have searched and indexed your site.

If you're still too impatient to wait for your indexed webpage to gain reputation over the years as a solid source of information on whatever your subject matter is, you can once again speed up the process by getting other websites to link to yours on a particular topic. Internet search sites like Google place great stock in what other websites think of yours. This means that a link saying "great info on car parts" that points back to your site goes a long way to establishing your website as a good resource for car parts in the eyes of Google. Call up or email your online friends and see if they can help you out with a link and a name-drop. You will be in their debt forever. Also, you can start to pester other popular news sites or blogs with emails asking them to give your content some consideration or linkage. They might actually do it.

An extreme version of this idea is to make a formal agreement with a website



that is already popular to share content and drive traffic to each other's sites. An agreement like this can be a godsend to a website that is just starting out, and by helping your website gain a reputation, the more popular website is creating a valuable ally that can in turn help them gain even more popularity.

Also, a little online advertising of your own can really help your new site get traffic. You can join those ranks of intrepid Google AdWords advertisers who already pepper your own site with ads by signing up for a new account and going through the process of building a few ad blocks, selecting keywords, and setting the whole contraption loose on an unsuspecting public. However, since Google AdWords is such an organic system, it requires constant oversight from you. This is ideally two or three hours a day maintenance, changing ineffective keywords for effective ones and tweaking the bids of your effective keywords. Make sure that's something you want to do.

So you can't make millions of dollars just by having a website, you still have to spend 8 to 10 hours a day advertising it. There's still no such thing as a free lunch, but the effect of even a little work on the Internet can have great returns.

### The next level

When you reach a certain threshold, you earn the

attention of not only legitimate users, but other website operators who want to work together with you to help you both gain more visitors. They'll probably email you out of the blue and ask to start link-sharing agreements. Link-sharing is an important part of a growing website, but not all link-sharing offers are beneficial to you, or even legitimate.

Most link-sharing ideas are trying to game the system that search engines have created to rank websites. Of course, the most popular search engine right now is Google, and its page-ranking algorithm that it uses is strictly a trade secret. It also keeps vigilant watch over its search results, and punishes websites which have used misleading or dishonest means to gain their page rank by relegating them to a secondary index - the Internet search equivalent of Limbo.

### Trading secrets

But before we get into a detailed description of link sharing or other ways to increase traffic, we should first describe the system that link sharing is meant to interact with. Google's PageRank algorithm is the stuff of legend - it makes or breaks new Internet businesses all the time. Google indexes all sites by keywords, what information they have in text on their site. But Google often gives hundreds of thousands of results. Which results are the most relevant is one of the most impor-



tant secondary concerns that the Google search engine takes care of, and the real reason for its popularity. You might be looking for the #1 spot for Beatles lyrics on the Internet, but a search for “Beatles lyrics” can turn up hundreds of thousands of websites. How can you make sure that the first few, more relevant, results be about the words to songs that the British band the Beatles wrote, rather than the one page of some guy who named his Volkswagen Beetle “lyrics” and decided to write a page about it? Google solves this problem by using Google PageRank.

With a secret method, Google assigns each webpage in its search index a rank. These ranks are simply from 1 to 10, with 1 being the least relevant and informative page for a certain keyword or search string, and 10 being not only relevant, but extremely popular, helpful, and well-known sites on the Internet. All of the websites on the Internet are arranged on this ranking in a sort of bell curve, with the large majority of sites being around 4 or 5. Popular destinations for specific uses, such as an actual Beatles lyrics site, can get a page rank of 7 or 8. Extremely well-known sites with millions of visitors per day and the highest standards of information on them can get 9. Very few sites, such as [usa.gov](http://usa.gov) and [cnn.com](http://cnn.com), can have a PageRank of 10. Google also gives itself, [google.com](http://google.com), a PageRank of 10.

Google uses a large mash-up of information to determine a site’s PageRank. One of those pieces of information is the number of links that point to a given site. Also, what kind of text is surrounding this link. If there are many sites which have text talking about a specific subject, like cell phones, and they all point to our website, we would get a higher PageRank when cell phones were searched for on Google. Also, a second but still important aspect of PageRank is the number of links that point from a particular site to another one. If a site has a large number of both incoming and outgoing links, it can be considered a hub of information on one or more topics, which factors into the site’s

PageRank. There are a number of other secret factors that are said to go into a PageRank, and Google does not release the information in order to try to avoid people manipulating the system.

### Gaming the system

While Google’s purpose is to try to give the most accurate search results possible, website creators vie for a coveted high PageRank for one or more keywords. Because, of course, more popularity in Google means more traffic, and more traffic means more advertising revenue. This may be the first time in history where one company is responsible for the success of so many others. Google holds the fortunes of millions within the palms of its digital hands.

So people try to manipulate the system anyways. Link exchange programs are one of the most popular ways to do this. Web site owners may try to actively

drum up more links to their own website in order to increase the popularity on Google. There are several ways to go about this, some of which are worthwhile, and some of which will backfire on you.

The best kind of link exchange happens without active effort on your part. Internet users simply find the content on your website interesting, and link

to it. Perhaps they run a blog, or edit a Wikipedia entry, or make a forum post with your link in it. These all help you to gain reputation and popularity with Google, and benefit you.

Another kind of link exchange is done with a lot of work on your part. Instead of just waiting around for people to find and link your content, you can peddle your site around the Internet, going around and posting links back to your own articles on other people’s blog comment sections, forums, or Wikipedia entries. This might be a little annoying to those people who run those sites, but also might help your own website’s reputation to grow faster.

A third kind of link exchange begins to involve other people. You can create agreements with websites that share a similar topic or interest with your own,

**You can also pay Search Engine Optimization (SEO) people to do all of the above. This is where things get risky, because you are artificially trying to inflate your PageRank with cash.**

and agree to give some links to their site in exchange for them giving you links in return. This can also help your online street cred as part of a growing body of work relevant to one or more keywords.

You can also pay Search Engine Optimization (SEO) people to do all of the above. This is where things get risky, because you are artificially trying to inflate your PageRank with cash. You can pay some gentlemen in another country to spread links to your sites all over the Internet, and they will do so. However, it may be possible that it will look too artificial, and then Google with lower your PageRank without telling you. Or, it may relegate your pages to the Limbo of the secondary index, as mentioned before. How artificial and sketchy things look, and whether or not you get caught, depend on the quality of the links you create. If you have ever visited an unregulated or abandoned blog, you

might see some of the poorest quality links show up in the comments. They just have a bunch of keywords crammed together into a huge paragraph, and the whole paragraph is linked somewhere. It is debatable whether this kind of brute-force tactic is even effective, and yet it happens with surprising regularity. A more elegant solution is for one website owner to pay a firm to write relevant, content-specific articles which link back to his site. This is almost an undetectable way to increase page popularity, but will undoubtedly cost more money.

Of course, if you are concerned with authenticity or simply have a budget too small to hire anyone, you can always just let your website grow naturally. And, if you have high enough quality content, it will do so without much prodding from yourself. It’s all up to you. **A-P**

## EMERGING 3D TV TRENDS

Continued from Page 22

their statement. Some reports said the service will begin only in the next year. There have also been reports that DirectTV is planning to launch a 3D HDTV channel in the U.S. this year.

### 3D Blu-Ray Becomes Reality

TDVision Systems announced the release of a new 3D system at SID 2008. It not only makes use of a standard Blu-ray disc, but is also compatible with existing non 3D Blu-ray players. For those not considering other high definition 3D options, the 3D film could be played in a non-3D Blu-ray player. It will play without any loss of quality, color, frame rate, or resolution. The 3D system is also compatible with existing 3D TVs from companies like Samsung and Mitsubishi. They make use of Texas Instruments’ 3D DLP chips.

Ethan Schur, director of Product Marketing for TDVision Systems, said, “TDVision has enabled a media breakthrough with our AlterSpace product by enabling the world’s first and only stereoscopic virtual world featuring media sharing and viewing. Compatible with multiple 3D display devices, this will be the industry standard that others go by.”

Samsung already introduced its BD-C6900 Blu Ray player that comes with 3D full HD playback with im-

pressive surround sound for the home. It has a multi codec which can playback almost all formats which include Divx, WMA, MKV, MP4, HD-JPEG and so on. It contains a 7.1 channel analogue output with internal audio decoders such as Dolby True HD, Dolby Digital and so on. It also integrates Wi-Fi support, Internet@TV and applications like Blockbuster, Facebook, YouTube, Flickr, Pandora and more.

Panasonic is going to make a giant leap in 3D technology. They are going with an advanced Blu-ray disc authoring laboratory in Hollywood for 3D content. The aim is to develop consumer Blu-ray 3D Home Theater products this year. This lab is working with “3D Full HD” which works directly with several studios.

Panasonic is also planning to manufacture a Plasma 3D Full HD home theater system as well as a 3D-ready digital cinema projector. It has a 380-inch screen theater which helps in playing 3D HD picture quality. They are also working with a 3-D ready MPEG-4 AVC High Profile encoder.

Eisuke Tsuyuzaki, managing director of Panasonic Hollywood Laboratory, said, “Panasonic recognizes that for 3D FHD to succeed, just like Blu ray, collaboration on research, development and production with studios and content providers is absolutely essential. The creation of the new PHL Authoring Center will enable Hollywood to start trial production and ultimately create commercially available 3D FHD titles to realize a new window into reality, and elevate the level of High Definition entertainment that consumers can enjoy in their own homes.”

### Is 3D the Next Big Thing?

Will three-dimensional TV become a reality in common households? Will the technology spur a consumer spending spree like that created in the case of digital and high-definition TV? Or will 3D end up as the next big flop? Only time will decide the fate of 3D TV. **A-P**

# TAKING THE FOCUS OFF THE HARDWARE

BY MATTHEW WEIGAND

**I**T companies in Korea have built up a strong reputation over many years as excellent hardware manufacturers, especially in the field of memory and flat panel displays. But the Korean software industry has always been lagging behind. While there are some game companies in Korea that have a portion of international mind-share, useful software applications are not normally Korea's forte.

There's never really been anything to write home about. However, it doesn't have to be that way. Korean companies can jump into the software business at any time. The question arises, then, if a new or small Korean business were to jump into the software industry, where would be a good place to start? Using yesterday's techniques and business practices can be a very bad move for a new software company. Where is the cutting edge; where is the place that new software companies can find success?

Software development used to be a simple product creation business. Companies would create a software application, burn it onto a hundred thousand CDs, package it up, and deliver it to stores. It was a simple commodity. Large companies were best at this, able to create a number of related applications and putting them into a package together. Many famous software development companies such as Adobe, Oracle and of course Microsoft have made their fortunes by delivering packaged software to stores. But the Internet is changing all that.

As the Internet becomes more prevalent, software is moving off the local computer and onto the Internet, hosted in a central location and offered as a service. Take Adobe's flagship product, Photoshop, as an example. It has been the beginning and end of digital photo editing, both for 15 year old hobbyists at home and professionals in the press. It costs \$699 and is considered a good investment for any company that deals with photos on a regular basis. However, it now has competition from an unexpected angle. Aviary.com has developed a set of photo editing tools to rival Adobe's entire creative suite, and they don't run as programs on a local computer, but as a webpage. They are fully functional desktop-quality applications but accessed within a Web browser like Internet Explorer or Firefox. And, what's more, they are freely avail-

able to anyone who signs up to the website.

Google has also done something with their Google Docs offering. They offer a fully functional document editing software application, a presentation application, and a spreadsheet application. These are similar in form and function to Microsoft's Word, PowerPoint and Excel. But whereas Microsoft Office is \$399.95 from its home page, Google Docs are freely available to anyone who signs up, exactly in the same manner as Aviary. There are many other websites that have sprung up like this, from simple functions like a to-do list, to complex project management tracking functions.

They are all generally laid out in the same way. This is a radical shift in the business model and philosophy of software creation. The traditional business model of selling a commodity has given way to something that doesn't look like a business model at all; in fact it looks like it's giving all the company's hard work away for free. However, it is not quite free.

A visitor to Aviary.com might not notice right away, but the website includes some limited advertisements. Also, the content created using the site's tools remains on the site, and is sorted, tagged, and ranked by popularity. The website also has a tiered membership policy. While anyone can access many features of the web site for free, and store up to 50 creations, if someone wants more storage space, more features available, no advertisements, access to tutorials and user groups, and a Pro status symbol next to their username, that user needs to buy a membership. Memberships are \$95 a year and come with all those extra features.

Aviary.com is pursuing a different goal than unit sales. They are creating value by creating a kind of on-line social club, one where you pay membership fees, mix and mingle with other people who have similar interests, browse, critique, and admire each other's work, and instantly distribute your own work to the entire club, and the entire Internet. This social network of people who share the interests of Aviary's software offerings is quite valuable to its customers, who are more than willing to pay the membership fee to join. Aviary.com is a software company that is following the business model of a gym rather than a manufacturing plant, and it works out for them rather well.

Google Docs follows a similar business model, but not as vigorously as Aviary.com does. Google has always offered services with its Google Ads program in mind, which is the core of the Google business model. The more people visit Google and search, the more money and value Google obtains. Integrated into the Google Docs page is easy and quick access to the other fea-

tures of Google, including the main search page. This is Google's bread and butter. Google Docs is another avenue to get people to use Google for searches, and this is profitable for them.

Aviary.com and other on-line subscription-based applications are following a formula that is new, but is not original to them. It was most famously followed by the very popular on-line photo-sharing site Flickr.com. Flickr created a system where every action by its users was considered in creating valuable services for its users, and its users are willing to pay a membership fee in order to access all of the features Flickr offers to them. Also, advertisers are willing to pay to reach the number of users Flickr attracts with its valuable offerings. Flickr creates value in several ways. First of all, they collect digital content, which in Flickr's case are photos, and open it up to interaction from users from all over the world. While Flickr does offer a private option for its photos, approximately 80 percent of its content is publicly available. Each user's interactions with the content

are recorded to find out which photos are popular, which are highly rated, which are commented on, and which are ignored. Flickr processes all of this using a secret algorithm and then gives the photos a new rating, "interestingness." It then recognizes the photos with the most interestingness and places them prominently on the front page of the website. The users who created the photos enjoy the exposure of their work, the users who visit the site appreciate the most interesting and popular photos being easily accessible, and everybody wins. Aviary is obviously following the same model that Flickr



pioneered in 2004.

Giving away free software applications on-line in order to attract regular website visitors was combined with another popular Internet phenomenon, social networking, in 2007. Facebook, now with over 100 million users globally, opened up its website to third-party developers in the middle of last year. Thousands of developers, from individual hobbyists at home to corporate entities, developed applications for Facebook in hopes of becoming more famous or generating traffic to their own websites.

So far, the most popular Facebook applications have been games, video posting, and friend-finder applications. But, a report titled "The Key to UC Revenue Success: It's the Apps" by Denise Culver, research analyst with Light Reading's VOIP Services Insider, focused on making money with Unified Communications. First, she said, the Facebook phenomenon is going to seep into the corporate environment. Social networks will soon be as widespread as instant messaging and e-mail, she



predicted, and because of this, many companies will be looking for ways to create serious social networking applications to take advantage of the existing social networking phenomenon. Some people said that 2007 was the year of the Facebook application.

Is a Facebook application still the cutting edge of software development? Probably not now, because what can be better for users than to write an application that can work on-line, on a social networking site that over 100 million people use, and can give the kind of content value that Flickr.com and Avary.com give? How about an application that works on-line, but on a large number of social networking, shopping, and rich content sites? This is what Google's OpenSocial API, launched at the end of 2007, does.

OpenSocial, created by Google, is a tool for application developers to build social applications across many websites. Google has gotten many famous websites to support the OpenSocial framework, from social networking sites such as MySpace, Orkut, Ning, and LinkedIn to software as a service companies Salesforce.com and Astadia.com to even Korean portal site Daum. Applications that are created with the OpenSocial API can work in the same way and be connected together when they are used on any of

these sites, and many more. Despite a slow start at the end of 2007, OpenSocial has been gaining a lot of popularity recently. Of course, many people are saying that the future of computing is mobile computing, with the Android operating system or the iPhone. The android OS is much easier to program for, because it is open-source and not strictly controlled. Any small or medium-sized Korean company wanting to make a splash in the programming market could easily produce one or more small Android applications which would be great for both the domestic and international markets. The Android platform is linux-based, so in theory everything that one knows about Linux can be applicable to the Android operating system. Android programming is also similar to Java, so experience in that language can also be helpful.

So the cutting edge of software development may in fact be a full-featured on-line application which creates digital content and includes a convenient OpenSocial component, or is entirely an OpenSocial application itself, or it may be something that can be run on a mobile application. New Korean software development houses could look into these avenues in order to jump into the cutting edge of software. **A-P**

# BRIDGING THE GAP IN TECHNOLOGY GENERATION AND ADOPTION IN INDIA

BY VINTI VAID

**A** larger disparity still exists between well-developed countries of Northern America, Europe and some parts of Asia in comparison with developing countries in Asia. Many experts attribute this to slow adoption of technologies into mainstream society.

Just take for example communications convergence through the Internet. In a review conducted by the World Summit on the Information Society, it was declared that only a quarter of the world's population is using the Internet. In developed countries, even rural areas have sufficient infrastructures in place that would enable broadband access. This is a sharp contrast to developing countries where even urban areas, institutions and schools do not have online access.

In India, efforts are bridging the gap and bringing these developed technologies to practical use and adoption by the targeted end users of society. One good example is the significant headway that the power sector in the country has achieved over the last few decades in terms of volume of power generation as well as the widespread reach for distribution. These successes are attributed mainly due to the proper adoption of various innovations and technologies that are very important to an emerging economy such as in India that relies heavily in energy.

But can the same successes in this industry be duplicated by other industries, as well as the country as a whole? Can the same quality of products and services be delivered to the consumers and pave the way for the further development of the nation? The answer would lie in how effective the assimilation of new technologies would be and how the gap between technology generation and adoption would be whittled down to acceptable levels – towards better implementation of technologies for the betterment of society.



## Technology generation and adoption: Why is there a gap?

To answer this, looking at India from an agricultural perspective would be a good approach, since agriculture remains the heart and soul of the economy. Even developed countries have agriculture as the backbone of their economies. The difference lies in the quick and effective dissemination and adoption of technologies and innovations stemming from exhaustive and extensive government and private research. This fast transfer of agricultural developments and technologies right down to where it all matters is critical and crucial in the development of society and the nation as a whole.

In India and other developing nations the transfer of new technologies for agriculture have not only been conventional but insufficient as well. Many gain knowledge and information only through traditional channels like the radio or newspapers, but even the volume through such channels (only 77.3 percent for radio and 11.3 percent for newspapers) is not sufficient enough to warrant proper adoption of these technologies. With the vast wealth of knowledge at their disposal through the Internet, only 12 percent of farmers use this channel and even less use these technologies for making critical decisions in the farms and fields.

Although the support of the government has tried to remedy this gap over the last 55 years, their efforts remained unfruitful or incomplete due to manual dissemination, training and information drive towards the majority of farmers. That's why technology implementation slowed down to a crawl, making it obsolete or ineffectual by the time it reached the end users. The same can be called true for other industries and aspects of society

## W★RLD

### View Across the DMZ on Korean Peninsula: Economic Needs Cool Tensions

Continued from Page 19

scared." Previously, "We gave everything to North Korea and want to talk," she said. South Korea was "very soft." Now, however, the mood had changed.

By scrapping agreements with the South, North Korea set off alarm bells in the minds of South Koreans. The North Korean command did not

mention the truce village but said it might stop South Koreans from entering the Kaesong complex, on a former North Korean military base within a mile or so of central Kaesong, an historic former capital of all Korea before the rise of the Yi dynasty. And by threatening "physical strikes" against South Korean ships entering North Korean waters, North Korea warned that clashes could break out any time around where the Cheonan went down.

Soon, however, South Korea tempered its own tough talk with signs of a desire to cool down tensions before they boiled over into fresh outbreaks of violence with unpredictable consequences. After the defense ministry said it was putting off the campaign of balloons and loudspeaker broadcasts, the South's

unification ministry began modulating its responses to the sinking of the Cheonan.

The fact is that neither North nor South Korea wants to shut down the complex at Kaesong, the last point of normal contact between the two Koreas. Choi Boh Seon, director-general for inter-Korean cooperation at the unification ministry, was reassured by reports from Pyongyang. North Korea needs "inter-Korean economic cooperation," he said, "and will make an effort to build up the complex." Choi offered reason for hope: South Korean factory managers at the complex had told him the North Koreans were working harder. "They are more committed to their work," he said. "That's because they want to maintain this industrial complex." **A-P**



– a fact that is typical in developing countries like India – and should be properly addressed now.

### **Bridging the gap: A convergence of technology generation and adoption**

A quick convergence from the moment a new technology is generated to the time it is disseminated and adopted by the populace is the key element for bridging this gap and paving the way for further development of the society and the nation. The following are some of the key roles that various sectors in society should take part of to make this convergence a reality – and totally eradicating any unnecessary gaps between technology generation and adoption.

#### **The Role of the Government**

The government should always be the catalyst and initiating party for developing, generating and sustaining new technologies for various industries including agriculture and food production that play a major role in India's society. Calls for agricultural scientists to step up their drive in developing new technologies have been put forward by various sectors in a bid to stem the steady decline of farm land holdings brought about the continued increases in population.

Not only are these urgings calling forth the generation of new technologies, but scientists are also exhorted to develop new and efficient methods of disseminating and transferring these technologies for the subsequent adoption of end users. The government will play a key role towards the dissemination and instruction of end users on new technological innovations that would improve their methodologies and processes for better and higher quality outputs.

This includes the establishment of more training institutions, centers and universities as well as beefing up extension agencies that will oversee the dissemination and implementation of these new technologies. The adoption of new Information Technologies and computer-based trainings should also be established, with easy access by end users like farmers and extension agency workers.

The government should also be the bridge or interface between research facilities that develop these new technologies and the industrial end users. A special agency or department should act as a liaison to ensure that proper technology transfer is achieved and implemented, while taking into consideration the various mechanisms, trends, and manage-

ment systems needed for the technology transfer.

#### **The role of industry**

The companies and institutions at the forefront of developing new technologies should also aim for bridging the gap between generation and adoption by the end users by adopting proper routes and channels to make technology transfer faster and more effective. Multi-service contact centers would be one good way for realizing this, using high-technology channels and options that would make it easier for the end users and consumers to make use and adopt these technologies. This also includes the improvement of new service methodologies and processes, more sophisticated enhancements, and improving the supply chain.

However, before companies improve on their external services in order to bridge the gap in the delivery and adaptation of their technologies by end users, these companies should also focus on developing and improving their internal structures as well. They should ensure that all employees, staff and service personnel are knowledgeable in these new technologies that they are introducing and disseminating before releasing it to the general public. Any technological gaps that exist within their organizations, particularly between old and younger employees, should be properly addressed. This would ensure quality and reliability of service when it comes to properly disseminating it for adoption by end users.

#### **The role of improving communications**

With over 2 million Internet connections and over 22 million telephone subscribers in India, it is still not sufficient enough to bridge the gap in information dissemination and communications required by society. Two-way communication channels should be properly established to ensure that transfer of technology and information between research organizations, marketing networks, and extension agencies to the end users are properly established. The government of India is addressing these needs through the following channels:

- Press, radio and television programs in the vernacular of targeted end users
- Use of state-of-the art communications like satellite and the Internet
- Other forms of audio and visual communications like mobile cellular communications

A report from the World Telecommunications Development Conference indicated that the adoption of technologies and Internet connectivity in developing countries like India is attributed to the fact that more people speak languages with non-Latin scripts, making it difficult for them to get data from the Internet, much less get something relevant for them. This is a clear indication of the need for promoting the importance of using the Internet and making society more literate in this area, while making it possible for them to understand by allowing the use of as many languages, scripts and channels available to the general populace as possible.

#### **The Role of Providing Education**

Part of ensuring that the public and intended end-users of developed technologies would be knowledgeable in this area is to provide them with the proper channels for obtaining knowledge and education. This includes the establishment of various research centers, institutes, bureaus, laboratories and universities, as well as repositories for accumulated knowledge and information such as libraries and data centers that are made accessible to the end users.

The use of the latest in Information Technologies in these education channels is also critical in ensuring the effectiveness and productivity of such institutions. This includes the use of expert systems, networks, multimedia information systems, digital and virtual libraries as well as other information management channels.

#### **The Role of the People**

While the government, NGOs, corporations and other agencies are taking part in the bridging the gap between the generation of technology and disseminating these technologies for the proper adoption of end-users in India, the people themselves should also take a major role in ensuring that these efforts would not go to waste. End

users should coordinate and collaborate with extension agencies and workers, research networks and participate in the programs put forward by these institutions.

In this regard, Village Information Shops are currently being experimented with in various areas in India, as a channel for collaboration wherein villagers use them as information kiosks while also serving as means to provide insight to the government and research institutions regarding the needs and capacities of these villagers. These information shops should provide value-added information that the villagers will see as extensive and can actually improve their livelihood – and seeing it as such, these villagers will have no qualms in investing in such systems.

Quoting Sures Elangovan in his article in Silicon India entitled “An Open Letter to the Youth of India”, he mentioned that the youth and the rest of the population should be part of a Knowledge Society:

“India must stand up to the World; unless India stands up to the world, no one will respect us as a nation - only strength respects strength. We must be strong, not only as a military power, but also as an economic power. This is our vision, and it can be none other than transforming India into a developed nation. The government alone cannot achieve this vision and we need a people's movement in the country; and this is the time to ignite the minds of people to join this movement. We must all share this vision and deliver knowledge to the needy using innovative technologies. We must be committed to propel the national economy through a knowledge based eco system.”

Knowledge and information are crucial elements that will ensure the continued development of society and as a nation. These are also the primary elements needed to bridge the gap between the technology generation and the adoption and proper usage of these technologies for the good of society.



### **New Travel Buzzwords: MEDICAL TOURISM IN TAMILNADU**

#### **Continued from Page 15**

and culture that has drawn well enamored tourists for several years.

Visitors seeking medical procedures would find their recuperation stage favorable, basking in the rich natural and cultural beauty that Tamilnadu offers. Tourists can enjoy the excellent art, music, dance and literary treasures by some of the best artists in India, and the rest of the world. Aside from that, tourists find themselves welcomed by rich level of hospitality and high quality services while undergoing their medical procedures as well as during their recuperating stage.

Medical tourists can also avail of non-traditional services and therapies that can only be found in this part of the world. These include alternative remedies for healing and recovery as offered by ayurvedic, homeopathy, medi-

tation, naturopathy, unani, siddha, yoga and other non-traditional treatments and procedures. Packages can also be arranged to include pilgrimage tours to the enchanting destinations in Tamilnadu, making their recuperation process and enjoyable and as memorable as possible.

If preferred, medical tourists can also include a spiritual element to their visit by arranging trips and visits for them and their family members to world renowned temples and destinations that made Tamilnadu famous worldwide. Aside from that, special arrangements can also be made for visits to locations of national importance in the region that is significant to Tamilnadu and India's past. This includes several World Heritage Sites that was previously declared by UNESCO that are fast becoming preferred destinations for both medical and regular tourists worldwide.

So, if you are planning to avail of that much-needed medical procedure and treatment, it would be very wise to consider going to Tamilnadu and have this procedure processed there. Not only will you receive the best quality healthcare in world-class facilities, you can also enjoy an enjoyable and memorable holiday journey in the natural and historical beauty that only Tamilnadu has to offer.

# FUTURE OF INDO-KOREA COLLABORATIVE ACTIVITIES IN NANOTECHNOLOGY

BY SIVARAM AREPALLI

**N**anotechnology involves controlled manipulation of materials at the nanoscopic level to achieve remarkable properties at the macroscopic bulk level. Recently, the International Organization for Standards defined nanomaterial to have at least one dimension less than 100 nm (nanometer is a billionth of a meter).

Following the U.S. lead on National Nanotechnology Initiatives in 2001, several countries adopted nanotechnology (NT) as a prime area of focus for national development. Because of the tremendous potential and realizable economic impacts, investments have been on the increase for the last several years. The proposed NNI budget in the U.S. for FY2010 is \$1.64 billion. This includes NT-based bio research and Environment, Health and Safety research. The projected worldwide market for NT-enabled products will be between \$500 billion and \$2 trillion by 2015.

Both India and South Korea have recognized nanotechnology as crucial for economic growth and therefore implemented programs to support this.

Here is a list of programs, facilities, universities and companies in India & South Korea focusing on NT. I hope that this will provide additional useful information for establishing and continuing active long range collaborations between the two countries in the exciting field of NT.

## South Korea

In Korea, the Korea NT Initiative (2001-2010) has been implemented with the latest revision for the period 2006-2015. The NT Development Plan included the investment of 1,485 billion Korean won (\$900 million) in R&D over a period of 10 years from 2001 till 2010. Five years after the establishment of the Phase-1 NT Development Plan during which NT development was actively conducted throughout the country, the Phase-2 plan (2006-2015) was formulated as a new national policy of NT development, and revealed the government's aggressive intention to develop NT-keeping environmental and societal impacts as priorities. Many NT-related research projects are being conducted by various groups in the government, academia, and industrial laboratories. Basic research on nanodevices (CNT-FET, single-electron transistor, nano-bio device, etc.), nanoanalysis (scanning probe microscopy, atomic force microscopy, etc.), nanomaterials (nanoparticles, nanowires, nanotubes applied to semiconductor, energy, and nanoprocessing technology) are being investigated with support of government project funding and infrastructure supplied through the Korea NT Initiative. Active universities include Seoul

National University (Sungkyunkwan University, Korea University, Korea Advanced Institute of Science and Technology (KAIST), Yonsei University and Pohang University of Science and Technology (POSTECH). Several industries maintain internal R&D in NT and the notables are Samsung and LG. Other institutions that conduct basic and applied research include Gwangju Institute of Science and Technology (GIST) and Korea Institute of Science and Technology (KIST). The level of Korea's NT is evaluated to have improved much from about 25 percent of the U.S., the strongest in NT, in 2001 to 66 percent in 2005, and the number of SCI papers and patents ranks 5th in the world. A report published by Lux Research, a U.S. consulting company specialized in NT, evaluated Korea as one of the top four countries in the area of NT in 2005.

## Korea has three NT Frontier Programs

1. "Tera-level Nanodevice Development Program" for ultra high speed, ultra large scale integration (ULSI), and ultra low voltage nanodevices
2. "Nanostructured Materials Technology Development Program" aims at developing environment-friendly and high-efficient nanomaterials
3. "Nanoscale Mechatronics & Manufacturing Technology Development Program" for process technologies and manufacturing nano-scale ultrafine industrial parts as well as analysis, design, control and measurement technologies

## There are five National NT Fabrication Facilities:

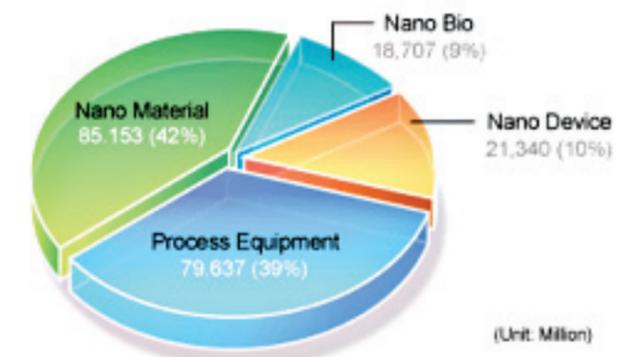
1. National NanoFab Center (NNFC) in Daejeon has silicon-based facilities include Patterning Lab, Device Lab, Pie Lab and measurement & analysis devices.
2. Korea Advanced Nano Fab Center (KANC) in Suwon supports nano device research equipment and facilities, measurement, test and inspection
3. National Center for Nanomaterials Technology (NCNT) in Pohang supports nanomaterials for semiconductor display
4. National Nano Printed Electronics Center (NNPEC) in Jeonju to support nanoprocesses
5. Gwangju NT Integration Center (GNIC) in Gwangju also to support nanoprocesses

NT work is carried out in several Korean universities such as Seoul National University, and Sungkyunkwan University and research institutes such as KIST, KAIST, Korea Institute of Energy Research (KIER), and SKKU Advanced Institute of NT (SAINT).

## From Phase I investment, the following are achieved:

1. Devices (World's first tera-level flash memory device, Photonic crystal laser, one millionth of a meter scale)
2. Materials (World's first synthesis of CNT at room temperature, and world's highest purity semiconductor nanorod)
3. Nano-Bio (Chips for diagnosis of hepatitis or cancers, Nano-bio sensors for cell use)
4. Processes/Tools (100 nm level soft lithography technology, Manipulation of block co-polymer for semiconductor devices)
5. Products (16 giga NAND flash memory, Sterilizing air conditioner/washing machine using nanosilver, Next-generation AFM)

## Investment by R&D area of Nanotechnology in 2006



## Investment Plan for the 2nd-phase Nanotechnology Development

In the Phase-2 NT Development Plan, R&D is divided into two stages. The first (2006-2010) pursues basic prerequisite activities that lay the groundwork for commercialization, and the second (2011-2015) pursues advanced technologies for commercialization and international collaboration.

## Planned resource allotment in NT in South Korea (Unit: 100 million won)

	R&D Infrastructure	Human Resources	Total
1st Stage(2006~2010)	19,730	660	20,360
2nd Stage(2011~2015)	27,200	990	28,190
Total	46,950	1,650	48,550

By 2014, Korea wants to capture a 20 percent of the global nanotechnology market (equivalent to \$500 billion).

## India

Lux Research in 2005: "Ranking the Nations: Nanotech's Shifting Global Leaders" mentions that the assessment ranks the U.S., Japan, South Korea and Germany as "dominant" and Taiwan, Israel and Singapore as "niche players," with a low score on absolute nanotech activity but a high score for technology development strength. The U.K. and France came out as "Ivory Tower" nations, with a low score for technology development strength but a high rating for NT activity. And the report ranked China, Canada, Australia, Russia and India as in NT's "minor league"!

In October 2001, Department of Science and Technology (DST) India launched a modest program in Nano Science and Technology, called the Nano Science and Technology Initiative (NSTI); has identified nanomaterials science & technology as an important thrust area of research and supporting some basic research projects in this field some goal-oriented projects on use of nanomaterials in drug-delivery systems, synthesis of Titanium dioxide from ilmenite ore etc.. By 2007, more than 450 Ph.D. students and four globally competitive basic and applied research centers came out of the NSTI program; completed projects covered topics such as "organic light emitting diodes (OLED), solar cells, nanophosphors, carbon nanotube (CNT) based sensors, nanocomposites, printable nanoelectronics, designed drug delivery, nanostructured magnetic materials" and developed 11 clusters of nano-

science center facilities with “Nanocluster & Ion Beam Sources, Field Emission TEM with CCD, Nano Indenter, PPMS with 7 T Magnet & VSM, Nanomanipulator with SPM, Optical Tweezer, Nanolithography, etc.” Based on the success of NSTI, the Government of India has mounted a Nano Mission in May 2007.

**The primary objectives of the Nano-Mission are:**

1. Basic Research Promotion – Development of fundamental understanding of matter that enables control and manipulation at the nanoscale. Creation of Centers of Excellence.
2. Infrastructure Development for Nano Science & Technology Research – Chain of shared facilities across the country for TEM, SPM, etc.
3. Public Private Partnerships and Nano Applications and Technology Development Institute activities like Public Private R&D Projects, Nano Applications and Technology Development Centers, Nano-Technology Business Incubators etc.
4. Human Resource Development –Provide interdisciplinary training as a part of education for the nanoscale science, engineering and technology students.
5. International Collaborations – Priority for Nano-Science and Technology collaborations with many countries. Academia-Industry partnerships will also be nurtured.

Steps were initiated for the establishment of three Institutes of Nano Science & Technology (INSTs) as part of the existing active centers in nano science and technology. These INSTs will be at:

- (i) Mohali, co-located with IISER, Mohali, as a centre of ARCI, Hyderabad,
- (ii) JNCASR, Bangalore as a joint centre of JNCASR and IISc and
- (iii) IACS, Kolkata

In addition, the INSTs, special support was given to the public-private-partnership projects including Nano Functional Materials Technology Centre (NFMTC) at the Institute of Technology Madras, Chennai; Development of High performance rubber nanocomposites for tire engineering at MG University, Kottayam; and Research program on Smart and Innovative Textiles (SMITA) at the Indian Institute of Technology Delhi.

The 11 clusters of nanoscience are located at Univ. of Pune, Pune; IIT Madras,

Chennai; JNCASR, Bangalore, BHU, Varanasi; IIT Kanpur, Kanpur; IISc, Bangalore; SINP, Kolkata; IIT Delhi, New Delhi; IACS, Kolkata; National Chemical Laboratory, Pune and SNBNC, Kolkata.

**There are seven centers of NT:**

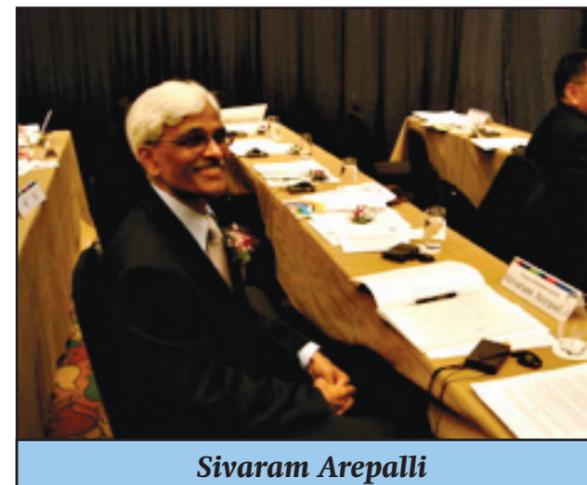
1. Amrita Institute of Medical Sciences, Kochi, Kerala (Implants, Tissue Engineering, Stem Cell Research)
2. S.N. Bose National Centre for Basic Sciences, Kolkata (NEMS & MEMS / Nano products)
3. Tata Institute of Fundamental Research (Nanoscale phenomena in biological systems & materials)
4. IIT-Bombay, Mumbai
5. (Nanoelectronics, polymer nanosensors, nanobiotechnology)
6. Indian Institute of Science, Bangalore (Nanodevices, Nanocomposites, Nanobiosensors)
7. IIT, Kanpur (Printable Electronics, Nanopatterning)
8. Indian Association for the Cultivation of Science (Photovoltaics & Sensor Devices)

**Achievements:**

1. Synthesized Nanocrystals of pure CoO and ReO<sub>3</sub> for the first time
2. Inorganic nanowires and nanotubes using alumina membranes and hydrogels
3. GaS and GaSe nanowalls and nanotubes; ZnO nano pyramids
4. Sensors with high sensitivity and low recovery time for humidity, H<sub>2</sub>, ethanol, carbon monoxide, LPG, NO<sub>2</sub>, NO and N<sub>2</sub>O have been fabricated using various metal oxides nanostructures
5. Development of two novel soft lithography techniques, namely, elastic contact and adhesive force lithography based on self organization of polymer thin films
6. Prepared a rectangular lattice of CoPt squares on NbN super conducting films using the technique of focused ion beam milling for magnetic studies.
7. Magnetic nanoparticles for hyperthermia treatment of cancer and MRI contrast agent
8. High throughput and high content RNAi screens to study nanoscale cellular processes
9. Si wafer arrays of Si/Si<sub>3</sub>N<sub>4</sub> structures
10. Design and synthesis of core-shell and quantum well structures based on group II-VI semiconductors with high efficiency for photovoltaic applications.

**Collaborations**

Following renewed interest in collaborations, a meeting was held in Seoul, Korea on January 18, 2010 to identify areas of technical expertise and possible future activities of Indo-Korea partnership. Some of the details are available in reference #6.



**Sivaram Arepalli**



**Indo-Korean Science and Technology Forum, Seoul, Korea, Jan. 18, 2010**

An important bilateral Science and Technology (S&T) decision was made to create a dedicated S&T corpus fund of \$10 million (with a contribution of \$5 million by each side) to promote joint research, during the State visit of President of Republic of Korea to India in January. The fund would serve as seed capital for joint Science and Technology. India’s Department of Science and Technology (DST) and Korea’s Korean Institute for Advancement of Technology (KIAT) and KIST have agreed to work out an MoU for bilateral industrial R&D investment. The program of cooperation (POC) is outlined in reference #7.

The DST is supporting six projects listed below:

**DST Sanctioned Indo-Korean Joint Research Projects**

Title of Project	Organization/ Co-PI of India	Co-PI of India/ROK	Amount
Application of Tasar and Muga Silk Sericin as Material for Drug Delivery	Karnatak University	Prof. B.B. Kaliwal,	Rs. 3,90,000/
Role of NF-related factor-2/Hemoxygenase-1 (Nrf2/HO-1) signaling in the retinal vasculature	Madras Diabetes Research Foundation, Chennai	Dr. Mohan Rema,	Rs. 8,76,000
Fabrication and evaluation of solution grown and pulsed laser deposited films based solar cells	Shivaji Univ., Kolhapur	Dr. V.J.Fulari	Rs. 4,16,000/-
Optimal Mobility and Resource Management in Next Generation 4G Wireless Networks	Dr. Swades De, IIT, Delhi	Dr. Navrati Saxena, Sungkyunkwan University	Rs. 4,66,500
Study and development of nano composite photo catalysts for hydrogen production from water	Dr.(Mrs) V. Durga Kumari, IICT, Hyderabad	Dr. Jae Sung Lee, Pohang University of Science and Technology	Rs. 4,89,000
Development of Thermoplastic Nanocomposites based on nanoparticles modified through surface initiated polymerization	Dr. S.K. Nayak, Central Instt. of Plastics Engg. and Technology, Mysore	Dr. Insung S. Choi, Advanced Institute of Science	Still not approved

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2. U.S. Nanotechnology Initiative: <http://www.nano.gov/>
3. Lux Research: <http://www.luxresearchinc.com/>
4. Korea Nanotechnology Gateway: <http://www.k-nano.kr/>
5. India Nano Mission: <http://nanomission.gov.in/>
6. Indo-Korea Forum: <http://www.koreaittimes.com/story/6850/beginning-something-big>, <http://joongangdaily.joins.com/article/view.asp?aid=2915762>
7. Indo-Korea Cooperative Agreement: [http://dst.gov.in/whats\\_new/press-release10/pib\\_25-1-2010.htm](http://dst.gov.in/whats_new/press-release10/pib_25-1-2010.htm)

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# Q&A

## YOZO HASEGAWA

Yozo Hasegawa is one of Japan's leading economic commentators. He graduated from the elite Keio University and afterward was assigned to cover Poland and Austria. Returning to Japan, Hasegawa became a professor of economics at the famous Gakushuin University. He is also the host of two programs — see interview for more details — where he queries leaders from Japan's world of business, questioning them about their values, objectives, methods and contributions to the economy and society. More recently, Hasegawa has turned to authoring books, drawing on his aforementioned experience to write *Rediscovering Japanese Business Leadership: 15 Japanese Managers and the Companies They are Leading to New Growth* (Singapore: John Wiley and Sons, 2010). He gave this interview to contributing writer Victor Fic about a theme few others are addressing.

BY VICTOR FIC

**Question:** Describe your television program where you interview top Japanese managers.

**Answer:** I have two regular interview programs with Japanese managers every Saturday. One is "Direct Interview with Top Management" on TV-Tokyo and the other is "A Visit with a Dreaming Entrepreneur" on Radio Nikkei.

**Q:** Many experts say that Japanese managements' golden age was in the 1980's "bubble economy" era...but that burst! Are you a brave commentator to claim Japanese management can be a model?

**A:** The golden age was based on Japanese Inc.'s strong team work between the government and companies. But after the corruption of the bubble economy during the 1990's, some clever Japanese cultivated their resources by themselves through a selective concentration strategy, creating new markets and a global strategy. So Japan's present success is based on a private oriented strategy instead of Japan Inc. style.

**Q:** What specific criterion led you to select the 15 case studies?

**A:** I selected 15 companies from the main industries that show either high earning performance or future potential.

**Q:** Makoto Lida of Secom provided security devices to companies, then realized that married couples and the elderly are also a market. What is the lesson here?

**A:** He always watched social trends for a business chance. Now he is interested in Japan's aging society and addresses caring for single old people.

**Q:** Shinzo Maeda of Shiseido Cosmet-

ics says do not wait for crisis to change. He streamlined the company before the global recession. But very few people can honor this precept, correct?

**A:** Yes. When Maeda became president, Shiseido had a big oversupply of products and the brand image was not clear. But many lacked a sense of emergency. So Maeda's first mission was to change the employee's consciousness.

**Q:** You cite how Renault sent an expat, Carlos Ghosn, to restructure its partner, Nissan. Why and did it work?

**A:** When Renault invested capital in Nissan, Louis Schweitzer was Renault's C.E.O. He relied on Carlos Ghosn, vice president, and appreciated his ability to restructure Nissan. So Schweitzer made the latter his successor.

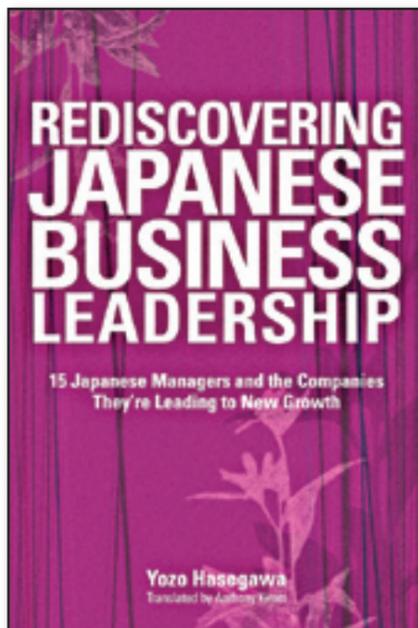
**Q:** Your book says that Nintendo famously refuses to publicly state its business plan. How does this encourage investors to buy its stock?

**A:** Success in the game computer business always depends on new game software, which faces hard competition. So it's very difficult to disclose the business plan early, but investors buy Nintendo stocks expecting profit.

**Q:** You insist that a cultural quirk is that Kyoto people want to be different from Tokyo's. Cite examples of this.

**A:** Kyoto is Japan's old capital. The citizens respect themselves and don't care about Tokyo. They show an independent spirit and so there are many such companies such as Kyocera.

**Q:** Osaka was the center of Japan's commerce during the pre-industrial Meiji era and after, producing powerful firms like Mit-



sui. What is the mentality there?

**A:** The Osaka mentality is stingy and independent, e.g. Sumitomo.

**Q:** Explain the concept of genba'ism that you say Kaoru Seto of Yamato Holdings transport company shows.

**A:** Kaoru Seto had a unique experience during his school days. He worked at a side business besides studying. Through this experience, he learned to work with front line people to find business solutions. Genba'ism means to communicate and study with ordinary people such as truck drivers who directly know the customer's requirements.

**Q:** Yuzaburu Mogi of Kikkoman foods was the first Japanese to earn an MBA – at Columbia. Why did so few Japanese do such a degree?

**A:** Mogi got an MBA in 1961. Japan was not open to the outside so few people had such a degree.

**Q:** Mogi favored what you call "rational" Western practices such as deregulation, risk taking and incentive pay for executives. Did these work for Kikkoman?

**A:** Kikkoman is a very old company, but it developed a global business earlier and depends a lot on it. Kikkoman is a westernized company because each division can decide freely to work speedily.

**Q:** Why didn't others imitate him?

**A:** Mogi is a famous manager who has many ideas and he contributes much to business society.

**Q:** You mention that Tadashi Yanai of the Fast Retailing Company introduced an in house business school in 2010. Summarize its purpose and methods.

**A:** Fast Retailing expanded too much during a short time. So experienced managers and Mr. Yanai wish to educate people about better management.

**Q:** Akio Mimura of Nippon Steel Corp. advises one to research and examine slowly and care-fully, but to rapidly execute the decision. This is not original, but the traditional Japanese precept – correct?

**A:** Yes. Japanese companies' tendency is not to be so speedy, e.g. Toyota. But recently it feels obliged to change its traditional decision making to cope with tough competition.

**Q:** Yasuchika Hasegawa of Takeda Pharmaceuticals was patient. Is this outdated in globalist competition where the weak are



quickly eliminated?

**A:** When I say Hasegawa is patient, it does not mean slow. Even with hard issues, he can decide.

**Q:** Masahiro Sakane of Komatsu construction emphasizes "visibility", where employees see all aspects of the operation to reform the entire system. But this requires ending internal compartmentalization, having a detailed view of a large process and much dialogue... can firms achieve this?

**A:** Yes, when Sakane says "visibility", it means each employee should understand his work, not only the details but also the entire system. Sakane also respects genba'isim but he always emphasizes seeing the total view.

**Q:** Your book says that Western management is top down while Japanese is middle up. Some experts insist that the reverse is true...your comment?

**A:** I believe Japanese traditional management style is bottom-up as we seen in quality circles. But Carlos Ghosn brought to Japan a top down style and the mixed style is becoming popular.

**Q:** Canon cameras sticks to Japanese style lifetime management, while also applying strong supply chain and cash flow metrics. How is this an example of wakon yosai or Japanese spirit and Western technique?

**A:** Fujio Mitarai, C.E.O. of Canon, is a famous manager against the direct injection of the American management style. Canon is a very profitable company. It continues to use Japanese lifetime employment to keep good human resources. This is the Canon spirit.

**Q:** What percentage of managers are using purely Japanese management vs. Western or a mixture?

**A:** Nowadays Japanese companies use a mixed style. A-2

# BUSINESS



## Automobile Industry the Largest Beneficiary of Changing Lifestyles in China

BY REENA SAXENA

In 2009, the automotive company Geely Holding Group Co., impressed the automotive industry by the announcement of expansion to Detroit. This move was done amidst the economic down-turn that is plaguing the United States. This company is based in Zhejiang, China and is looked upon as a great example of the China's growing strength and competitiveness in the automotive industry. This story is just one that solidifies China's standing in the global automotive market. China now stands as the biggest automobile market in the world.

2008 was a bad year for many enterprises and businesses due to the global economic crises. The automobile industry was not an exception.

There is only one part of the world whose automobile market has made steady progress. It is not surprising China has seen steady growth of its automobile industry, despite the crisis that consumed the West.

In January 2010, Dr. Yu Hong and Dr. Yang Mu, both senior research fellows at the East Asian Institute, National University of Singapore wrote a research paper on China's growing automotive industry. In this study "China's Automobile Industry: An Update" the two explored the driving force behind the success of the industry.

According to this study, U.S. auto sales dramatically dropped to 2.2 million in the first quarter of 2009 due to the credit crisis.

As the U.S. falls, so is the rest of the West. Interesting enough, China is singing a different tune.

The Hong and Mu study also reported that the auto sales in China were recorded to reach 2.65 million on the same quarter. In addition, the total auto sales on the last quarter of 2009 were 3.96 million.

Direct automobile manufacturers are not the only ones benefitting from this surge in growth. China Automotive Systems Inc. is one of the leading companies supplying power steering components and systems in China. In a press release for their 2010 first quarter financial results, they announced that net sales increase 88 percent year-over-year – up to \$84.2 million. This is the highest quarterly sales figure for the company.

Chief executive officer Qizhou Wu commented, "We are encouraged by our first quarter result and long term growth potential of world's largest auto nation. With the high saving account balance, Chinese consumers are increasing consumption of durable goods. Auto, as the second highest price tag after housing, remains a natural candidate for Chinese consumers. Auto is also the largest beneficiary of the changing life styles in China, as it gives Chinese people more freedom to travel within and outside of the cities."

Dow Jones Newswires reported that Xu Changming, director of economic research for the State Information Center, declared that China's auto sales this year are expected to grow a healthy 13 to 15 percent. Xu further predicted that this year's private vehicle market will grow an impressive 20 percent.

### Government initiatives

Policies and initiatives implemented by the government such as tax brakes for auto purchases and even accessibility of subsidies were a big encouragement for locals to buy vehicles. This move is an integral part of the government's initiative to further strengthen key industries, which benefits the country.

The Yu Hong and Yang Mu study also outlines the different government initiatives and stimulus campaigns attributed to the industry's dominance. The study emphasizes the effects made by these government initiatives. When auto sales in the third quarter of 2008 decreased to 2.04 million from 2.57 million in the first quarter of, The Chinese government stepped in and saved the day. In 2009, sales were up 73.5 percent.

According to the study, in March 2009, the State Council of China carefully produced a new development outline for the automobile industry for 2009 to 2011. The outline

has schemes involving upgrades, enhancement of technology and new engine promotions. The outline also has three main objectives. The first main goal is for production to move from assembling low-end vehicles to high-end manufacturing and products design. Second main goal is placing emphasis on developmental research in the efficient production of energy-saving and environmentally friendly vehicles. The third goal is to support domestic car manufacturers by increasing demand. This goal involves the "sell automobiles to peasants" program. The authorities are providing one-off allowances for farmers to replace three-wheeled and low-speed vehicles. There is also a lower purchase tax on cars with small engines.

### Changing lifestyle

There are several key factors that are behind the success China's automotive industry. One of which is the lifestyle change of an average Chinese consumer, which in turn can be attributed to the nation's strong economy. The National Bureau of Statistics, People's Republic of China, 2009 report revealed that the average income of urban families in China rose from 16,159 yuan (\$1,973) in 2005 to an estimated 24,302 yuan (\$3,522) in 2008. This only proves that buying power has dramatically changed for the average citizen.

According to Keith Bradsher's article entitled "With First Car, a New Life in China" the firm J.D. Power & Associates made a calculation that four-fifths of newly sold cars in China is purchased by first time buyers. Furthermore, the firm revealed that this figure has been consistent for the last four years. The United States auto sales statistics seem to the exact opposite. Less than a tenth of new automobiles are bought by first time buyers.

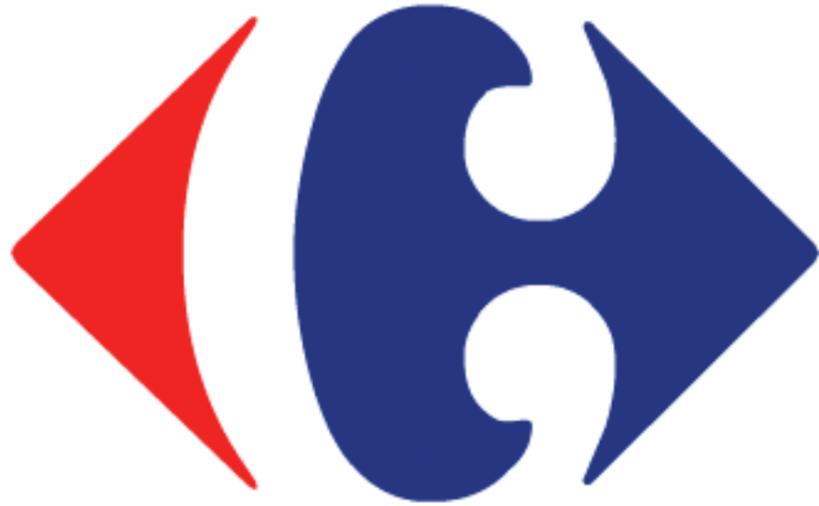
China's first time buyers seem to allocate a big portion of their new and empowered average income into purchasing new vehicles. This is the main reason why the country's car industry's growth and revenue surpassed those other auto giant countries like Japan and even the United States. Chinese people's general outlook on vehicle purchasing has changed dramatically for the better and is in sync with their government initiatives and global economic development.

### China's support for domestic brands

China is well ahead of the global game when it comes to economic growth. According to the Auto Industry Development Report of 2009, a quarter of own-brand vehicles make up 30 percent of total car sales. China Automotive Technology and Research Center is focusing on safety performance technology as it seems to be more of a priority to the customers. Domestic automobile enterprises have been working for several years, accumulating studies, tests, technology to develop their own brands and their very own alternative energy automobiles. They have made progress, especially in electric cars and plug-in hybrid vehicles.

China has clearly set a new standard in the automotive industry. It has proved its dominance by overtaking U.S. sales. Outstanding economic growth and aggressive governance ensure that such dominance is here to stay. However, the more important issues of establishing steady technologies on renewable energy and fuel efficiency in the automotive industry are still unsettled. This may very well determine the dominance of one country to another in the years to come. Experts believe that whoever masters such technology shall rule the industry. (A-P)

# European Retailer Carrefour Marches Ahead in China, Eyes Indian Market



BY ANURAG AGNIHOTRI

**T**he largest retailer in Europe is making waves in China and Latin America. Carrefour just recently announced, that this year's first quarter showed a significant increase in growth in both China and Latin America. The company is proud of the 34 percent market growth. Additionally, the website reported the opening of 16 hypermarkets, 22 supermarkets and 77 hard discount stores.

In China alone, the company reported like-for-like basis sales growth of 4.5 percent and the expansion made up 10 percent of sales. Although sales in some countries in Asia went down, overall the company remains optimistic about continuing a strong presence in the retail business in these countries. Referring to the significant growth sales in China, CEO and Board Member of Carrefour, Lars Olofsson announced "Our quarterly sales grew on a like-for-like basis for the first time in 18 months in spite of an environment that remains challenging. This performance reflects the heightened attractiveness of the Carrefour brand, our strengthened commercial dynamics and the acceleration of growth in emerging markets, notably in Latin America and China.

We are moving forward with determination to implement our transformation plan to better serve our clients and achieve profitable growth. The Board of Directors' decision to approve a share buyback plan for up to 6 percent of Carrefour's capital is a further sign of confidence."

## Where the money is

Going to a Carrefour hypermarket is becoming a welcoming habit for typical Chinese shoppers. According to Dai Yan of China Daily, an average Chinese customer spends about of \$13.80 (110 yuan) per visit to a Carrefour hypermarket. This figure is significant considering the Chinese consumer population. Dai Yan further pointed out that China's retail market expansion is projected to

soar \$2.4 trillion by 2020. With China's economy getting stronger every year, it is clear that Carrefour has been successful in strategically implementing its worldwide campaign of opening more outlets in the country.

The company has also evidently perfected the ideal retail experience that Chinese consumers seem to love, as there is a steady flow of Chinese customers in Carrefour Hypermarkets. According to a China Daily news report, government mandates such subsidizing energy-saving home appliances have worked in favour of boosting sales. General manager of the North Territory of Carrefour China and vice president of Carrefour China Claudio Gouveia confirmed the company's aim to construct 6,000 sq m to 11,000 sq m hypermarkets. Furthermore, Gouveia pointed out that the French company is striving to strike a balance on the number of stores among major cities and second to third tier cities. They plan to open an outlet in the Inner Mongolia Autonomous Region. If this plan is implemented accordingly, Carrefour is going to be the first international retailer in this region.

Carrefour group has been consistent with their performance in the Chinese market for two consecutive years. At present the company owns a total of 157 stores in China. Malaysia has a favourable increase of 11.4 percent. However Indonesia, Taiwan and Thailand experienced a like-for-like sales decrease. Following its sterling performance in the Chinese market, Carrefour plans to open 20-24 more outlets across China. LSA, a French magazine pointed out how Carrefour is applying the same strategies used in France such inventory reduction in China to maximize its hypermarket's performance. Planetretail.com reported that Lars Olofsson in his official visit to China claimed that reducing the time of inventory from 29 to 22 days, would generate 1.5 billion euros (\$2.2 billion) of cash flow.

The relationship with China has not always been a smooth road for Carrefour. Back in April 2008, there was an Olympic Games controversy when advocates of Tibetan independence disrupted the Olympic Torch relay. Some Chinese groups promoted boycotting the company's outlet stores because of its French background. Carrefour tried their best to disconnect themselves from the Beijing Olympics controversy and eventually emerged stronger than ever.

Carrefour has also been successful in Latin America. The first quarter statistics on the company's website shows that like-for-like sales in this region garnered a steady 10.1 percent increase. Meanwhile, the other parts of the world seem not to share the same success as China. Just in March of this year, Carrefour announced the selling of 8 stores to AEON Group. Carrefour also sold 524 stores in Portugal in April. It seems that the company tends to focus on the countries that are having great

success and is slowly moving away from countries that are giving the other end result. However, in a Reuters news report, Olofsson insisted that Carrefour remains profitable in all countries that it has outlets in. He also stated that it is not necessary to quickly make the move to withdraw their businesses in these countries.

## What makes Carrefour work

There can be a number of reasons why Carrefour has emerged in global retail competition. These reasons may include the group's vision and global marketing strategy.

Carrefour's vision includes being the preferred retailer wherever its operation may be. That is why Carrefour has been successful in countries like China, because they promote a client-centered culture that heavily depends on customer trust and loyalty. Today Carrefour has an estimated 15,000 stores and four store formats. These are the hypermarkets, supermarkets, hard discount and convenience stores. The company has also sets its standard in terms of product quality. From household and personal care products to children's wear and toys, the company ensures a high standard of safety. Aside from being a retail store, Carrefour also manufactures its own brand products. One big advantage of a retail chain such as Carrefour is the ability to offer a wide variety of brands. They offer industrial and regional brands including the "first price" items which refer to their own products.

**The relationship with China has not always been a smooth road for Carrefour. Back in April 2008, there was an Olympic Games controversy when advocates of Tibetan independence disrupted the Olympic Torch relay.**

## Eyeing India

There have been talks that Carrefour has been eyeing to expand in India for quite some time. Reuters reported recently that the retail king is going to announce its major partner in India. The company is said to have been very careful of not launching or acquiring too much too soon. Carrefour reportedly spent much time trying to find the right partner for this potentially historic business venture in India. Reuters further reported that in the annual shareholders meeting Lars Oloffson announced they will soon reveal the new business partner. This announcement came amidst the speculation among Indian media organizations that is Kishore Biyani's Future Group. The Future Group is said to run the largest store chain in India. It is also important to take note that countries like India do not permit foreign companies to own and operate their own retail chains. In order for a retail invasion by Carrefour in India to come true, they have to strike a partnership with local companies. The only exception to this restriction is that the company is allowed to manage cash-and-carry outlets.

Breaking through India is very much crucial to the company's calculated vision of reigning over Asia in the field of retail. <sup>(A-P)</sup>

# Asia-Pacific Consumers Ready to Spend their Way Out of Recession



BY ANURADHA SHUKLA

**T**he Nielsen Global Consumer Confidence Index latest global survey revealed an increase of 6 points compared to the survey conducted 6 months ago. This result clearly implies that consumers are ready to spend again. This mentality drove the global index up to 92 points, which is close to the prerecession 2007 third quarter result of 94 index points. The financial system downfall in 2009 reflected 77 points. Overall, the results were favorable with 41 out of the 55 countries increasing their consumer confidence. India and Indonesia and Norway were among the most confident nations with 127, 116, 115 points respectively.

## Asia Pacific's remedy to recession

Asia Pacific is the highest among all regions in terms of purchasing confidence with a (+8) points. This rally is spearheaded mainly by Taiwan and Singapore who garnered (+14) and (+11) points respectively. India gained (7+) and China (+6) which is an optimistic sign for the two emerging economic market forces. Chinese confidence soared to 108. A figure they matched in the first quarter of 2005. Vietnam was the odd one out when its consumer confidence scored lower than the previous

survey conducted 6 months ago. This is attributed to the 8.51 percent price increase on goods.

Dr. Venkatesh Bala, chief economist at the Cambridge Group, a part of The Nielsen Company stated, "Asia's rapid recovery and bright prospects makes this booming region a high priority for resource allocation for manufacturers and retailers, including tapping into the large and growing number of middle-class consumers."

Christopher Cambournac, president of the Nielsen

Company's Asia Pacific, Middle East and Africa region stated that Asia Pacific consumers' results showed evidence that they are shopping more. Consumers have demonstrated plans to purchase out-of-home entertainment, technology, holiday getaways and new clothes

## Hong Kong's response

According to Nielsen, Hong Kong consumers are very optimistic and they plan to spend on recreation expenses such as vacations and entertainment. The city's consumer confidence is improving on a yearly basis. Although consumers generally still want to put money away, the index reported a rise from 70 points to 99 points in consumer confidence. Of the local residents, 53 percent also expressed confidence in the stock market, mutual funds and other investments. Hong Kong is one of the premier cities whose spending outlook has sparked a new energy. They are confident that the economy will bounce back. The Nielsen results revealed 47 percent of the consumers are ready to spend on vacations, 37 percent on other recreational activities, 37 percent on clothes and 27 percent on electronics.

The managing director for Nielsen Company in Hong Kong, Oliver Rust, reminded us that, "Although consumers' intent to spend has improved, we still need to remain cautiously optimistic about the future, especially given the high dependency on mainland tourist spending, and the fact that some frugal consumers have yet to return to their 2008 shopping behaviour." He further added that the, "Asia Pacific region is on a high and businesses are looking their way to invest in a place where consumers are willing to pay for quality and innovation."

## The rest of the world

Overall, Europe increased by 2 points but it is clear that they are in a different state of mind as 7 markets out of the 28 marked a decline in consumer confidence. The top markets, Italy and Germany, did not save Europe and did not escape consumer pessimism as the index dropped by 3 points from the previous survey score. In the UK, 84 percent of respondents believe that they are still experiencing recession in the first quarter. This is lower in comparison to the 94 points taken six months ago. Spain's score of 79 is five points higher than previous results, however, France increased by only one drawing their index level to 68.

Greece tallied the biggest decline with 15 points. This is due to the surprising debt crises that affected financial markets in Europe and Asia. Meanwhile, U.S. confidence scores were up one point from the previous quarter. Canada remained steady at 100. Overall, it is looking great for the rest of the world since the percentage of consumers who believe they are in recession had declined to 58 percent compared to the previous year's 77 percent.

## Nielsen Global Consumer Confidence Survey

Nielsen's Global Consumer Confidence Index tallies their results from 27,000 online respondents in 55 countries within Europe, Asia Pacific, Latin America, Middle East and North America. The Global Consumer Confi-

dence Survey was held from March 8 to 26 this year. The survey intends to measure consumer spending habits, present financial standing and perception of the job market. The sample is taken from internet users from different countries. Respondents are also classified according to age. The survey has a margin of error of  $\pm 0.6$  percent.

## MasterCard' version

Nielsen's result seems to coincide with MasterCard's own Worldwide Index of Consumer Confidence. In their results released in May this year, Asia-Pacific consumer's exhibit optimism in terms of their country's attempted rebound. From the fourteen market participants, eight showed a favourable consumer outlook.

The survey also demonstrates that age may influence consumer confidence. Younger consumers which were aged below 30 seemed to show more optimism. This can be noticed on the point difference in countries like the Philippines, Hong Kong, Singapore, and New Zealand. Korea proved to be the exception as their respondents above 30 were more optimistic. The MasterCard Worldwide Index of Consumer Purchasing Priorities is a survey that measures five components that affect the economic climate. These are employment, regular income, stock market and quality of Life. The respondents are presented with a scale where 100 points reflects optimism, 50 represents neutrality and 0 represents pessimism. The Index does not focus on the actual economic condition but is mainly concerned with the personal views and reactions of the respondents to the different elements.

The economic advisor for Asia-Pacific at MasterCard Worldwide, Dr. Yuwa Hedrick-Wong, firmly believes the consumers of this region are ready to spend on personal discretion and move a step back from precautionary savings, even if the story was different 18 months ago when the same consumers were amongst the first to tighten their belts on discretionary savings. "This stability of consumer confidence and rising consumption in Asia/Pacific therefore bodes well for stronger business investment through the rest of the year, thereby contributing to the momentum of recovery."

## Singapore' stance

In Singapore, The MasterCard Consumer Index indicates an increase in consumer confidence compared to the previous survey conducted in 2008. The general view however is still conservative when it comes to spending. They remain cautious, but they are still willing to spend on electronics (37 percent) and air travel (35.2 percent).

"Consumer sentiment here fell precipitously in 2008 and early 2009, but it is now seeing a V-shaped rebound. Persistent uncertainty in the outlook of the global economy, however, continues to affect consumer savings and spending behaviour, which show that most consumers are still saving for precautionary reasons," Dr. Yuwa Henrick-Wong, stated.

He also went on to say, "For the Asia Pacific region as a whole, the robust recovery in both economic conditions and consumer sentiments can therefore be characterised only as a 'partial decoupling' from the rest of the global economy." <sup>(A-P)</sup>



# ENVIRONMENT FRIENDLY MANAGEMENT

BY AMANDA MIN CHUNG HAN

**T**here are always fads and trends not only in fashion, but also in business management strategy. Six sigma was once a must have tag to improve the manufacturing processes. According to the book "Institute's Six Sigma Breakthrough and Beyond," by the late 1990s about two-thirds of the Fortune 500 organizations had begun Six Sigma initiatives with the aim of reducing costs and improving quality.

There was Quick Response Manufacturing (QRM), a companywide strategy for reducing lead times, which was first developed in the late 1980s. ISA-95, an international standard for developing an automated interface between enterprise and control systems, has been developed for global manufacturers.

Customer relationship management (CRM) is also a broadly recognized, widely-implemented strategy for managing company's interactions with clients. Supply chain management (SCM) is used in executing supply chain transactions. Knowledge management (KM) is a relatively new strategy since the turn of millennium. A Korean business newspaper established an economic forum called 'World Knowledge Forum' in 2000. The current Korean administration even changed the name of

ministry from 'Ministry of Commerce, Industry and Energy' to 'Ministry of Knowledge Economy' in 2008.

Sustainable Management (SM) also caught eyes of the public as people are concerned about environment. Sustainability has three substructures: the environment, the needs of present and future generations and the economy. The environment was part of sustainable management, but environmental awareness led to environmental friendly management and may bring "zero-carbon management." Under the United Nations Framework Convention on Climate Change, Korea is classified as developing country that is not required to reduce emissions. Still, the Korean government ratified the Kyoto Protocol and already had policies in place to reduce greenhouse gases.

Accordingly, Korean companies set goals to reduce carbon emissions and some earn money and cut expenses. Hankuk paper is one of them. A printing paper manufacturer, Hankuk paper buys surplus steam from Korea Zinc Inc. to dry wet and thick pulp to produce paper. The steam is cheaper than bunker C oil and also it hardly emits carbon dioxide unlike Bunker C Oil. The cooperation benefits Hankuk paper, reducing fuel costs, and Korean Zinc Inc. earns money from the deal. It is win-win for both firms.

This idea started from good location and a simple communication with companies in the same industrial complex. Each company and/or factory is in the range of 3 to 5 km from Hankuk Paper in the complex.

Kim Jong-Soo, team head of technology planning, said "As people of each company know each other, sometimes we share ideas of reducing green house gases and expenses. Reducing carbon emission is a new mission for Korean companies."

Hankuk Paper put much effort into managing environmental friendly processing in the paper manufacturer to get rid of the misconception that the paper industry is responsible for environmental pollution and disruption due to its logging. While he was sharing ideas with colleagues and employees from neighborhood companies, he learned that his company needed

steam and Korea Zinc Inc. had overabundant steam from its manufacturing process.

"We consume 1.06 million tons of steam per year for paper making in the paper mill. To generate 1 ton of steam, 67 liters of Bunker C Oil needs to be burnt, which means we need to buy 71 million liters of Bunker C Oil annually. It costs around 44 billion won (\$35 million)," Kim explained.

Burning Bunker C Oil is not only expensive, but also fumes out greenhouse gas. If steam replaces Bunker C Oil, the paper making process will not emit carbon dioxide that makes Hankuk Paper as a carbon-zero company. Two companies started negotiating the steam trade. As Korea Zinc Inc. is 3 km away from Hankuk Paper, establishing a pipeline between the two companies is enough to deliver steam.

The negotiation took a long time. One year was spent making the deal happen. Hankuk Paper and Korea Zinc Inc. agreed to trade half million tons of steam per year. Hankuk Paper will be supplied steam from next year for seven years.

Why did it take so long to make the deal? "Because we didn't know how to assess the price of steam and Carbon Emission. There was a not clear criterion to judge or many precedents to consider," Kim said.

From three companies, Hankuk Paper gets 1.06 million tons of steam annually, and expects to save 44 billion won in oil expenses. Considering the company's estimated operating profit for fiscal 2010 is 45 billion won, it has a very positive effect economically and environmentally.

This cooperation is also good for Korea Zinc Inc. The company used to generate electricity with steam to save costs and the environment. However, generating electricity from steam lost much of its heat energy during the process. Selling the steam to Hankuk Paper is more effective for Korea Zinc Inc as well.

It is the first case in the paper industry that a firm is using steam from another company. Competitors in the paper industry are considering establishing a cogeneration plant. Kim thinks Hankuk Paper was lucky to be near other companies in an industrial complex.

Hankuk Paper also hopes that recycling steam gives it better credit from the public as an environmental friendly company. The paper industry is an energy-consuming industry.

The late chairperson, Dan Sa-Chun, the founder of Hankuk Paper foresaw that the carbon emissions would be a big social issue. He ordered forest trees in a size of 52 million square meters plantation to prevent climate change. At the same time, the company has come up with an answer to reduce carbon emissions.

Kim also hopes that people think the paper industry is a friendly one. "Paper companies have spent a big amount time to consider less energy consuming processing. At the same time, they have planted numerous trees - more than which are consumed."

This kind of cooperation between companies in a same industrial complex is encouraged, especially in Eco Industrial Parks (EIP). Hankuk Paper

and Korea Zinc Inc. are in a same Ulsan Eco Industrial Park. The Ministry of Commerce, Industry and Energy launched on a project to build ECO industrial park which pursues zero-emissions by recycling byproducts, waste, used energy generated from the industrial complex, so that they could be used as material or energy sources for other production activities. There are currently five Eco Industrial Parks including Banwol-sihwa, Ulsan, Yeosu, Cheongju, and Pohang. As part of the ECO industrial park project, waste heat (steam) generated from the Ulsan-Seongam incinerator is channeled to the Hyosung company (located within the industrial park), which not only provides economic benefits, but also reduces the use of fossil fuels, and consequently decreases COD emissions. Through this project, Hyosung company saves 3.9 billion won annually, as well as reduces 55,500 tons of carbon emissions.

From next year, another newly launched incinerator will channel waste heat to the Hyosung company, which will increase Hyosung's savings on fuel to 5.9 billion won per year.

Korea Industrial Complex Corporation (KICOX) has led the Eco Industrial Park project since 2006. During that time, KICOX has invested 29.3 billion won to five Eco Industrial parks including Banwol-sihwa, Yeosu, Cheongju, Pohang and Ulsan-Seongam incinerator to get 49.8 billion won in economical effects, with a reduction of 197,000 tons of carbon emissions.

In Pohang, Dongkuk steel mill Co., DSI and POSCO cooperated to reuse steel waste as a substitute of scrap metal. In Cheongju, Hynix Semiconductor Inc. separate and refine waste sulfuric acid and waste hydrochloric acid, then supply it to companies which need sulfuric acid. Annually, 10,000 tons of waste acid is reused by the system. The Eco Industrial Park project also helps to hire people to generate new jobs. The official at KICOX said "Eco Industrial Park aims for Carbon zero emission to be a future green industrial complex." 





# GREEN CARS STILL NOT A HIT IN ASIA

BY VINTI VAID

**T**he Global Financial Crisis resulted in a collapse of car sales in the United States and Europe. However, this trend did not affect the continuing economic growth experienced in China, India and some parts of Asia. China surpassed Western car markets in 2009 and continues to be strong.

With only 50 people out of a 1,000 owning a private vehicle in China, the market continues to grow tremendously in this part of the world, where the concept of owning private vehicles is relatively new. One major car company in Shanghai reported sales growth from a mere 20,000 units in 1999 to 1.83 million in 2009. What's more unique in these transactions are that 90 percent of sales are conducted with cold hard cash.

The increasing appetite for large limos, sedans and other power vehicles by the Chinese consumer continues to make headway for both Western and local car manufacturers. But will this enthusiasm be translated to hybrid, electric and other green vehicles? Will the Asian market embrace these new means of transportation in the same manner that their Western counterparts patronized what is touted as the future of the car industry?

## Dark outlook for green car industry

Studies have shown that due to certain technical limitations in the current technology for electric and hybrid cars, market acceptance would not be as well-rated as standard combustion vehicles and is projected to settle in the 2 to 5 percent range. These limitations place certain inconveniences and disadvantages for end consumers that would overwhelm the fuel economy benefits they can derive.

Another blow would be the reported diminishing support for electric vehicles from major car manufacturers, most of which are skeptical that the green car industry would make a substantial impact in the market. Incidentally, these skeptical car manufacturers are the ones who topped the surveys of brands consumers would buy hybrids or EVs from.

These manufacturers believe that the inconveniences and disadvantages brought about by the limitations posted by electric cars would eventually weight much in driving consumers away from these vehicles. Unless technological breakthroughs arise to address these annoyances and inconveniences, these car manufacturers would remain doubtful whether the green car market will pick up in Asia.

## Issues and disadvantages of electric, hybrid

Hybrid and electric vehicles were designed to reduce or eliminate the car's dependency on gasoline and petroleum-based fuel. A hybrid car or hybrid electric vehicle is powered by combination of a gas engine and an electrical battery. Pure electric cars run on electricity powered by a battery pack.

The use of electricity reduces the negative impact that vehicles have on the environment, as well as addresses the imminent reality of diminishing oil reserves. However, despite these significant benefits, there are certain disadvantages that hinder the Asian masses from adopting hybrid or electrical cars as their main choice for transportation. Such disadvantages are outlined below:

## Form and appearance

To increase the efficiency of hybrid and electrical cars, the vehicles are designed to be highly aerodynamic to reduce drag and resistance. This would let the vehicle glide through as smoothly as possible to get more mileage from its electrical power reserves. With greater resistance, a car that is not aerodynamically designed would realize less mileage or distance range as compared to aerodynamic cars.

The problem however, lies in the compromise in form and appearance to achieve the desired aerodynamic qualities for the vehicle. In most cases, function weighs more than form when these vehicles are designed to achieve the targeted efficiency. The result would be designs that defy standard norms in vehicle

styles, even to the point that some output designs border on the absurd that will not cater to most consumers' taste and preference.

## Not Very Cost-Effective

Hybrid electric cars cost approximately \$5,000 to \$7,000 more than their standard combustion counterparts. This is one of the topmost disadvantages that consumers get from these green cars. Although in the long run, owners gain significant cost savings from the reduced or eliminated use of gasoline, the initial price tag would not be affordable or very appealing to consumers, particularly in the Asian region.

Aside from the cost of the car itself, owners will eventually spend more money for battery replacements and maintenance in the long run. This is primarily one of the reasons why the Asian masses continue to shun electric cars. Many are worried that batteries would expire more frequently and have to be changed regularly with constant use. This would translate to additional costs that would be very taxing and cost prohibitive for the average user.

## Limitations of the battery

Current battery technologies used for hybrid and electric cars is limited in energy and power, providing a limited range for vehicles in between charging times. Consumers are apprehensive, for fear of finding themselves in the middle of nowhere without a charging station. To get longer mileage, an electric vehicle would need more battery packs – which would take more space, would weigh more heavily and would cost much more.

Aside from that, larger battery packs would take a much longer time to completely recharge. If users choose to run on a partial charge, they would not get much mileage and would still need an hour or two to get a running capacity from their battery packs. Fast chargers would require more power; however, such a practice would increase the risk of damage to the expensive battery packs. Such disadvantages make the prospect of purchasing such vehicles less appealing.

## Environmental issues due to higher emissions

Hybrid electric cars were designed to minimize the use of fossil fuels known to cause toxic by-products that would harm the environment. However in China, electricity is generated by power plants that run on coal. If the masses eventually move towards the use of electric vehicles, researchers have concluded that this would result to higher emissions of CO<sub>2</sub> and potentially result in more environmental issues.

This would present a significant problem, as the number of cars in China is projected to exceed that of the United States. Unless a viable energy source is established to power all these cars to replace coal and fossil-fuel power generation plants, the use of hybrid electric cars may not be a very environmentally viable option.

## Safety issues

Related to the use of battery packs to power hybrid electric cars is the safety concerns and issues that are posed with the use of these packs. Overheating and exploding battery packs are some of the known safety issues. Aside from that, the use of high voltage wiring in such vehicles also poses safety concerns, particularly during road accidents and other similar occurrences.

## Recharging infrastructure

Another holdout that prevents the Asian market from switching to hybrid electric vehicles is the lack of infrastructure that will serve as charging stations for these electric cars.

## Technological solutions for green car industry

The disadvantages and inconveniences that consumers will derive with the use of hybrid electric cars overshadow the benefits that can be derived with their usage – if technologies behind these green cars remain as they are now. To answer these concerns, car and parts manufacturers in Asia and the rest of the world continue to develop new technologies and innovative advances that would address all these concerns.

In line with this, prominent car manufacturers have teamed up with battery suppliers, technology developers and local car manufacturers in China to develop a highly efficient electrical vehicle that will cater to the demand of the Chinese and Asian markets. This includes a focus on battery technologies that would be significantly more superior to the current battery systems that hybrid electric vehicles use.

Currently, standard lead-acid (pbA) and NiMH or nickel metal hydride batteries are in use but such batteries are limited in range and pack as much energy as they can carry. Focus is shifting to the use of Lithium ion as mainstream replacement, however certain trends and innovations in battery technologies would require far better technologies to address these needs.

This includes the emergence of lithium nickel or lithium air batteries which is projected to provide much higher energy density than standard batteries. Such batteries are projected to have more capacity, less recharge time and longer battery life. Costs would be much less and consumers can reach farther distances at lesser time including recharging.

Such technological breakthroughs and innovations can make the use of hybrid electric cars much more appealing to consumers, particularly in an Asian context. Further research and study should be done to address the remaining issues associated with electric cars. 



# DECLINING SHINE OF MT. PAEKDU RESERVE

BY BRYAN KAY

It is the birthplace, North Koreans are told, of their “Dear Leader” Kim Jong-il. It is also said to be the cradle of the reputed founder of the first Korean kingdom, Tangun, almost 4,500 years ago – the son of a god and a bear. Both of those stories may be debatable – Kim’s because Russian documents suggest he was born in Siberia during the Japanese occupation of the Korean peninsula and Tangun because it is considered a myth passed down the ages – but there is one indubitable truth about the Mt Paekdu region: it is a verifiable ecological treasure chest. Or, rather, it was, if recent reports are to be believed. For rampant logging may have wiped out as much as three quarters of the UN-protected forest, supposedly shepherded in a key North Korean biosphere that is home to the endangered Siberian tiger among other animal and plant species, researchers revealed in late May.

The Mount Paekdu reserve, which straddles the communist country’s border with China, has lost giant chunks of primary forest from its core area – a habitat which contains the world’s highest plant biodiversity in a cool, temperate climate. But as the research team – made up of members from the United States and China – elicited no response from the country’s Pyongyang-based government in a bid to address concerns over the issue, some fear a return to the vicious cycle of food shortages, deforestation, flooding and possible famine. The disclosure of the destruction comes at a time when exerted pressure and economic sanctions are being placed on the North by its blood brother and political enemy South Korea – with many in the international community following suit. That follows a report blaming North Korea for the torpedo sinking of the South Korean navy vessel the Cheonan. Food aid is one area where South Korean President Lee Myung-bak this week ordered major curbs, with the only shipments to be allowed through being those destined for children.

“Particularly in the core area, there should be no human activity – no deforestation,” said Guofan Shao, a member of the research team who is based at Purdue University in the United States, on the research, published in Biological Conservation. “But when you look at the data with Google Earth, you can see the forest is no longer intact.” The researchers used NASA satellite data and Google Earth to pinpoint the parts of the

326,000-acre UNESCO-designated site under heavy pressure. They also identified damage on the Chinese side of the reserve, though that was described as less serious and linked to pine nut harvesting rather than logging. Experts say it is unclear why the forest has been so dramatically felled but point to three main possibilities: clearance for farming, use of the timber for fuel, or the opening up of lucrative markets for certain types of wood. “There is a pretty cynical use of all resources by the ruling government,” said Tom Coyner, a Seoul-based political commentator on North Korea. “Wood is a fuel that is often used to power the economy as if it was in the worst period of World War I. It is used to fuel trucks when there is no access to petroleum products and so on.” In freezing winter temperatures, too, North Koreans are known to scour the land for material to keep warm and cook food – a crude look at Google Earth by night-time, of course,

**“Particularly in the core area, there should be no human activity – no deforestation,” said Guofan Shao.**

famously shows the northern half of the Korean peninsula practically shrouded in darkness, while the southern side of the demilitarized zone (DMZ) dividing North and South is, by comparison, lit up like a Christmas tree. From the South’s side of the barbed-wire strewn DMZ, the hills skirting the North’s southern limit are virtually stripped bare, again a contrast to the forest-strewn half controlled by Seoul. Kim Jong-il’s regime is said to be incapable of feeding its own citizens and relies heavily on food aid from overseas. A desperate attempt to rein in private markets late last year with a redenomination of the national currency plunged the state into even more chaos, sparking hyperinflation, extra cash in the hands of the privilege few – and leaving many of the remainder at the very least even more malnourished, and, perhaps, starving. Andrei Lankov, a professor of North Korean studies at Kookmin University in Seoul, fears the damage may be beyond repute. “It is an open secret that in poor countries like North Korea, where officials are economically corrupt, that it is

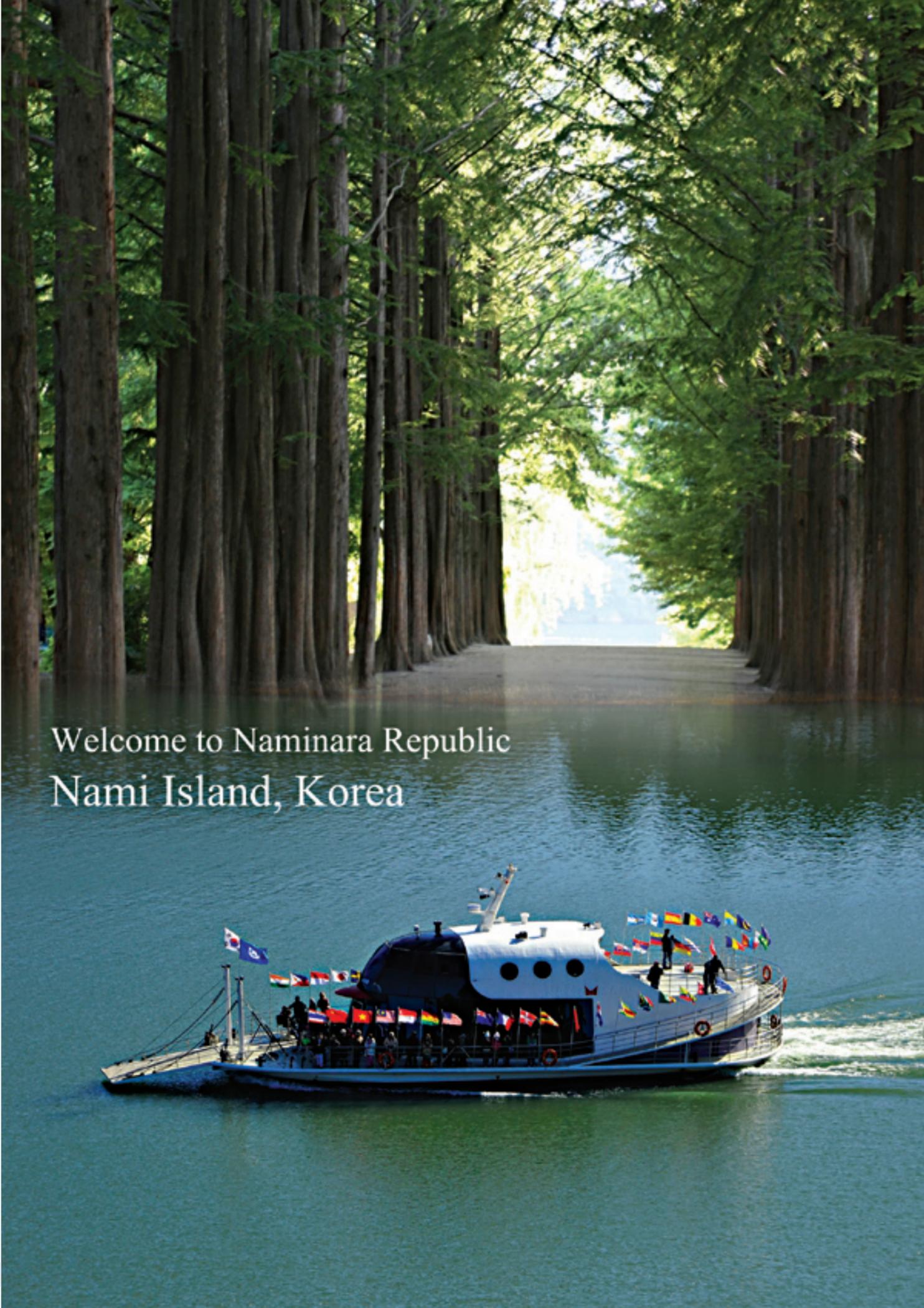
almost impossible to stop... the threat is even greater.”

He said local farmers may be clearing mountain slopes in desperate attempts to feed their families in the face of food shortages. “You see a lot of fields in the mountains (in North Korea),” explained Lankov, a veteran North Korea watcher who studied in Pyongyang in the 1980s. “It is there the farmers have their private fields. They don’t really touch the government lands because they are not paid. Also, officials are easily bribed. The officials are bribed or sympathetic. They understand. The forests on Paekdu are important, but what about a farmer who has three children?” Lankov pointed out overseas markets for sought-after timber could also be a trigger, saying: “This can be done by the state, which really needs cash, or by local officials for their own profit.”

Coyner agrees. “Someone could have found a good market in Russia or China for certain kinds of logs.” Since the period around the North Korean famine in the 1990s – believed to have claimed the lives of millions – North Korea’s forest cover has been systematically devastated: This was the result of issues such as increasing firewood production, conversion of forest to farmland and timber production, a 2004 report noted. During serious flooding in 2006, North Korean defector Han Young-jin told of the devastating contribution deforestation made to flood damage. “For use as fuel, and in order to cultivate farmland, trees have been felled in large quantities, leaving the mountains bare,” she wrote in the Daily NK, an online news service dedicated to covering North Korea.

Coyner sees no end in sight to the issue – pointing out the impact of the other side of the meteorological spectrum that afflicted the North after the famine. “One of the constant problems is a large part of the droughts were caused by inappropriate use of agricultural land.” The Mount Paekdu clearances, he said, “come as no surprise,” adding: “It is so sad to see as it is a major heritage site.”

One that the founder of the first Korean kingdom, Tangun, and despotic leader, Kim Jong-il – cherished as Mt Paekdu is in the folklore engendered by either – would see die as the bountiful and graced national treasure that it represents to all Koreans. **A-P**



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