



Climate Change Adaptation in Mainstream Media

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CLIMATE CHANGE:

10 signs

1 RISING TEMPERATURES

Worldwide temperatures are forecast to rise by an additional 1.5 to 6.4 deg C this century, as emissions of carbon dioxide (CO₂) and other greenhouse gases build up. Wide-ranging impact on weather patterns, the environment and human life.

2 RISING SEA LEVELS

Sea levels up 15-20cm in the last century. The pace is quickening and by 2100, sea levels may rise by as much as 2m, threatening coastal communities and low-lying islands. Tens of millions already suffer severe flooding.

3 MELTING ICE

Glaciers are retreating at unprecedented rates. The world's largest, Greenland has lost 2.5 trillion tonnes of ice since 2002. The meltdown contributes to rising sea levels. Loss of Arctic ice also frees methane - a greenhouse gas - from seas and soils, worsening global warming.

4 DYING SEAS

The seas absorb CO₂ emissions but increasing output is turning the waters more acidic, threatening marine life such as plankton, fish, shellfish and lobsters. Warmer waters have also contributed to the death of about a quarter of the world's coral reefs.

5 SEVERE STORMS

The frequency of downpours as well as the power of hurricanes have increased so dramatically that "100-year storms" are striking some areas once every 15 years. For every rise of 1 deg C in surface temperatures in the tropical Atlantic, rainfall from a tropical storm increases 6 to 18 per cent.

6 PARCHED EARTH

More intense heatwaves in the past 50 years, from Europe in the north to Australia down south. El Niño weather pattern - associated with droughts - appearing at shorter intervals. Higher temperatures bring less snow to the Himalayas, threatening water supplies of people living downstream.

CARBON JARGON: A LAYMAN'S GUIDE

Annex I countries

Industrialised countries and those in transition to a market economy that are pledged to greenhouse gas emission cuts under the 1997 Kyoto Protocol.

Annex II

Industrialised countries specially obliged under Kyoto to provide money and technology to help developing ones reduce emissions and adapt to climate change.

Non-Annex I countries

Developing countries that have signed and ratified the Kyoto Protocol. They do not have binding emission reduction targets.

Annex

Balance of Small Island States. Countries in island and coastal states mostly in the Pacific and Caribbean. Member States to be hit hardest by global warming as sea water rises.

Baseline for cuts

The year against which countries measure their target decrease of emissions. The Kyoto Protocol uses 1990. China's is 2005.

Business as usual (BAU)

A scenario used for projections of future emissions assuming no action, or no new action, is taken to mitigate the problem. Some countries are pledging not to reduce their emissions but to make reductions compared to a business-as-usual scenario. Their emissions, therefore, would increase less than they would have done.

Cap and trade

A scheme whereby businesses or countries can buy or sell allowances to emit greenhouse gases up to the limit, or cap, imposed by the authorities. Also known as emissions trading, the built-developer example of which is the European Union's scheme launched in 2005.

Carbon dioxide (CO₂)

Gas in the Earth's atmosphere which occurs naturally and is also a by-product of human activities such as burning fossil fuels. It is the principal global warming gas produced by human activity.

Carbon intensity

A unit of measure. The amount of carbon emitted by a country per unit of gross domestic product.

Carbon neutral

A process whereby the amount of CO₂ taken out of the atmosphere, such as through reforestation, and the amount released are identical.

Carbon offsetting

A way of compensating for emissions of CO₂ by participating in, or funding, efforts to take it out of the atmosphere.

Clean Development Mechanism

A United Nations programme that enables developed countries or companies to earn credits by investing in greenhouse gas emission reduction or removal projects in developing countries. Each Certified Emission Reduction credit is equivalent to 1 tonne of CO₂ and can be used to offset emissions and bring its holder below its mandatory target.

Climate change

A pattern of change affecting global or

CLIMATE CHANGE SUMMIT

What hope, Copenhagen?

By JESSICA CHIAM

COPENHAGEN, Denmark (AP) — Monday, the countdown to a historic meeting of the world's leaders in Copenhagen ends and negotiators begin to reach a deal that is set to define the 21st century.

The heads of state will descend on the highly anticipated United Nations (UN) climate change conference in the Danish capital for a single purpose: to put the finishing touches on an ambitious international climate change agreement.

If they succeed, COP15, short for the 15th Conference of the Parties, will go down in history as the most important meeting - and the first form of global co-operation of such a scale - since World War II.

Even if they fall short, their efforts in Copenhagen will have a far-reaching impact, one that will pave the way for a revolution in our economies, change the way businesses work and how people live.

But the journey to Copenhagen has been a long and bumpy ride, one that began in Rio de Janeiro, Brazil, in 1992. There, the UN Framework Convention on Climate Change (UNFCCC) was born at the Earth Summit.

Five years later the 1997 Kyoto Protocol, the world's first legally binding treaty compelling developed nations to reduce greenhouse gas emissions.

This deal ends in 2012 and COP15 is the deadline for negotiators to devise a successor to the Kyoto Treaty. Yet hopes of success seemed headed for a dead end as recently as two weeks ago.

At that time, leaders at the Asia-Pacific Economic Cooperation summit in Singapore conceded that a binding climate change agreement at Copenhagen was "out of reach".

The science, "emission impossible" and its battleships. TIERRE will be the doubters, but those at COP15 will have the warning signs: destructive floods in South-east Asia, droughts in Australia and Africa, wild weather in North America.

Wherever the case, planet Earth's climate is changing. Scientists on the Intergovernmental Panel on Climate Change (IPCC) note that the average global temperature has risen by 0.7 deg C in the past century, enormous by scientific standards. They say there is a 90 per cent

probability that this is due to polluting man-made activities such as power generation, deforestation, transport, agriculture and industry.

That's why the 192 parties that have ratified the UNFCCC are now in a race against time to develop a "draft, double-check, re-check" by some, "emission impossible" that would stop the Earth's temperature from rising by more than 2 deg C.

It would reduce emissions and help countries at risk from climate change reduce its impact. But as expected, when countries with different national interests are involved, negotiations are tough.

A few divisions have developed between the 182 parties which ratified the Kyoto Protocol, and went on extension of the treaty, and the United States, which has not ratified it and wants a different international framework.

Indeed, two parallel sets of negotiations are taking place. One set focuses on a second commitment period for the Kyoto Protocol and its parties. The other talks aim to bring the United States in line with the other nations.

This new negotiation track started in 2007 when UNFCCC parties met in Bali at COP13 and agreed to adopt a Bali Action Plan, a five-year process to finalise a binding agreement that included the US by this year in Denmark.

While developed nations like the US and those in the European Union (EU) favour a single agreement to emerge from the two sets of talks (which will see all countries pledging some form of action), developing countries are backing a deal that keeps the Kyoto Protocol going beyond 2012 as this has legally binding commitments.

This is also because under Kyoto, they are not legally bound to any cuts and a new agreement might change that. The other major battle is between developed countries - collectively known as Annex 1 - and developing ones (Non-Annex 1). The latter argue that Annex 1 nations should take on steep cuts since they have "historical responsibility", having

rapidly industrialised in the last two centuries, through unsustainable patterns of production and consumption. Developing countries such as China and India say they have more immediate problems such as poverty reduction and economic development than committing resources to climate change.

But developed ones such as the US argue that emerging economies have to share the burden because they have rapidly growing economies that, if left unchecked, would negate all mitigation efforts by developed nations.

Experts have estimated that China's CO₂ emissions will rise 5 per cent to 10 per cent annually as its economy grows, and India's emissions are set to double by 2015.

US congressmen, who have to sign off any climate treaty, have been in particular at allowing China, an economic rival, to get away with any deal that has down sides to its own economy while allowing the Chinese to fuel their export engines with carbon-burning plants.

The division is also not a simple one between the G-77/China camp of 130 nations, which are in various stages of development, and the world's most industrialised nations.

Small island states such as Tuvalu also find themselves opposing plans like China over the method of capping emissions. The latter prefers per capita caps to an absolute figure given their large populations, while small nations would be disadvantaged by targets based on head count.

Many countries - Singapore included - say there should be "differentiated responsibility", taking into account economic and social factors, such as being unable to turn to alternative energy sources such as wind or nuclear power.

Other areas of contention: how technology will be transferred from the richer to poorer nations to cope with climate change and issues of intellectual property rights.

Finance is also a big sticking point. The World Bank says developing nations

will need a staggering US\$400 billion (S\$352 billion) a year for mitigation and up to another US\$100 billion for adaptation. Questions of how it will be raised and how it will be managed and used are proving difficult to solve.

Then there is the issue of deforestation and the best way to tackle it. There is the vulnerability of the tiny island nations in the Pacific and Caribbean such as the Maldives, whose governments are calling for

much tougher action in the face of the threat of being wiped out by the sea of the Earth by the rising waters that surround them.

Out of this complex mix of competing interests, COP15 must answer four key questions, notes the International Institute for Environment and Development.

CONTINUED ON PAGE D4

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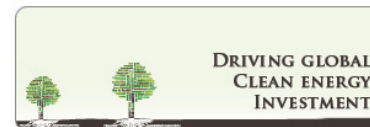
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GMS policy-makers discuss growth amid water, energy and food challenges

[Vietnam](#), February 20, 2012

Policy-makers from the Greater Mekong Subregion (GMS) began discussions today on the challenges and opportunities for balancing economic growth with environmental sustainability in Bangkok. The two-day conference, entitled The GMS 2020: Balancing Economic...

World Bank backs climate response

[Vietnam](#), February 4, 2012

The World Bank on Thursday approved the first of a series of three operations that will strengthen and enhance Viet Nam's response to climate change. The operation will support the development and adoption of priority actions to strengthen policies...

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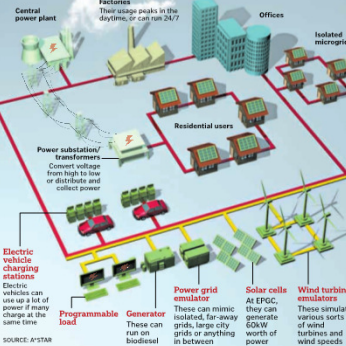
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POWERING SINGAPORE'S GRID RESEARCH

The \$38m Experimental Power Grid Centre (EPGC), an A*Star installation on Jurong Island, opened yesterday. It will study smarter ways and means to get electricity from generation sources to users and the effects of adding renewable energy sources. Here is how the centre will be put to use to simulate the demands of users like factories, offices and housing.

ABOUT THE CENTRE

- A power grid is a complex network that transmits and distributes electricity from plants to users, and must cater for everyone from his industrial loads to small households.
- As more renewable energy sources like solar are added to the grid, this can affect the quality and stability of electricity as the amount of energy generated can change with weather.
- The centre is a way to study how power networks can reliably handle more renewable energy, deal with electric vehicle charging, and manage energy efficiently.
- It can transmit up to 1 megawatt of electricity – enough to power 500 households.



SOURCE: A*STAR

Govts, firms must think 'long term' on energy choices

Their investment decisions will affect future growth: Vivian

By JESSICA CHIAM
ENVIRONMENT
CORRESPONDENT

MINISTER for the Environment and Water Resources Vivian Balakrishnan yesterday called on governments and businesses to think long term when making multi-billion-dollar investments in energy, as such choices will have significant impact on the future.

As the world's population hits seven billion and millions of people move from rural areas into cities, the choices of individual governments and their choices of technology will have implications for sustainable growth, he said.

"We are living at a point of great inflection," he added, in his address at the opening of the three-day Clean Energy Expo Asia, a trade fair and conference for business leaders from the technology, services, finance and government sectors.

Participants at the event at Suntec will discuss issues in renewable energy, energy efficiency and sustainability solutions. The minister said the problem is that the world has enjoyed economic growth without putting its cost to the environment in the last two centuries.

But as resources become scarcer, these costs have to be borne, he said. The right price has to be paid for energy, he said.

Dr Balakrishnan expressed doubt that the world will reach a

legally binding deal at the upcoming United Nations climate summit in Durban, South Africa, at the end of the month. The deal would have bound governments to reduce their countries' levels of carbon emissions and a global price on carbon, regarded as the coldest behind climate change.

"There isn't the political will or financial resources to make such a deal stay," he said, so rational government policies are key in creating effective energy markets.

Citing Singapore as an example, he said the Government here does not give subsidies for energy, because these "distort the economy and distort consumption" in the long term.

Because Singapore has no natural resources, it has to import almost all of what it needs. About a decade ago, it obtained 80 per cent of its energy from fuel oil, today 60 per cent comes from natural gas, a cleaner form of energy.

Singapore has also chosen to foster a clean energy market, allowing technologies and companies to compete. Because energy subsidies are not given out here, people are motivated to conserve energy and cut wastage, he said.

Malaysia's Minister of Energy, Green Technology and Water Resources, Peter Chin, who also addressed the conference, participants yesterday, shared his country's experience with energy subsidies. He said that the Government had

been investing in more cost-

ly but cleaner sources of energy, and now that the people, especially the rural poor, have become used to fuel subsidies, it is politically difficult to wean them off it.

Malaysia's response has been to set up a legal framework to encourage the development of the clean energy industry such as by guaranteeing companies generating solar power attractive electricity tariffs.

The Malaysian government has also set aside RM300 million (\$113 million) in a renewable energy fund, which Mr Chin said he hoped would propel Malaysia into an Asian list of clean-energy leaders. Malaysia is expecting RM70 billion in revenue and 52,000 jobs to be created in the clean energy industry by 2020.

The industry here also has targets to shoot for. It is expected to add \$1.4 billion to the country's gross domestic product by 2025, and generate 18,000 jobs.

Dr Balakrishnan noted that Asia is making steady progress in clean energy, pulling in US\$2.4 billion (\$100 billion) in global investments last year – an increase of 33 per cent from the year before. The figure is set to rise.

Clean Energy Expo Asia is organised by event firm Koozmo and the Sustainable Energy Association of Singapore (SEAS). These disclosed yesterday that the association is looking to set up a service centre to give support to overseas clean-energy firms, setting up here to encourage the growth of the nascent clean-tech industry.

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Singapore Case Study

a) Increased flooding

b) Coastal land loss

c) Water resource scarcity

d) Public health impact from resurgence of diseases

e) Heat stress

f) Increased energy demand

g) Impacts on biodiversity

Massive floods unlikely here, says minister

MASSIVE floods of the kind hitting Thailand are unlikely to happen here, Environment and Water Resources Minister Vivian Balakrishnan has said.

In an interview with wire agency Reuters, published yesterday, he said Singapore has made moves, such as raising the height of reclaimed land by a metre above sea level and deepening drains and canals, to protect itself against floods likely caused by worsening climate change.

It has also encouraged building owners to improve their flood defences. "It'll be more expensive, (and) involve more upfront cost, but you are buying insurance for the future," he said.

He added: "You're not going to get areas like Thailand, that are seriously inundated for weeks or months. That is extremely unlikely in Singapore."



A couple wading knee-deep in floodwaters in northern Bangkok yesterday. Dr Vivian Balakrishnan said Singapore has taken steps to protect itself, making floods like these in Thailand unlikely here. ST PHOTO: GABRIEL HE

Government needed to improve the city state's defences against flash floods, and added that technological advances in wireless communications and the use of sensors would shorten response time when these occur.

He noted that Singapore has developed large projects in the last two decades to divert water from low-lying areas to reduce the risk of a major flood.

One is the Marina Barrage at the mouth of the Singapore River, which enables the water level in Marina Bay to be controlled.

He told Reuters: "There are still people who do not believe in climate change. But I think the increasing weight of evidence suggests that something is going on and the rational thing is to review all assumptions and norms."

Attack caused victim's skull to cave in: Expert

THE attack was so violent that part of the victim's skull caved in, and fractures were found over his head.

Yesterday, forensic pathologist Paul Chui brought along the reconstructed skull of production supervisor Murugayyan Selvam – killed two years ago – to the High Court.

Pointing to the damage on it, Dr Chui said: "It was like a shock wave going through the skull."

He was testifying on the second day of the trial of Sri Lankan maid Puseyanayagam Tharmalingam, 35, who is accused of committing culpable homicide.

She is alleged to have used a sharp object to stab the groom of her 22-year-old lover and bashed his head with a dumb-bell, as she felt he was exploiting her for money and sex.

Dr Chui said the blow near his right ear was deadly, with fractures extending to the left side of his head, roof of his mouth and base of his skull.

Mr Murugayyan would have lost consciousness immediately and died within minutes, he added.

Coroners found his body on the bed in his room at the FMC System media works factory in Sembawang Crescent at about 6am on Dec 4, 2009.

Dr Chui estimated that the Indian national, a permanent resident who had worked here since 1998, died between 1.30am and 2.30am that day.

He said the victim was probably asleep as no defensive injuries were found. Traces of sleeping pills were detected in his blood, but the court was not told if he had a prescription.

He had met Puseyanayagam in 2006. Despite knowing she was married with two children in Sri Lanka, he started an affair with her a year later.

He would use his company's lorry to pick her up at her employer's home

in Serangoon Gardens at night. After sex at a hotel or in his room, he would take her back to his home.

She lent him money and bought him gifts and jewellery. Twice, he got her to hand over her employer's cheque book, and he forged the signature to pocket a total of \$10,000.

In 2009, his family arranged for him to marry a woman in India. He went there in September that year for an engagement ceremony. The wedding was set for January the next year.

On his return here, Puseyanayagam continued meeting him.

On the night of Dec 3, he took her to his room for sex. They argued when he allegedly pushed her to get her employer's cheque book so that he could forge another cheque.

She accused him of exploiting her, he hit her and ignored her when she asked him to drive her home. He then went to sleep. That was when the prosecution said she saw the improvised dumb-bell outside his room.

It weighed about 5.6kg, and she allegedly picked it up with a scarf over her hands and bashed his head with it.

The bloodstains on the wall and ceiling were made when the attacker swung the bloodied weapon up, and there would have been two to three blows, said Dr Chui.

Cross-examined by defence counsel Abraham Varian, the pathologist said he was unable to say if the bloodstains were confirmed as Mr Murugayyan's.

Dr Chui also could not state how fast and high the weapon had to be swung up to create the blood splatter.

He said he was not a blood spatter analyst and was only expressing an opinion based on his experience.

The cross-examination continues today. If convicted, the maid could be jailed for life.

RUSHWANT SINGH

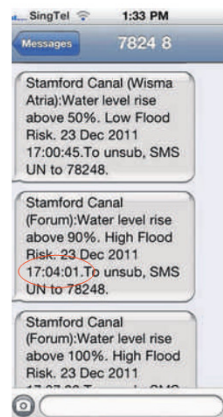
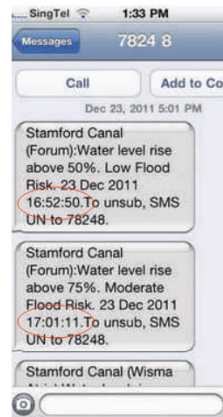
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the building's 3.3kw pumps had been The Liat Towers spokesman added continuously pumping water out at a high- had never faced such severe flooding canjy@spn.com.sg

Ebb and flow: What happened



5.25PM A time-stamped photo by Liat Towers' owner Goldvein shows knee-deep water along the pedestrian mall outside Liat Towers' floodgates. The top of the stairs leading to Liat Towers' basement is above water, but its basement is in knee-deep water. PHOTO: GOLDVEIN

NATIONAL water agency PUB sends out SMS alerts on water levels in various canals or drains to its network of subscribers, which include building managers. Subscribers may select the canals or drains which they wish to monitor. The alerts tell them when the water level in these canals rises above 50 per cent, 75 per cent, 90 per cent and 100 per cent, and when it falls below those levels.

The following is a timeline based on those alerts and eyewitness accounts during the heavy downpour on Dec 23.

4.52 PM The water level at Stamford Canal, measured from the sensor nearest Liat Towers, is above 50 per cent. PUB's SMS alert sent out at this time reads: "Stamford Canal (Forum): Water level rise above 50%. Low Flood Risk." Liat Towers' building management activates its flood gates, which pop up.

5.01 PM The water level rises above 75 per cent to "moderate flood risk", according to the PUB alert. Eyewitnesses say it is raining heavily, and that the water level in Liat Towers' basement plaza is rising.

5.04 PM The water level in the canal exceeds 90 per cent. The SMS alert at this point describes this as "high flood risk".

5.07 PM The water level rises "above 100 per cent", says the alert. It has gone from 90 per cent to more than 100 per cent in the space of three minutes.

5.25 PM Liat Towers' time-stamped photographs show knee-deep water along the pedestrian mall outside

its floodgates. The top of the stairs leading to Liat Towers' basement is above water, but its basement is in knee-deep water.

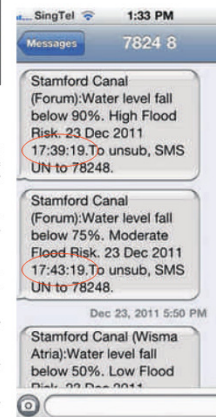
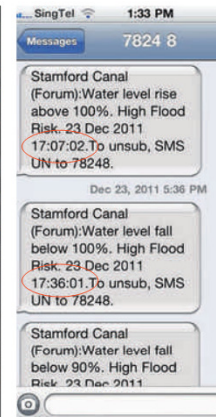
5.26 PM Liat Towers' building management sets up a hose to pump water out of the basement.

5.36 PM The water level in the canal falls to below 100 per cent, says the PUB alert.

5.39 PM It falls to below 90 per cent.

5.43 PM It falls further to below 75 per cent.

5.59 PM It falls to below 50 per cent.



LAST YEAR, floods along the Orchard Road shopping belt caused damage estimated to run into millions of dollars.

Last Friday, floods swept once again into the basements of Liat Towers and Lucky Plaza.

Burger chain Wendy's said it was still totting up the damage from the latest deluge at its Liat Towers outlet.

The floods in June last year caused it \$500,000 in damage.

Asked if it would move out at the end of its lease, the fast-food chain's

marketing and branding manager Seng Woonfa said: "We will assess the situation."

Insurance litigation specialist Edric Pan, a partner in law firm Rodyk & Davidson, said much depends on the extent of the shops' insurance coverage.

"If their own insurance covers flood damage, they can look to their insurers to cover their losses," he said.

Who pays for flood damage?

But the owners of a building cannot be held liable if the flood is caused by a public canal overflowing, as there would have been nothing the owners could reasonably have done to prevent that.

The tenants in a building will, however, be able to file claims against the building management if it can be shown that it had contributed to the flood, such as by failing to clear a blocked gutter.

The damage from last year's floods was covered by Liat Towers' insurance as well as insurance policies taken out by the individual tenants.

Following that deluge, which has since been attributed to the Stamford Canal overflowing, the building management spent \$500,000 on pop-up floodgates. It also put \$11,000 into small flood barriers in front of Wendy's,

coffee outlet Starbucks and clothing retailer Massimo Dutti, and waived three days of rent for affected tenants.

This time round, the management has pitched in with a post-flood clean-up; it is still in talks with its tenants on how else it can help them, said a spokesman for Liat Towers' owner Goldvein.

Said Mr Seng of Wendy's: "We have to solve the issue, rather than pointing fingers. That is the most pragmatic way."

GRACE CHUA



Floodwaters in the carpark behind Orchard Building in the Orchard Road shopping belt (left) and in Hertford Road near KK Women's and Children's Hospital (above) yesterday. PHOTOS: STOMP

PUB: Stamford Canal did not overflow

FROM
PAGE A1

Starbucks crew actually used a (secondary) barrier in front of their shop, but that didn't work and water started seeping through."

She managed to get out when it was shin-deep and still rising.

Yesterday's heavy rain caused "ponding" at Orchard Road malls and floods in other areas, said national water agency PUB, as people thronged the shopping belt to do their last-minute Christmas shopping.

Liat Towers was the worst-hit, but Lucky Plaza was also inundated.

PUB said the "ponding" at Liat Towers was caused by prolonged heavy rain which fell directly into the building's open basement area.

"Based on our monitoring, Stamford Canal did not overflow. If it had, it would have resulted in flooding on Orchard Road which was not the case yesterday," said a spokesman.

"Our officers will work with the management of Liat Towers to investigate further and determine the appropriate additional measures to be taken."

Yesterday's floods are likely to raise questions over the adequacy of flood-protection measures in the area such as flood barriers at Liat Towers and the raising of a 1.4km stretch of road.

of rain fell on Orchard Road in the three hours between 2.20pm and 5.20pm.

In June last year, 100mm of rain fell in two hours when Orchard Road was flooded.

Then, both Liat Towers and Lucky Plaza were overwhelmed, with merchandise swept out and away by rising waters.

Yesterday's floods are likely to raise questions over the adequacy of flood-protection measures in the area, such as flood barriers at Liat Towers and the raising of a 1.4km stretch of road from Orange Grove Road to Cairnhill Road.

At the underpass between Lucky Plaza and Ngee Ann City, the water was ankle-deep, with an oily sheen.

Wave after wave of pedestrians walked

pass, only to be turned away when they saw it was cordoned off.

Other areas were also submerged in yesterday's downpour, with water rising as high as 30cm in some places.

Between 4pm and 6pm, Newton Circus, United Square, parts of Bukit Timah, Kampong Java and Lincoln Road were among those hit by flash floods.

Road improvement works in some of these areas had been completed, such as at Lincoln Road.

The PUB had raised a 200m stretch along the road last year by about 50cm, but it said the rain yesterday was still too intense. About 140.8mm fell in the area in the three hours between 2.20pm and 5.20pm.

An ongoing project at the nearby Rochor Canal to reduce flooding in the area will be completed by 2014.

At Wee Nam Road, which was also affected yesterday, ongoing work to expand the area's drains will be completed by 2013.

PUB said most of the flash floods had subsided by 6.30pm.

Along Sixth Avenue in Bukit Timah, water bubbled out of the drains and grates, but shop owners and residents said they were not affected.

Most shops in the area were prepared:



Staff from Parafloil Design & Engineering demonstrating how to set up a floodgate outside Forum The Shopping Mall yesterday. A 5m-long floodgate was set up at the mall and another one will be put up at Tanglin Mall next month. PUB's announcement of details of 10 new drainage projects came as flash floods hit the Orchard Road shopping belt yesterday. ST PHOTO: KEVIN LIM

Drainage in 10 areas to be improved

By KEZIA TOH & GRACE CHUA

VIEWPOINTS

WE SAY

Get off the couch

Mall-cruising and phone texting on the move are not competitive sports. Nor are console games played with buddies in front of televisions or at video arcades. Yet, these are activities many Singaporeans excel in. Which is why an ambitious plan by a committee charting the path for Singapore sports over the next two decades deserves support for its attempt to encourage and instill a life-long interest in the outdoors, fitness and games.

■ EDITORIAL PAGE A27

COLUMNS

Students short-changed



South Korean students pay some of the highest fees in the world for what is on paper one of the best education systems – but they should get what they pay for.

■ REVIEW PAGE A28

OUR READER SAYS

Cross-border crime fear

Rohan Langley raises the terrifying possibility that a lack of cross-border police cooperation could mean Malaysian criminals can commit crimes here safe in the knowledge that if they get back across the border, they are unlikely to be caught.

■ FORUM PAGE A29

What it should have been

IN LAST Friday's report, "Red" fears grip major HK daily", we said a rare meeting held recently between South China Morning Post chief executive Kuok Hui Kwong and China's top official in Hong Kong and Macau, Mr Wang Guangya, triggered concerns that it led to the appointment of the Post's new editor-in-chief Wang Xiangwei. He is the first mainlanders to take the role.

The Post has clarified that the meeting took place a year ago.

Agencies need to work together in flood fight

Coordinated response needed to execute plan, manage any conflicts



■ BY FENG ZENGKUN

LATE last month, national water agency PUB announced its battle plan to reduce floods in Singapore over the next five years. It will spend \$750 million on 20 drainage projects, including the expansion of six major canals across the island. Also promised are smaller engineering fixes such as rooftop gardens to slow rain water and flood barriers to keep the water out.

Arguably, it is a complete management system to tackle floods at various points of the rain-water chain. But the devil is in the details. Independent engineers told The Straits Times that PUB may find the plan difficult to implement, raising other issues which should also be addressed.

The \$750 million figure sounds impressive. But PUB is already spending about \$150 million a year on drainage projects. This amounts to \$750 million over five years. The canals run through built-up estates such as Rochor and Bukit Timah, and widening them in these crowded areas may be difficult.

Where possible, the expansions will take away space from future and existing roads, homes and businesses. The excavation works and expansions could lead to intrusions into private property, said Dr Ho Nyok Yong, president of the Singapore Contractors Association.

Associate Professor Tan Soon Keat, an Institution of Engineers fellow, said the capacity of the canals is likely to be reduced during the construction work, leading to a higher risk of floods. Widening the canals could also change the water's

speed and how sediment is transported, affecting eco-systems in reservoirs.

Four of the canals for enlargement are upstream of the Marina Reservoir, magnifying the risk. Computer models should be used to predict the environmental impact of the work, said National University of Singapore Assistant Professor Vivien Chua. Whether the drainage projects would reduce floods or simply shift them from one place to another is another pertinent question.

Only sections of the canals in flood-prone areas will be enlarged. If sections farther downstream cannot handle more water from these expansions, the projects will only transfer the floods downstream. But PUB explained that its hydraulic checks ensure the problem will not be transferred farther downstream, and conditions will be no different than before.

PUB's other measures could also bring it into conflict with other agencies. It will work with developers to install features such as rooftop gardens to help slow and retain rain water during storms. These

will be built into new and, if necessary, existing buildings.

But flood-prone areas such as Orchard Road and Bukit Timah are built-up and are unlikely to have many new developments. For the features to be effective, they will have to be compulsory and applied to existing buildings.

But other agencies may have their own plans for the rooftops of existing buildings. The Housing Board (HDB), for example, plans to install solar panels on rooftops in 30 precincts by 2014. Engineering fixes at the street level may also affect other services such as train systems and water, sewage and power utilities.

Associate Professor Susanto Teng of Nanyang Technological University's civil and environmental engineering school said changes in the soil pressure could affect the stability of MRT tunnels. "When both MRT works and canal works happen at the same location, things can be tricky," he said.

PUB said the expansion of canals near tunnel works will be led by the Land

Transport Authority (LTA) to better coordinate the projects.

Potential conflicts with other agencies is why a whole-of-government approach to flooding is necessary. Such an approach will address other issues such as pedestrian and traffic flow disruptions, urban planning and the effect of the projects on homes and businesses.

Such coordination is important as land use – on rooftops, at the street level and even underground – will become more competitive.

Minister for the Environment and Water Resources Vivian Balakrishnan has said an underground detention pond to relieve Stamford Canal and reduce floods in Orchard Road would have to be the size of two to three football fields. PUB is studying its feasibility and will announce its findings by May.

But last month, the Government said a masterplan was under way to map out possible uses of underground space across the country. The Singapore Geology Office, set up in 2010 to provide subterranean data for future underground planning, is yet to complete this work.

Currently, the land-use masterplan is reviewed every five years, while the drainage masterplan will be updated every three years, from next year. Engineers point out that the different timetables do not make sense as work on one level affects the others. Greater alignment between the agencies would also result in more efficient use of limited available land.

The Ministry of National Development (MND), for example, is considering plans to add more car spaces to ease shortages in older estates. Theoretically at least, MND can work with PUB so that the new spaces can absorb rain water.

In the United States and Brazil, the authorities have jointly redeveloped car parks with porous material instead of normal asphalt. This allows the carpark spaces to double as water retention areas during storms.

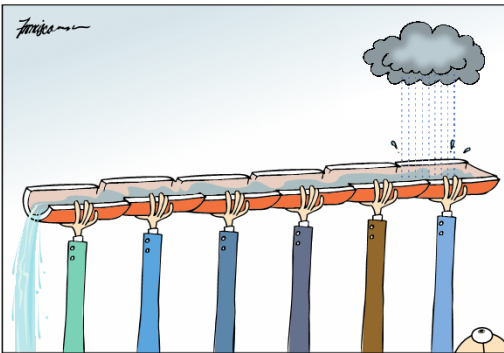
An inter-agency committee was formed in 2010 to tackle floods, comprising the PUB, HDB, Singapore Land Authority, LTA, Building and Construction Authority, National Parks Board and industrial landlord JTC Corp. But little has been heard from it since its recommendations last year for higher platform and crest levels for buildings.

Let it lead the way. Give it a deadline, task it with integrating the masterplans and solutions and put its findings up for public discussion. Explain the trade-offs between flood prevention and other goals clearly.

This will not only improve the plans, but also restore confidence in the flood situation being resolved – not just punted into another arena.

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PUNCHLINES



Sunday, December 25, 2011

Whole island submerged then can call it "Flood"

listen now



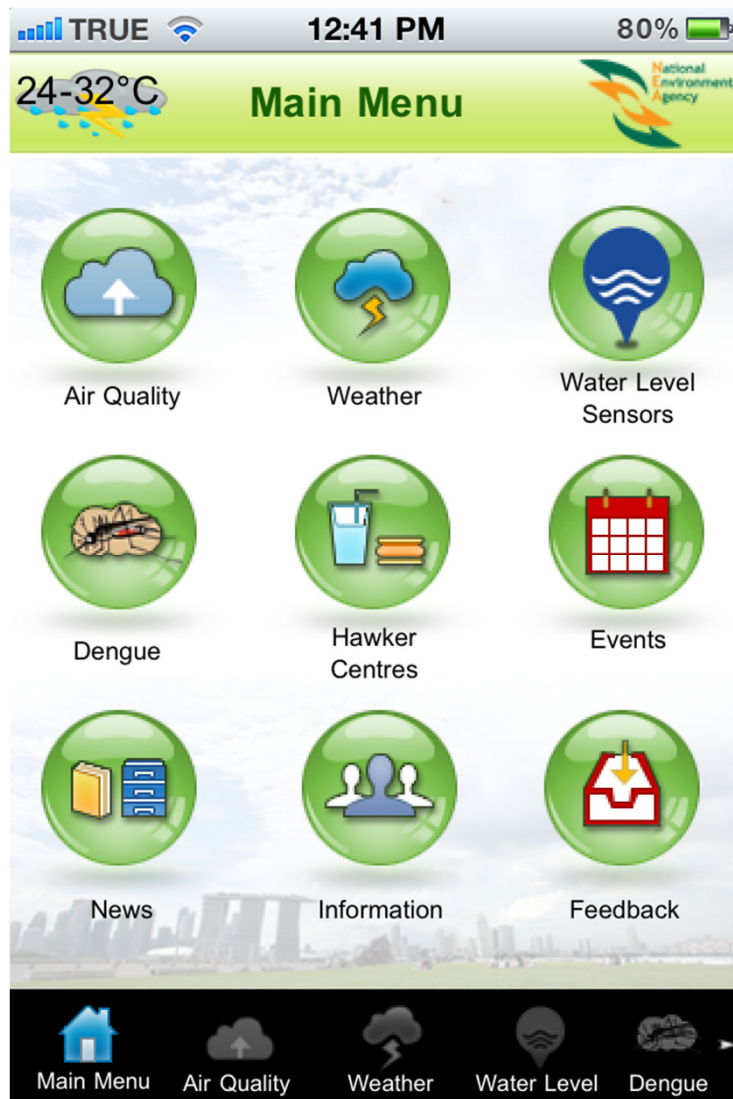
The PUB is pleased to announce that Singapore did not flood yesterday. It merely encountered some "ponding".

In some places, it was just puddling.

I suppose anything below chin level isn't flooding. Because, you know, flooding implies our drainage systems were not adequate.

(Photo from Alan Seah's FB)





Adaptation measures driven by:

- Government
- Civic organisations

Tools:

- Mainstream media
- Alternative media
- Social media
- Technology: Apps
- Community campaigns

Keep climate change in the news

Global warming is not about environment only; it cuts across economic, social issues



Jessica Cheam

It was a strange confluence of events. Last Sunday, I was in Budapest, Hungary, participating in a journalists' seminar organised by the Asia-Europe Foundation (Asef) on climate change and the media's role in furthering the debate.

It seemed fitting as it was also World Environment Day. And on that day, Mother Nature seemed intent on reminding Singapore of the unpredictable force that she is—Singapore experienced its worst floods this year, which ruined the retail shops in the basement of Tanglin Mall and caused Bukit Timah Road's canals to overflow and flood the roads.

This came on the heels of recent tragic news that an Indonesian boy

had drowned in a flash-flood incident, when he fell into a drain in the Moulmein area concealed by the high water levels.

Singaporeans were instantly abuzz about the floods. Not again, they complained. Last year, Singapore had also experienced heavy flooding in June and, in particular, parts of Orchard Road such as Liat Towers were flooded, among other areas, destroying millions of dollars' worth of goods. A review of our flood-prevention systems then led to flood levees being installed in Orchard Road, and plans were made to enlarge and widen drains.

But it looks like it was not enough. Tough questions are now being asked: What has changed such that our drainage system, which worked for the best part of the last three decades, is no longer adequate?

A few reasons have emerged: rubbish choking our drains, overbuilding in certain areas that results in water hitting concrete with no place to go, and alert systems that failed.

But there's one other important factor—one we cannot control—which is that Singapore's climate patterns have changed, likely permanently, and our low-lying island is set to see heavier precipitation from now on.

Inevitably, climate change has been mentioned in the news coverage of the floods. Environment and Water Resources Minister Vivian Balakrishnan acknowledged the "very high probability that our weather patterns have changed", and that Singapore's planning norms and building codes must be



Last Sunday, roads were flooded when the canals in Bukit Timah Road overflowed during heavy rain. Singaporeans were instantly abuzz, but will they forget the reality of climate change as soon as the sun shines again?



Flood survivors in Pakistan negotiating a flooded road. Climate stories, usually page-fillers in its papers, were given top coverage after the massive floods.

reviewed in the light of this development.

Although weather events cannot be specifically pinned on climate change, there is an emerging consensus that the increase in the incidence of extreme weather events across the globe is due to unpredictable and changing climate patterns.

The public, who on a normal sunny day do not give two hoots about the environment, have suddenly sat up and taken notice.

Are Singaporeans finally feeling the impact?

Across the world, we are seeing

trends of nations being awakened to this new reality. Climate stories were but page-fillers in Pakistan, for example, until the country experienced massive floods that claimed many lives, then they were given the same top coverage as terrorism, governance and the economy.

But the challenge is sustaining the momentum.

When the floods subside, and the sun shines again, will Singaporeans forget?

How do media practitioners bring home to the average person that the choices he makes today, the government policies he sup-

ports or rejects, will ultimately have an impact on his daily life in the near future?

At the 6th Asia-Europe Journalists' Seminar, this was a question that 30 journalists across Asia and Europe grappled with.

Following the high-profile United Nations climate change summit in Copenhagen in 2009, media coverage of climate change dropped drastically, back to 2005 levels, according to DailyClimate.org.

Similar trends were found in studies by other institutions such as the University of Colorado and Oxford University. Earth Journalism Network executive director James Fahn, who spoke at the seminar, noted that this was also partly due to "climate fatigue". People have grown tired of phrases such as "climate change" and "environment".

This is partly because stories on the climate and environment often involve bad news: floods, loss of lives, melting glaciers, rising food and energy prices, and so on.

So what can we do?

The seminar threw up a set of recommendations (full details can be found on Asef's website www.asef.org), which remind media practitioners that, to borrow Mr Fahn's words, climate change is not just an environment story.

It is not just an environment story because it cuts across economic, policy and social issues. It has become the important context with which to view global developments.

It challenges certain fundamental and conventional notions, for example, on economic growth and its definitions. Already we are beginning to see interesting debates on whether there are alternative models that could redefine growth in the next century. Policies are also being made with climate change at their heart—from Germany's energy policy to trade negotiations at multilateral meetings.

Then there's the good news: There are unparalleled opportunities offered by this global challenge, whether it is finding the next renewable energy technology, or inventing a flood-proof system to implement in flood-prone areas—stories that have largely been under-reported compared with the negative stories on the consequences of climate change.

The seminar also noted that while writers should be careful not to provide "false balance" in stories, such as by including misleading or inaccurate statements from climate-change sceptics, they should also strive to be objective and reflect any new developments in climate science—even if they challenge the current consensus.

This helps climate change reporting, as a whole, gain credibility.

Most importantly, stories on climate change need to speak directly to readers, to help them understand their role in this global challenge.

The stories on the floods in Singapore are a good example of how climate change can affect the man in the street.

People may ask: Why should we care? And, how do my consumer choices matter?

Well, they matter a lot, since the complex problem of climate change will ultimately affect the price of the petrol you put in your car, how much your plate of noodles costs, and what type of jobs you can expect to see in the future.

It's important to keep it on the agenda because, like the floods last Sunday, it could come out of nowhere and catch us unprepared.

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Power of the Pen and Public Pressure

prime commentary

THE STRAITS TIMES THURSDAY, MAY 7 2009 PAGE A2

VIEWPOINTS

WE SAY

True test of self-reliance

It speaks well of Singaporeans' famed spirit of self-reliance that eight in 10 respondents to an Institute of Policy Studies survey agreed people should take personal initiative more than depend on the Government to cope with the recession. The ability if not the willingness to sacrifice, however, will face an increasingly severe test as the jobless rate continues to rise. The survey was conducted before the job situation worsened.

■ EDITORIAL PAGE A23

COLUMNS

Pawns in a chess game

China sees its relationship with the EU as a game of chess with 27 squabbling opponents, and it's time the Europeans got their act together, says **Jonathan Fyfe**.

■ REVIEW PAGE A23

Help the little ones

Governments should act early to help vulnerable children rather than try to fix problems later, says **Jack Shonkoff**.

■ REVIEW PAGE A24

OUR READER SAYS

Not a popularity contest

The STTA should have at least nominated Liu Guodong as Coach of the Year, as he did bring back an Olympic medal, says **Waffles Wu**.

■ FORUM PAGE A25

ONLINE BLOGS
www.straitstimes.com

■ **Rene Ahmad** says Malacca's airport expansion is designed to attract Singaporeans on holiday.

■ **Joanne Lee** describes how The Straits Times is experimenting with Twitter.

Black marks on green blueprint

Bold action, flexibility needed to turn S'pore into environmental hub



By JESSICA CHEAM

AFTER more than a year in the making, Singapore's \$1 billion blueprint on how to become a greener, more sustainable nation was finally unveiled by an inter-ministerial committee two Mondays ago.

Coincidentally, the Asian Development Bank (ADB) launched a landmark report the same day on the economics of climate change in South-east Asia, highlighting the damage the region will suffer if this goes unaddressed.

In that sense, the launch of Singapore's blueprint could not have been more timely.

Leaving aside the ongoing economic crisis, climate change is arguably the most important item now on the international agenda.

A landmark global deal on curbing greenhouse gas emissions is expected to be brokered at Copenhagen in December as a successor to the Kyoto Protocol.

The United Nations is also calling on governments across the globe to integrate climate change concerns into their sustainable development policies, and to put their economies on the "low-carbon, high-growth" path with a focus on green infrastructure.

So in the midst of all this buzz over going green, how does the Singapore blueprint stack up?

It is clear that some of the plan's more aggressive targets, such as reducing energy intensity (energy consumption per GDP dollar) by 35 per cent from 2005 levels, and certifying 80 per cent of all our buildings Green Mark by 2030, are commendable.

But from a wider perspective, some critics are saying the report lacks punch. The most obvious gap in the plan is its failure to discuss or make any provisions for curbs on greenhouse gas emissions, the chief culprit behind climate change.

Many other countries, such as those in Europe, have gone much further than Singapore in this regard, putting in place measures like "cap-and-trade" systems where polluting industries have to buy carbon credits for the right to pollute.

True, it would have been silly for Singapore to stick its neck out to take on cuts in carbon emissions even before the Copenhagen negotiations, but critics say strategies for such a possible outcome could have been more clearly articulated.

Another key argument for not going big on curbing carbon emissions is that it could send members of an already nervous business community fleeing to places with lower costs and less regulation.

This is a valid concern, but it is one that will recede over time. This is because many forward-looking companies are already anticipating such regulation and making adjustments to their business models, given the rising importance of climate change in recent years.

In fact, being a location with high environmental standards is increasingly becoming a competitive edge.

A second aspect of the blueprint that critics have jumped on is the size of the Government's commitment to going green. The entire plan will cost \$1 billion

to implement over the next five years. In comparison, the Jobs Credit Scheme introduced in the Budget costs \$4.5 billion. Even the Marina Coastal Expressway, work on which began one day after the blueprint was launched, costs more than \$4 billion.

Seen another way, the plan amounts to a very conservative 0.3 per cent of gross domestic product. In comparison, South Korea and Japan have pledged at least 2 per cent to 3 per cent of GDP, costing tens of billions of dollars, to invest in environmental projects to help stimulate their flagging economies.

Ministers at the launch of the blueprint asserted that \$1 billion in absolute terms is a big amount and "not to be sniffed at". Singapore does not want to simply spend some "headline-grabbing" amount, but to do a proper "bottom-up" assessment of how much needs to be spent to achieve cost-effective results, they said.

But the signal that the number sends, in comparison to others, is that Singapore is going slow and staying cautious.

Finally, the blueprint favours a "light touch" approach, which works largely through voluntary action and incentives instead of punitive disincentives such as

taxes or legislation.

Some experts are not so convinced that this type of persuasion works to alter the behaviour of companies and people who generally love their plastic bags and resist the idea of paying for them.

In China, the government has put its foot down and banned the manufacture and distribution of thin plastic bags - "white pollution" littering water bodies, beaches and streets all over the country.

This is why environmental leaders like Nominated MP Edwin Kiew have called for more legislation to be introduced, not less, if the blueprint is to be successfully implemented.

To be sure, there has been positive feedback on Singapore's green blueprint. The blueprint is itself a study in efficiency, careful in identifying problem areas and proposing solutions.

But ultimately, what does such a finely honed approach do for Singapore in terms of impact and international image? Singapore has ambitions to be an environmental hub in Asia, where cutting-edge clean energy technologies are developed and manufactured. It also desires to position itself as a carbon trading hub in Asia.

So it needs, in a sense, to walk the talk. While it is well-known for keeping the country "clean and green", it is also gaining a reputation for being conservative about certain key green policies.

Its insistence on being classified as a "Non-Annex I" country under the Kyoto Protocol has come under pressure in recent times. Non-Annex I nations are typically developing countries and do not have to cut emissions by 5 per cent from their 1990 levels by 2012. This is a target which "Annex I" or developed countries need to adhere to.

Many argue that Singapore is a First World, developed nation and should be more of a leader, especially in emerging Asia, in addressing climate change.

If Singapore truly wants to be a global model for sustainable development, there are some hard decisions it needs to make.

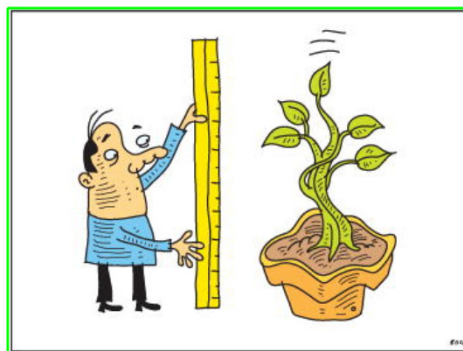
It needs to be bolder, or at least more nimble, as the global conversation on climate change continues. It will need to change its position or even boost its plans in the years to come.

The flexibility of this blueprint, an "evolving document" as its authors call it, will be vital to delivering on its green ambitions.

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PUNCHLINES



Q&A

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