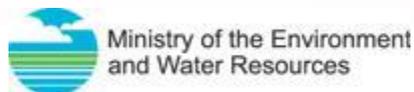


MEWR's Partners FORUM 2013



Foreword

On behalf of the Ministry of the Environment and Water Resources (MEWR) Family, I would like to thank all of our partners for taking the time to participate in the inaugural MEWR's Partners Forum.

Singapore would not have been able to achieve the clean and green garden city we all enjoy today, without the commitment and perseverance of individuals and organisations like you. The MEWR Family deeply appreciates your contributions, leadership and dedication over the years.

At the Forum, we have had the opportunity to hear your views on a diverse range of environmental issues, e.g. littering, dengue, energy efficiency, climate change and preserving our hawker heritage. These and many other interesting suggestions would be explored further by the MEWR Family in consultation with our partners in the coming months.

As many of you have articulated at the forum, we will certainly face many more challenges in sustainable living in the future. With your continued support, I am confident that Singapore will be able to meet and overcome them.

Thank you for your participation and I hope that you would find the report we have compiled useful especially on the questions that the panel and I were unable to answer. We hope to see you at the next MEWR's Partners Forum.

Dr Vivian Balakrishnan
Minister for the Environment and Water Resources

Summary Report

Introduction

The Ministry of the Environment and Water Resources (MEWR) Family, comprising MEWR, the National Environment Agency (NEA) and PUB, the national water agency, organised the inaugural MEWR's Partners Forum on 1st April 2013, at MEWR Hall, Environment Building. Over 200 key partners, representing schools, youth groups, non-government organisations, grassroots organisations, public sector agencies, industry and private sector leaders attended the event.

The aim of the Forum was to create a platform for our partners to engage directly with the MEWR Family's leadership on the environmental challenges and issues facing Singapore, as well as interact with their fellow environmental advocates. The event featured an update on MEWR's Committee of Supply (COS) announcements for 2013, and a dialogue session with Minister for the Environment and Water Resources Dr Vivian Balakrishnan, Second Minister Ms Grace Fu, NEA's Chief Executive Officer Mr Andrew Tan, and PUB's Chief Executive Mr Chew Men Leong. The dialogue session was moderated by Professor Simon Tay, Chairman of the Singapore Institute of International Affairs.

A summary report of the dialogue session begins below.

Opening Remarks

Opening the session, Dr Balakrishnan addressed the perception that highly urbanised, dense cities such as Singapore are less able to contribute solutions and ideas for sustainable development. In fact, cities can be one of the most efficient and sustainable development models; because of the shorter distances and time needed to distribute goods and services to large numbers of people, the economies of scale from concentrating resources in one geographical area, and the integration of greenery with the urban landscape. Singapore itself is an example of a dense city which is renowned for its green spaces. Dr Balakrishnan shared a quote by renowned British urban designer and planner, Peter Calthorpe: "A city is the most environmentally benign form of human settlement".

However, no matter how green cities like Singapore are, we remain vulnerable to regional and global impacts. Singapore's experience of transboundary haze is a highly visible example of this. We are also vulnerable to global competition for resources including food, energy and water. Hence, it is vital for us to be active in the international platforms on the environment, such as the United Nations climate change negotiations.

The government can play a key role in our sustainable development as a city, and our involvement in the wider international environment issues. However, the government

needs the help of the public and all stakeholders to power positive environmental changes. Our past achievements, such as former Minister Mentor Lee Kuan Yew's drives to create a clean and green city, and clean-up the Singapore River, can only be effectively maintained for future generations by engaging and empowering everyone to take ownership of the environment.

Platforms such as the MEWR's Partners Forum thus help to play a key function in forging a common understanding between the government and the people, so that we can move together towards a more sustainable future.

Following Dr Balakrishnan's opening remarks, the dialogue session was opened to the floor. Over the next one and a half hour, the topics raised by participants covered a wide and diverse range. These have been summarised and organised by topic below.

Adopting An Environmentally Friendly Lifestyle

Many participants raised questions on how we can better inculcate environmentally friendly practices in the lifestyles of Singaporeans.

One of the recurring problems is littering. A participant observed that the situation in Singapore had deteriorated in the last couple of years, despite Singapore having the highest density of litter bins in the world. Another participant attributed the lack of public consciousness of the littering problem to the army of cleaners in Singapore - 70,000 cleaners in Singapore cleaning 2 to 3 times a day. To increase awareness, participants suggested measures such as having the cleaning frequency of the cleaners reduced.

Second Minister Ms Grace Fu commented that beyond raising awareness and public education on specific issues such as littering, there was a need to better promote basic values, such as being considerate to others and conserving resources. For example, the earlier generation of Singaporeans, while not being as aware of environmental issues such as climate change and recycling as today's generation, still practised the 3R's of reduce, reuse and recycle, as part of their values of frugality and waste minimisation.

With the inculcation of basic values of social graciousness, the government could take the lead in defining acceptable behaviour, but the public could help to enforce such social norms by speaking out against and discouraging behaviours that were not socially acceptable, such as littering. Ms Fu cited Japan as an example of how this works.

The MEWR Family has been aligning its public education and outreach efforts towards the building of such underlying basic values.

One of the key areas of MEWR Family's engagement has been with schools, in recognition that the inculcation of basic values and environmentally friendly habits are best shaped and

started from young. Alluding to this, a participant suggested that a mandatory environmental module be introduced as part of the education system. However, it was explained that from MEWR's consultation with teachers and principals, it was more effective for environmental education to be integrated and infused into everyday lessons in all subjects, and not mandated. MEWR would continue to work with the Ministry of Education (MOE) to see how ownership of the environment can be further infused into the current emphasis on character, values and citizenship education.

Responding to another participant, Dr Balakrishnan was supportive of the idea to create avenues for the green entrepreneurs. This could be done through providing facilities to help host and fund them. MEWR would explore how this idea could be taken up with relevant partners.

Energy and Climate Change

A participant suggested that a carbon tax be implemented in Singapore, in view of the high carbon footprint the country generates. Dr Balakrishnan explained that Singapore's position must be seen through the context of our role as a hub for entrepot trade – a center where goods are received for distribution, transshipment. We also have one of the largest bunkering operations and oil refineries in the world. Singapore's carbon emissions and energy consumption was hence closely related to external demand.

However, while governments worldwide spent about US\$600 billion per year to subsidize fossil fuel consumption, in Singapore, energy and water costs were not subsidised. Such fossil fuel subsidies had been shown to have a negative effect on the efforts and investments in developing clean alternative energy. By not subsidising fossil fuel, Singapore ensures appropriate price signalling of these resources, so that users would be more conscious of their electricity and water usage.

Being green by improving the energy efficiency of our economic operations, and hence keeping costs low and productivity high, was therefore a competitive edge for Singapore's economy.

Some participants expressed disappointment with the recent development of coal-fired energy plants, seeing them as a step backwards in terms of carbon emissions. Dr Balakrishnan shared that the new coal-fired power plants in Singapore were committed to produce less carbon emissions than that of higher sulphur fuel oil. In addition, MEWR had imposed high environmental standards on these companies. Dr Balakrishnan explained that Singapore was currently dependent on natural gas and oil for energy and there was a need to diversify our energy mix.

Responding to a question on whether Singapore was prepared for climate change, such as rising sea levels, Dr Balakrishnan assured participants that Singapore was way ahead of other countries in adaptation measures such as increasing the minimum height of reclaimed land. Dr Balakrishnan noted that there was an increasing global interest in the effects of

climate change on weather patterns. Singapore is not immune to these effects and would benefit from greater international research, study and co-operation on this topic.

Rounding up the discussion on carbon emissions and efforts on mitigating climate change, Dr Balakrishnan said that Singapore was committed towards the goal of being environmentally responsible and economically viable, without compromising either. Singapore will also continue to be open to future opportunities in the growing environmental sector.

Hawker Centres

Many participants expressed their views on the need to preserve Singapore's rich hawker heritage and to continue to ensure the availability of quality hawker food. One participant felt that the status of hawker food needed to be raised, in order to attract the next generation of hawkers to enter the industry. This could be achieved by designating certain hawkers as "national treasures", similar to how highly popular street food vendors of items such as sushi rolls, ramen and yakitori are treated as beloved public figures in Japan. It was also suggested that a hawker training institute be set up, to allow veteran hawkers to teach their craft to the next generation. Other than raising the prestige of the hawkers, participants also mentioned that some hawker centres needed to be re-designed or built to be cooler, for the comfort of patrons.

Agreeing with the views on hawkers, Dr Balakrishnan highlighted that they remain an important institution in Singapore. Dr Balakrishnan explained that hawker centres had started off as a public hygiene measure to house, regulate and monitor illegal street hawkers, but had now evolved to be a prominent part of Singapore's culture. Unique among first world cities, Singapore's hawker centres provided an affordable and good food option to the public. This is why, after a hiatus of 26 years, MEWR had restarted the Hawker Centre Building programme.

However, Dr Balakrishnan shared that the main challenge in building more hawker centres was the lack of manpower. Only Singaporeans and permanent residents are permitted to operate government-owned hawker stalls managed by NEA. As the participants had observed, means of attracting new hawkers to fill the manpower shortage will need to be found. MEWR would explore the ideas raised by the participants, such as the hawker institute to preserve and teach valuable hawker skills.

Dengue

Some participants expressed their concern with the recent spike in dengue cases. Second Minister Ms Grace Fu explained that the higher number of infections was partially due to a lower immunity to certain dengue strains in the general population, as Singapore had not suffered from an outbreak in many years. Ms Fu added that NEA would be stepping up enforcement and education effort to combat dengue, but that it was important for the public to continue to help these efforts, by keeping a high level of vigilance against mosquito breeding.

Responding to a participant's suggestion to increase fines for mosquito breeding, to make anti-dengue enforcement more effective, Dr Balakrishnan said that NEA would consider this. However, Dr Balakrishnan commented that an individual's motivation behind dengue prevention should be to protect the lives of his family, and not due to a fear of increased fines. Dr Balakrishnan added that it was not sustainable or practical for dengue enforcement officers to inspect each and every individual household or building for mosquito breeding, and that it is crucial to get public support to in the fight against dengue.

Water

One participant asked if water conservation should be focused on the non-domestic sector, due to their larger share of the overall water demand. PUB CE Mr Chew Men Leong shared that PUB works closely with non-domestic users to conserve water, through various stakeholders in the industry. This is done in tandem with outreach efforts to domestic users on water conservation, which tend to have a higher public signature.

After a lively dialogue session, Moderator Prof Simon Tay invited the Panellists to close the discussion with their final thoughts for the Forum.

Closing Remarks from Panellists

PUB CE Mr Chew Men Leong noted that climate change would have significant impact on Singapore and would be a major factor in driving resource efficiency. Major changes in weather patterns could increase the propensity of flooding and affect water supply in Singapore. To guard against this, PUB would continue to work closely with stakeholders to increase Singapore's flood resilience and improve the drainage system. PUB would also look to expand water supply sources and promote the culture of water efficiency and conservation.

Both Second Minister Ms Grace Fu and NEA CEO Mr Andrew Tan commented that social norms and standards for acceptable behaviour, in terms of social graciousness and leading an environmentally-friendly lifestyle, were currently not firmly established in Singapore. They encouraged everyone to help the MEWR Family set high social standards for gracious behaviour, and to promote the message that all members of the public can play their part for a clean, green and beautiful living environment.

Dr Balakrishnan highlighted Singapore's exposure and vulnerability as a hub in the global network, where any international crisis, whether due to climate change or even a global pandemic, would have severe implications for us. While Singapore had been able to develop significant international credibility and goodwill, financial capability and a well-established infrastructure, we should avoid having a false sense of security, or rely on the

notion that Singapore could use its material wealth to solve all problems. Dr Balakrishnan emphasised that a total national approach was required to meet these challenges, and appealed to all participants, as MEWR's partners, to be involved in addressing them together.

INTRODUCTION

At the forum, many questions were raised and unfortunately there was not enough time to answer all of them. As a follow-up, the responses to these questions are given in this section.

ENGAGEMENT & OUTREACH

While we move to engage the grassroots and industries, are we also engaging the commercial and financial sectors? For example, getting them to green their supply chain. (13 votes)

MEWR, NEA and PUB are closely engaged with the private sector on many environmental issues. Apart from regulatory and operational issues, the MEWR Family facilitates the adoption of environmentally-friendly business practices through the funding schemes, such as the various energy efficiency incentive schemes (available at www.e2singapore.gov.sg).

We have also been encouraging the private sector to take greater ownership of the environment as an integral part of Corporate Social Responsibility (CSR). There are several programmes developed by us to help corporate entities take the first step towards environmental CSR.

Examples of such initiatives include PUB's Our Waters Programme, and NEA's Corporate and Schools Partnership Programme and Environment Champions Programme.

Our Waters Programme empowers corporate partners to adopt waterways, reservoir parks, sponsor water programmes and community events or provide resources to assist schools or other interest groups to start water projects. The Corporate and Schools Partnership Programme facilitate partnerships between companies and schools to work on environmental projects, and the Environment Champions Programme trains company

representatives to develop and implement environmentally-friendly practices in their offices and operations.

Through encouraging environmental CSR, many companies have been able to start looking beyond just the bottom line, to implement pro-environmental practices within the organisation, including greening their supply chains. Some have also come forward to extend their influence beyond their companies, by initiating long-term environmental projects and programmes for the wider community. The MEWR Family will continue to work with the corporate sector to promote this trend.

How do we intend to involve the migrant workers to embrace our initiatives too? Most don't come from a dense city and have chosen to litter, throw cigarette butts in parks. What can be done? (10 votes)

From the feedback from our youth group, while environmental challenges are being addressed at schools the reach is not getting to our foreign workers who could be the cause of the issues. (0 vote)

NEA has been working in partnership with the Ministry of Manpower (MOM), the Singapore Police Force (SPF), and stakeholders such as private construction companies and dormitory operators to reach out to foreign workers.

NEA, MOM and SPF hold regular roadshows, exhibitions and quizzes at foreign worker dormitories and congregation sites to educate them on Singapore's strict regulations, including those on littering and urinating in public. As part of anti-dengue efforts, foreign workers are taught dengue prevention tips such as how to spot and report mosquito breeding at their worksites. More than 290 roadshows have been organized since 2008. These roadshows are conducted in the foreign workers' native languages with educational materials in these languages also distributed to them.

In addition, NEA provides posters and banners to be displayed in dormitories, construction sites and areas where migrant workers frequently congregate. At a district level, customized activities such as organized talks, litter-picking exercises as well as litter-free ambassador training sessions are conducted for foreign workers. Examples of these programmes include the "Keep North West Environment Clean & Hygienic" and "My Dormitory Shines! @ South West".

We will continue to work together with our partners to reach out to foreign workers.

As an educator and an active volunteer of Jane Goodall Institute we need to focus on the 3 areas - knowledge, compassion and action. Schools can teach the content but needs support from NEA for current data (0 vote)

NEA has established a network of Environment Education Advisors (EEA) in all schools, comprising teachers who are trained and equipped through workshops and seminars to help impart environmental knowledge to their students.

There is at least one EEA appointed in every school in Singapore. EEAs serve as the main contact point between NEA and schools, and keep in regular contact to receive updates and useful information that teachers can utilise.

The MEWR Family is also working with MOE to leverage on values-based education to inculcate the values of responsibility, care and respect for the environment and to put these values in action through environmental activities in the community.

Teachers are encouraged to work with NEA through their school's EEA, for content and knowledge support. Any schools which currently do not have EEAs, or would like to train more representatives as EEAs, can approach NEA for assistance, through the webpage below:

<http://app2.nea.gov.sg/eea2.aspx>

MEWR also supplies useful facts and figures, presented in a fun and informative style, on its own official website at:

<http://www.mewr.gov.sg>

Is there a recycling plant for all recycling waste collected from HDB, landed,.. If we put our students to know more about such education trips, we will be able to bring to heart the Issue. (0 vote)

Under the National Recycling Programme, recyclables are collected from HDB estates and landed households by Public Waste Collectors (PWCs). These are then sent to the PWCs' respective Material Recovery Facilities (MRFs) for sorting into the respective waste types. The sorted recyclables are then baled and sent to local or overseas recycling plants.

MEWR, NEA and PUB has worked closely with the Ministry of Education in compiling a list of Learning Journeys, covering areas of focus such as waste management, water management and conservation, energy efficiency and climate change, which students can take part in. These Learning Journeys allow students to visit our facilities, and gain out-of-classroom insights as well as local context perspectives to the theories taught in the classroom.

More details about these Learning Journeys are available at these websites:

http://www.ne.edu.sg/ljs/lj_mewr.htm

http://www.ne.edu.sg/ljs/lj_nea.htm

<http://www.pub.gov.sg/events/ProgrammesAndEvents/Pages/LearningJourneys.aspx>

In addition, PUB offers the Active, Beautiful, Clean Waters (ABC Waters) Learning Trails programme, a series of place-based trails which encourage students to explore, discover and learn at ABC Waters sites, such

as our waterways and reservoirs. More info on the Learning Trails can be found at:

<http://www.abcwaterslearningtrails.sg/web/index.php>.

SOCIAL BEHAVIOUR

My personal opinion is if the place is clean most of people will behave well & not litter at all. Therefore, not cleaning a place will make the environment worse. Motivation is a key factor? (0 votes)

We agree that motivation is a key factor in maintaining the cleanliness of a place. The only realistic and sustainable solution remains in getting everyone in the community to take personal responsibility and build a strong sense of societal norm against littering.

A lot of comments have been made about enforcement, and education to change citizens behavior...but are there any measures on an essential 3rd pillar: motivating the residents to change their behaviour? (0 vote)

To keep Singapore clean, and not just a 'cleaned' country, we need to harness the energy of the community to first act responsibly, to not litter, and to build a common understanding in society that it is wrong to litter. The Government will continue to work with and engage the community to foster a stronger sense of ownership among residents beyond their front door to the common areas of their neighbourhood. Through this, Singapore will become a clean city because our people care enough to keep it clean.

Will people's perceptions of Government affect how they view NEA's Clean & Green Singapore initiatives and policies? (1 vote)

Yes, public perception of Government will inevitably affect how our initiatives and policies are viewed. To build public support

and trust, we will continue engaging and working with the public across all sectors and through different platforms while also focusing on being transparent and building our credibility.

ENFORCEMENT BY VOLUNTEERS

NEA littering enforcers are protected by the law as they are Public Officers. When you train volunteers to enforce littering, are they protected by the law? (1 vote)

The volunteers would be empowered with the necessary powers of NEA's enforcement officers under the law to carry out their enforcement duties.

GREEN PROCUREMENT POLICY

Can the public sector take the lead by endorsing Green Procurement, making it mandatory will be better? (6 votes)

If the civil service is to set an example for a sustainable and green Singapore, are their SOPs put in place in every ministry to consider these needs in every policy that is implemented? (3 votes)

Is the government practising green habits in their daily work? E.g. Green procurement? (0 vote)

The public sector is committed to take the lead in environmental sustainability. The Public Sector Taking the Lead in Environmental Sustainability (PSTLES) initiative, which was introduced in 2006, establishes environmental sustainability standards and promotes best practices within the public sector.

There are already a number of green procurement practices that public sector agencies have to comply with. For example, all new large air-conditioned public sector buildings are required to attain the Green

Mark Platinum rating, while existing buildings have to attain Green Mark Gold Plus by 2020. New office ICT equipment have to meet the latest ENERGY STAR standards. Offices also have to attain the Eco-Office certification, which promotes green procurement practices such as the use of recycled paper and Green Label products. The MEWR Family is also looking into establishing a standard of environmentally-friendly practices for our events, which will require our event vendors to put in place requirements such as reusable crockery for catering.

We are continually looking at ways to promote green procurement practices without being too prescriptive.

ENVIRONMENTALLY-FRIENDLY PRACTICES

MEWR organised many large scale events. Are there plans to develop standards for environmentally-friendly practises for event or even mandate some - such as provision of recycling bins. (20 votes)

Since 2009, NEA has published a set of guidelines for environmentally-friendly events, which is available to the public at:

http://app2.nea.gov.sg/Guidelines_for_event_s.aspx

Where applicable, MEWR, NEA and PUB have used the checklist provided at the website as a guide to implement environmentally-friendly best practices at our events.

In April this year, MEWR implemented a set of environmentally-friendly best practices for all our events. These best practices, which include the provision of recycling bins at events, will be field-tested in our events for the most practical and cost-effective methods of implementation. Once standards have been fine-tuned and well-established internally, MEWR will seek to expand them to other public agencies' events. We will encourage all

agencies to adopt environmentally-friendly best practices as standard for all events, with the intention of making this a social norm for public events.

ENERGY PERFORMANCE STANDARDS

Will minimum energy performance standards be making some inefficient energy devices be made not available for sale in retail outlets? Seems drastic but sustainable and sensible! (1 vote)

Minimum Energy Performance Standard (MEPS) has been implemented for household air-conditioners and refrigerators since September 2011 to protect consumers from being locked into the high cost of operating inefficient appliances. These two appliances are the largest energy guzzlers at home, accounting for about half the energy consumption of a typical household. Today, all the 0-tick appliances, and some of the 1-tick and 2-tick appliances have been removed from the market.

The implementation of MEPS has encouraged manufacturers and suppliers to bring in a wider variety of more energy efficient appliances. About 70% of air-conditioner models and 90% of refrigerator models sold in 2011 were of the more energy efficient 3- and 4-tick models.

MEPS standards for air-conditioners and refrigerators will be further tightened in September 2013. MEPS will also be extended to general lighting and clothes dryers in 2014.

NUCLEAR PLANT

Any possibility of a nuclear plant? (2 votes)

Singapore commissioned a pre-feasibility study on nuclear energy to assess the feasibility of nuclear energy as an option to meet our long-term energy needs. The study, which was completed in 2012, concluded that

nuclear energy technologies presently available are not yet suitable for deployment in Singapore.

The latest designs of nuclear power plants are much safer than older designs which remain in use in many countries. However, the risks to Singapore, given that we are small and dense, still outweigh the benefits at this point. As we are planning for the very long term and not for our immediate energy needs, we prefer to wait for technology and safety to improve further before reconsidering our options. Over time, nuclear power plants with safer and more robust designs will be developed.

CLIMATE CHANGE

My question relates to climate change adaptation. The government has been taking the lead in conducting climate change studies on the impacts of temperature rise, increased rainfall and sea level rise to our country. I would like to know whether there are some ways that the government can bring about greater awareness on this topic to corporates to help spur collaborative initiatives to tackle climate change impacts at an early stage. For example, companies may be interested to know how sea level rise might impact on their sea-facing premises and how soon, what government is doing and what they can do. Companies will also be interested to know the likelihood of floods happening in their area of operations and what preventive/control measures the government and they themselves can take to avoid a worst case scenario. I think this is especially important for large infrastructure companies which may decide to invest in a long-term infrastructure (i.e. operating lifespan of several decades) in the future. Knowing the risks and how to deal with them will be important. (0 vote)

Our philosophy in sustainable development has seen us adopt a pragmatic, cost-effective and flexible approach that recognises the

concurrent need for growth, stringent environmental regulations and investments in environmental infrastructure. We understand the need for the private sector to also weigh in on our preparations for Singapore to be climate-change-ready, and to recognise that environmental sustainability and economic viability can form a virtuous cycle. In fact, we encourage companies to take a long-term view on the sustainability of their operations and infrastructural planning in creating greater value through making informed business decisions.

The Expert Panel on Drainage Design and Flood Protection Measures released their findings in Jan 2012. This report provided many useful recommendations on drainage planning and flood protection approaches. BCA has initiated a study to assess the impacts of sea level rise on our coastal lands and associated infrastructure. The study will be completed by end 2013, and the findings will enable us to develop cost effective measures against any potential coastal flooding.

At the same time, it is also important to recognise that climate science is a complex issue, and that capabilities and knowledge in this field are constantly evolving. We took an important step towards improving our knowledge and capabilities in climate science through the establishment of the Centre for Climate Research, Singapore (CCRS), officially launched on 26 Mar 2013. The CCRS has initiated a new Climate Change Vulnerability Study which will use data and methodologies consistent with the upcoming 5th Assessment Report (AR5) by the Intergovernmental Panel on Climate Change (IPCC) to provide projections of the future climate change in Singapore and the region, which will contribute to developing solutions and measures to adapt effectively. Strong climate science capabilities and updated scientific information will further enhance our assessment of risk to adverse impacts of climate change, and better inform all stakeholders on the adaptive measures required to mitigate these risks.

RECYCLING

Understand the recycling rates for food waste and plastics have remained low. While we ramp up the resources for recycling, how can we do more into these two waste resources? (15 votes)

Food and plastic wastes are one of the largest waste streams in Singapore, with low recycling rates. The MEWR Family would like to share some of the initiatives to improve the recycling rates for these two waste streams in the household and commercial sector.

For household recycling, MEWR has recently completed a household recycling behavioural study – which includes recycling plastic waste. The findings of this study will then be used to formulate a more targeted recycling campaign that will impact specific recycling behaviour, such as for plastic containers. However, due to public hygiene concerns and infrastructure constraints, we are unable to segregate food waste for recycling in households, and will be open to suggestions from the public and private sector.

For commercial premises, we will be mandating submission of waste reporting and waste improvement plans for large hotels and shopping malls from 2014 onwards and will be exploring the possibility of extending this to other large waste generators.

Is there any option offered for the recycling of batteries? This is much more common in Europe and helps to reduce the pollutive effect on the environment? (11 votes)

Since 1992, only batteries that meet prescribed limits of mercury content are allowed to be sold in Singapore. The used batteries therefore are safe for disposal together with household waste at the waste-to-energy incineration plants, which are equipped with pollution control equipment to remove pollutants and ensure that the

emissions meet strict standards as prescribed in our regulations.

Apart from batteries, some electronic waste, or e-waste, contains small quantities of heavy metals such as lead, chromium or mercury. Due to an active second hand market and recycling initiatives, very little e-waste actually ends up at our disposal facilities. Used e-waste is mostly sold to second-hand dealers where they are either refurbished and resold, or dismantled for recycling. E-waste recycling companies in Singapore are equipped with proper pollution control systems to prevent any heavy metals from entering the environment.

In addition, NEA encourages e-waste recycling efforts through voluntary take-back schemes upstream, such as those implemented by several large IT and mobile phone companies (e.g. Dell, Canon, Nokia) and second hand dealers (For more information about the take-back schemes, please refer to NEA's website: <http://app2.nea.gov.sg/OtherTakeBackProgrammes.aspx>)

Nonetheless, the government will continue to closely monitor the e-waste and battery situation and work with stakeholders to further enhance their recycling.

When will details of mandatory waste sorting in large buildings be ready? What is the plan for the recycled material collected? (3 votes)

In 2011, we announced mandatory waste reporting in large waste generators / premises such as hotels and shopping malls by 2014. There are on-going discussions with the premises owners on this. NEA will also explore the possibility of mandatory waste sorting in large waste generators / premises. Similar to recyclables currently collected elsewhere, those from large commercial premises will be sorted and processed (e.g. paper will be baled and sent to paper mills).

People generally do not argue about the merits of recycling, but they don't do it properly, such as throwing dirty containers into recycling bins. How might we incentivise people to recycle properly? (3 votes)

Since July 2011, NEA has required all new Public Waste Collection Contracts to put in place incentive programmes for recycling. For example, Veolia Environmental Services has implemented the GRIN scheme (Grow your Recycling Incentives Now) in Pasir Ris-Tampines while Sembwaste has Cash-for-Trash in Bedok.

NEA is also currently exploring Save-As-You-Reduce pilot projects in selected estates in Singapore. Under these pilot projects, residents will save if they can reduce their waste disposed and recycle more.

Public education and engagement (on how and what to recycle) are also important in shaping the right recycling behaviour, and NEA will be exploring a more targeted and behaviour-focused recycling campaign.

When can we expect to see the proposed one recycling bin under each hdb block? I can't wait! (0 vote)

By September 2014, all HDB flats will have 1 recycling bin per block. This will be introduced in phases, depending on the sectors, during the renewal of Public Waste Collection Contracts. To date, HDB flats in the Pasir Ris-Tampines, Bedok and Jurong sectors already have 1 recycling bin per block.

Waste from households always has some water mixed in it. This increases the overall weight of the waste & consumes more energy in the transport/value chain. How can PUB & NEA work together on this? (4 votes)

Most waste disposed is usually bagged in some form, which, while reducing the likelihood of a potential mess, also traps liquid in, making it currently impractical to drain water from waste in the rubbish chute. We

will continue to explore ways of draining water from household waste.

FOOD WASTE

Apparently food waste accounts for 20% of total waste in the US, what are our statistics for Singapore? (0 vote)

In 2012, food waste accounts for 21% of the total waste disposed in Singapore.

GREEN VEHICLES

In terms of Green vehicles new diesel standards seems the way forward. However are we doing away with CNG vehicles, if so why. Thanks? (6 votes)

CNG remains a viable technology that contributes to our clean environment objectives. Going forward, government assistance for clean vehicle technologies will be technology neutral and based on environmental outcomes.

VEHICLE EMISSION

How to ensure diesel vehicle from our neighbour country meet NEA's standard? (4 votes)

Re PM 2.5 how do we manage trucks and diesel vehicles coming from Malaysia & Thailand? (0 vote)

Are we able to ensure that diesel vehicles from our neighbouring countries meet NEA's emissions standards? (0 vote)

NEA sets emissions standards for local diesel vehicles. However, the same emissions standards are not applied to foreign vehicles. Nonetheless, NEA enforces against foreign-registered diesel vehicles which emit excessive black smoke. Enforcement on foreign-registered smoky vehicles is carried

out at the checkpoints at Woodlands and Tuas. Vehicles that are observed to be smoky undergo a smoke test. Upon failing the test, vehicle owners are issued a fine. Very smoky vehicles are turned back.

BICYCLE TRANSPORT CITY

Singapore appears to be a perfect place for a bicycle transport city - why is so little being done to advance that effort? (0 vote)

The Land Transport Authority has in place a National Cycling Plan, which will develop cycling infrastructure to promote intra-town cycling at selected HDB Towns by 2014.

Nonetheless, many Singaporeans do not see the bicycle as the ideal mode for transport to travel greater distances given our hot and humid climate, and prefer air-conditioned modes of transport such as the train or bus.

USE OF PLASTIC BAGS & DISPOSABLES

Can we reduce receipting and the provision of plastic bags in supermarkets? Maybe even extending to using less of disposables like styrofoam boxes and wooden chopsticks in hawker centres? (2 votes)

All of us can do our part to conserve resources, reduce greenhouse gas emissions and minimize wastage. Retailers can play their part to provide fewer plastic bags. Consumers should ask for only the minimal plastic bags they need and use reusable bags (such as the one shown below) whenever possible.

We should also reuse or recycle all excess plastic bags to bag waste etc. NEA has launched initiatives such as the [Singapore Packaging Agreement](#) to reduce waste at source. NEA is also supportive of the "Bring Your Own Bag" campaign which encourages shoppers to use reusable bags to reduce the wastage of plastic bags.

About a bad social behaviour and health risk - Common to see hawkers use plastic pails/huge plastic bags to store boiled soups (e.g. wanton soup) or beverages (soya bean milk) before serving. Acceptable? (0 vote)

Ordinary plastic pails are not intended for the storage of food, and thus should not be used as containers for hot food and soup. During their routine inspections, NEA officers will advise operators to use only food-grade containers which can withstand high temperatures for storing, serving, and packing hot food.

LONG TERM IMPACT FROM FOGGING

We appear to have an obsession with fogging in Singapore - I am concerned about the longer term impact of these chemicals on my family and Singaporeans, including on our NEWater supply? (1 vote)

NEA has formulated guidelines on fogging practices with the Singapore Pest Management Association in 2006.

In general, NEA advocates source reduction and the judicious use of fogging for mosquito control. Fogging is not recommended unless there is an increased presence of adult mosquitoes, or necessitated by the need to eliminate infective mosquitoes immediately during a dengue outbreak.

Nevertheless, the fogging pesticides permitted for local use have undergone the World Health Organization (WHO) Pesticide Evaluation Scheme and have been certified safe and suitable for use by the WHO. The concentration used in fogging is also diluted such that it poses minimal risk to the environment. All pest control personnel are licensed and trained to handle pesticides and are also required to follow proper fogging procedures to protect the public and the environment.

Water supply is also not affected by fogging. The chemicals used for fogging next to reservoirs are water-based and biodegradable hence its impact on the reservoir raw water quality is minimal. In addition, the raw water in all reservoirs is treated to meet the World Health Organization (WHO) Guidelines for drinking water at PUB's water treatment plants before it is supplied to the households. We also have a comprehensive water monitoring programme that starts from the raw water in the reservoir all the way to the customers' taps. Water samples are taken daily from the water distribution network at various locations throughout the island to ensure that the water is safe for consumption.

SMOKING

How about legalising electronic cigarettes? Solves the problem of second-hand smoke and removes the nasty cancer risks associated with smoking? (7 votes)

This is under the purview of MOH and MOH is of the view that electronic cigarettes are the industry's attempt to attract new users and were marketed to appeal to younger customers, including women.

While it is good to have many smoking banned area, shouldn't we put equal emphasis on areas where smoking is legal so that the ban is more effective? (5 votes)

MEWR will explore having clearer designation of smoking areas.

POLLUTION

Is anything being done to address heightened pollution experienced in western Singapore where the effects of higher industrial activity and Jurong Island has made the air significantly more polluted? (3 votes)

Stringent measures have been put in place to ensure that Singapore maintains good air

quality. At the planning stage, polluting industries are located away from residential areas. In addition, strict emissions standards are mandated. NEA monitors emissions levels, and enforcement action is taken if they are breached.

FUNDING

The relevant industries are playing major roles in keeping SG clean. Can the government look into funding to professionalise the industry, bearing in mind of the call for increasing productivity? (2 votes)

NEA and the NTUC are working with the cleaning industry to improve their cleaning processes and operations planning to raise productivity, which would help mitigate cost increases and inflationary pressures. Cleaning companies can tap on Government's Inclusive Growth Programme funding, the Productivity Innovation Credit, and other schemes. The Wage Credit Scheme introduced in Budget 2013 as part of the 3-year Transition Support Package would also provide support to employers to share productivity gains with their workers through higher wages.

WATER COLLECTION & RECYCLING

I would like to install water collection and simple water recycling equipment in my house to be used for watering plants and general cleaning. What are the regulations governing this? (4 votes)

Home-owners who would like to collect rainwater in their premises, can do so as long the collected rainwater is solely for their own non-potable uses, such as general washing, watering of plants and toilet flushing.

On water recycling, some families already practice simple habits, e.g. using laundry water for general washing, reusing water used to wash rice to watering plants, etc., which

are good water conservation practices. However, if home-owners are looking to install sophisticated recycling systems, which would involve some form of water treatment and/or modification to their piping system, for non-potable uses, they should ensure that there is no cross contamination with the existing piped water supply system in the home. When in doubt, home-owners should consult PUB to ensure their systems meet the necessary technical and public health requirements.

For both rainwater collection and water recycling systems, home-owners must also take necessary precautions to prevent mosquitoes from breeding.

Should you need more information and clarifications on requirements for rainwater collection and water recycling systems, please contact PUB at PUBone@singnet.com.sg.

Recycle and reuse of water and solid waste require changes in the private & public infrastructure, e.g. separate plumbing for water & segregated disposal of waste. What is government initiative in this? (0 vote)

Since 2002, PUB has closed the water loop by recycling used water at the national scale into NEWater to maximise our water resources. Within individual developments, there is also potential to recycle used water from bathtubs, bathroom wash basins, washing machines and laundry tubs locally for non-potable use such as toilet flushing. Developers or owners looking into implementing water reuse or recycling systems for their developments can consult PUB and NEA to ensure that the necessary technical and public health requirements are met.

Also, since 2011, NEA has required all new Public Waste Collection Contracts to have one recycling bin per HDB flat. In addition, we are also exploring recycling chutes in selected HDB estates.

The BCA Green Mark Scheme has been in place since 2005 to encourage developers or owners to develop/retrofit buildings with green features, including water and waste recycling systems. Developers or owners could earn the BCA Green Mark certification for their buildings and may also qualify for incentive programmes.

EFFLUENT DISCHARGE

Why is a fine for failure to meet water discharge standard call a tariff? Tariff means it is ok to fail the discharge standard as long as you pay. (1 vote)

All trade effluent to be discharged into the public sewerage system must be done so with the written consent of PUB. The requirements for trade effluent discharge are spelt out in the Sewerage and Drainage Act and the Sewerage and Drainage (Trade Effluent) Regulations.

The limits for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) for trade effluent discharge into the public sewers, as stipulated in the Sewerage and Drainage (Trade Effluent) Regulations, are 400 mg/l, while the limit for Chemical Oxygen Demand (COD) is 600 mg/l. Nonetheless, the Trade Effluent Tariff Scheme offers a choice to industries that produce biodegradable wastes of higher concentration, but find it impossible to install, operate, and maintain a trade effluent treatment plant on its premises. This scheme allows applicants to discharge trade effluent with higher concentrations (i.e. BOD and/or TSS exceeding 400 mg/l, COD exceeding 600 mg/l) into the public sewer, subject to PUB's prior permission and payment of a tiered Trade Effluent Fee. However, approval will not be granted for the discharge of trade effluent which contains:

- a) BOD greater than 6,000 mg/l of the trade effluent, or
- b) TSS greater than 6,000 mg/l of the trade effluent, or

- c) COD greater than 10,000 mg/l of the trade effluent or three times the concentration of BOD in the trade effluent, whichever is the lower.

Any person who contravenes any provision of the Sewerage and Drainage (Trade Effluent) Regulations shall be liable upon conviction to a fine not exceeding \$5,000, and in the case of a continuing offence, to a further fine of \$500 for every day or part thereof during which the offence continues after conviction.

FOOD SECURITY

We speak about clean air, water & energy security and diversification. Are we addressing food security when Singapore produces only 20% of our food? (0 vote)

Ensuring a Resilient Supply of Safe Food for Singapore

The Agri-Food and Veterinary Authority of Singapore (AVA) is responsible for ensuring a resilient supply of safe food for Singapore. To achieve this, AVA has in place the key strategy of source diversification and complementary strategy of enhancing local production to ensure the adequate and stable supply of food for Singapore.

Source Diversification

Singapore imports more than 90% of our food. Our key strategy in ensuring food supply resilience is source diversification. By buying from many sources, Singapore is better buffered against potential food shortages and to a lesser extent, price volatility. This allows Singapore to hedge its risk and not be overly reliant on a single source for any food item.

To enhance supply resilience, AVA partners the private sector in food sourcing and facilitates the development of potential overseas food sources.

AVA also launched the Food Fund in Dec 2009 to strengthen our food supply resilience strategies of food source diversification and

local farming. It is used to support food diversification and farm capability development.

In the area of food diversification, the Food Fund will assist to facilitate private sector investments in overseas food zones and contract farming with a focus on the six key food items: rice, chicken, pork, fish, eggs and leafy vegetables. The Fund supports feasibility studies on overseas food zones, overseas contract farming and sourcing from non-traditional sources. The studies should establish that proposed investments can lead to new and stable sources of food supply for Singapore.

Local Production

While diversifying our overseas food sources remains a key strategy to ensure our food supply resilience, we will continue to promote local farming, which plays an important complementary role in ensuring food supply resilience. While we cannot expect to be fully self sufficient in food production, we aim to achieve some degree of self sufficiency in the three key food items of eggs, fish and leafy vegetables, and up farming levels for these items to 30%, 15% and 10% respectively (current production levels are 26% for eggs, 8% for fish and 8% for leafy vegetables).

AVA has been working closely with local farmers to raise productivity and capability of the farms through advising farmers on good farm management practices, helping farms monitor and manage animal diseases, and promoting local produce to consumers. We routinely visit farms to help address farmers' concerns.

AVA also conducts R&D to transfer technology to the farms. We work closely with the private sector to develop innovative solutions to maximise productivity. In addition, AVA supports local farming through the Food Fund. Farmers are encouraged to tap on the Food Fund to maximize local farm productivity. Through the Food Fund, AVA co-funds R&D in local food farming technology, and the

upgrading of the production capability of local farms. So far, AVA's Food Fund has helped farms to achieve higher productivity through automation, mechanization and investing in technology.

Conclusion

AVA will continue to work closely with the industry to bolster our food supply resilience and ensure that Singaporeans are assured of a stable and adequate supply of safe food.

[Credit given to Agri-Food & Veterinary Authority for providing the response.]

term strategy to mitigate against the increasing number of developments. We are also planting more trees in some of these development areas; as the trees mature, they will help create a more lush and green environment for all.

[Credit given to National Parks Board for providing the response.]

.....End of Report.....

MANPOWER CONSTRAINT

Good to see that the agencies are doing more e.g. enforcement. but with the manpower strain in Singapore now, how do we ensure the stakeholders like contractors have the sufficient workforce? (9 votes)

Our economy is undergoing restructuring. Foreign labour is being tightened but many work in service sectors, cleanliness & F&B. Business costs has also gone up. How does this impact on our environmental work? (6 votes)

We are exploring the possibility of leveraging on technology and the media where possible to ease our manpower constraints. In the case of stepping up enforcement efforts, the use of cameras to catch instances of high-rise littering is one such example.

TREE COVERAGE

Tree cover is decreasing along our roads. Can we increase tree cover again, in line with the City in a Garden idea? (0 vote)

In line with the City in a Garden vision, we are committed to ensuring that Singapore remains green and vibrant even as we become more urbanised. We are continuing with our tree planting programme as a long