



NATIONAL  
ENVIRONMENT  
CONFERENCE  
BRUNEI DARUSSALAM

# CONSERVING OUR RESOURCES FOR A SUSTAINABLE FUTURE

20TH JUNE 2012



ASIA INC *FORUM*

**SUMMARY REPORT**



## “Conserving Our Resources for a Sustainable Future”

### SUMMARY

The National Environment Conference 2012 held on June 20 brought over 250 stakeholders from government, business, academe and civil society in a format that encouraged open forum discussion and interaction between the speakers and the participants. The conference featured a keynote opening address by the Minister of Development followed by a session on the Future of Water, concurrent sessions on rainforest conservation and resource efficiency, a conversation after lunch on consumption and wastage and an open forum discussion in the afternoon on litter as well as future flashes by the corporate partners on energy, aluminum and education. In conjunction with the conference, a green showcase with more than 20 corporations, SMEs, ministries and educational institutions also took place. The conference saw the recognition and awarding of youth from various schools who participated in the Youth Eco Video Documentary Awards 2012.

The 2012 National Environment Conference was convened by Asia Inc Forum in partnership with HSBC, Total, Butra HeidelbergCement and Alcoa and supported by the Ministry of Development.

This paper highlights the key findings/recommendations that arose from the dialogues and a summary of the discussions addressing the priorities for Brunei.

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## **Key Highlights of the Conference:**

- The current state of our environment appears to indicate sustainability, but on a per capita basis, what we generate to the environment present a different reality. The Bruneian lifestyle habits may not fully fit into the sustainable development context.
- The amount of fresh water on this planet is so little. Exploration will enable us to understand how it affects us and how we can manage this delicate incredible resource and this includes understanding of the ocean. Where Brunei is concerned, the country is quite comfortable with its water supply; however it is recognized that demand will rise along with population and industrial development.
- Economic potential from the Heart of Borneo includes research and ecotourism. As one of the largest mega-biodiversity ecosystems in the world, HOB is a prime spot for eco-tourism and there are plants that can cure some of the world's deadliest diseases. From Brunei's rainforest, products such as bio-fertilisers, carbon trading and biofuel can be generated for the country's profit.
- Transport sector is currently one of the largest carbon emitter in Brunei. Therefore, sustainable, efficient and attractive transport system plays a major role in this equation of resource efficiency. The small population of Brunei poses a challenge for mass public transportation where private transportation i.e. car dominates 90 per cent of total vehicles.
- Our consumer-focused society may look really good on the surface but if we look into more deeply, there are hidden economic, environmental, social and health problems. Global population is increasing and our per capital use of stuffs is increasing indicating that we are bumping up against the limits of one planet.
- The waste management system in Brunei does not fit the current situation. Our current system involves just collection of rubbish and disposal to the landfill. Recycling is a big part of the integrated waste management which is missing in the system.

## **Recommendations from the Conference:**

### **On Water**

- 1) Effective water conservation
  - "Economic instrument" to be put into place to allow users to 'feel' the price and cost of consumption
  - Education and civil enforcement to inform choices
  - Domestic research and development to be implemented
- 2) Businesses can be a big part of the solution in solving the demand and supply issue of water
  - Industries need to lead the way through research and development, disciplined governance and dynamic stewardship of resources

### **On Resource Efficiency**

- 1) Transport: Research and development to study the level of pollutants from CO2 emission (from transport sector).
- 2) Financing: Financing mechanism to be devised to encourage more use of energy appliances, devices and et cetera at individual level.
- 3) Green Building: Incentives to be put in place to spur greater interest of green buildings in Brunei.

### **On Rainforest Conservation**

- 1) Put more emphasis on research of the rainforest especially by the locals which includes allocation of research funding to encourage a more thriving research community
- 2) Important stakeholders are the local people who live around the forest reserves therefore, should always be a major component of conservation

### **On Consumption and Wastage**

- 1) To declare zero waste in Brunei through the following:
  - Composting
  - Design waste out of the system
  - Ensuring there are no incinerators
- 2) To protect people and nature from harmful chemicals
  - Brunei might want to do a national Body Burden Testing to see what chemicals are used in the community. This testing can be done every five years to see which chemical is increasing or decreasing in the community
- 3) To nurture non-consumer values and opportunities
  - Work together for a clean and healthy Brunei, sustainable, healthy, clean economically thriving Brunei
  - Encourage a stronger community spirit and sharing of resources within the community

### **On Litter Free Brunei**

- 1) Green campaigns and initiatives at education institution level to be encouraged and supported
- 2) Empower citizens to take ownership of their environment and then put in place measures to solve environmental problems in the community.
- 3) Re-engineer policy regulatory structure on waste management to include a nationwide recycling program

## Summary:

### Opening Session:

**Keynote Address by the Minister of Development: YB Pehin Orang Kaya Indera Pahlawan Dato Seri Setia Awang Haji Suyoi bin Haji Osman**

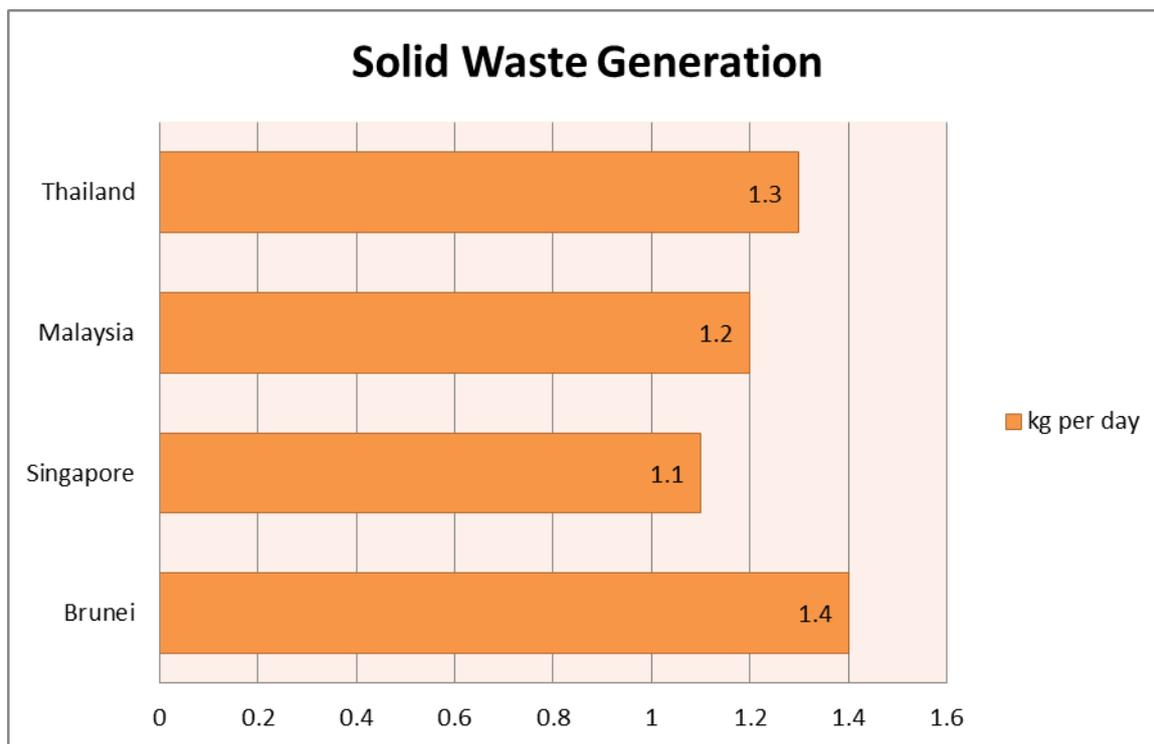
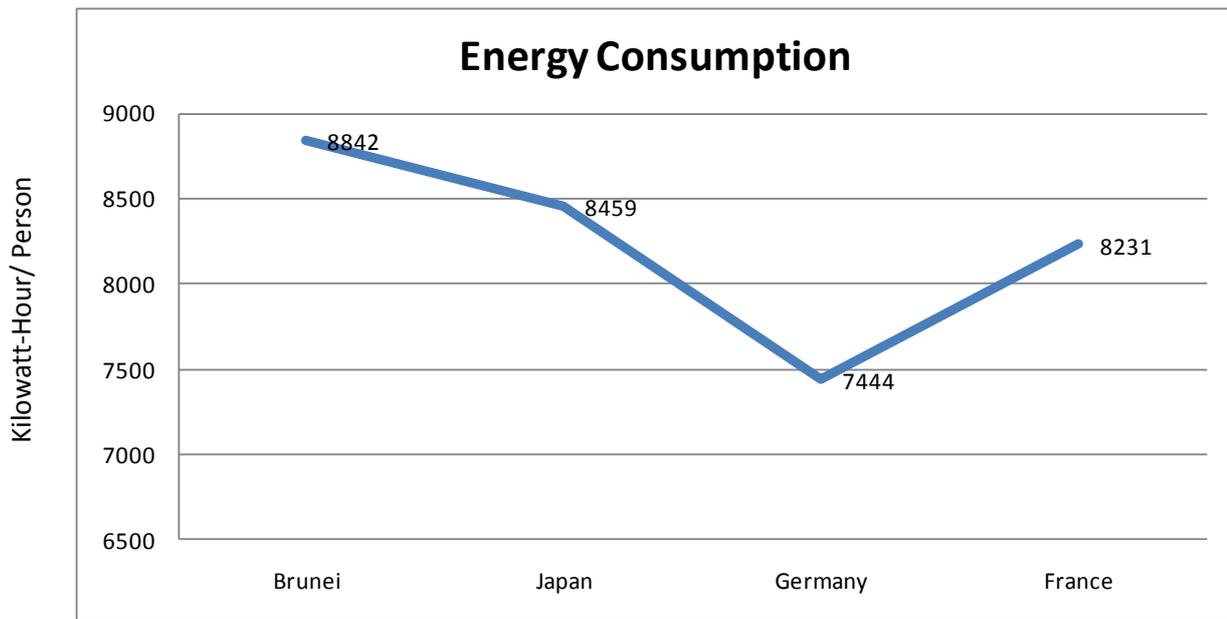


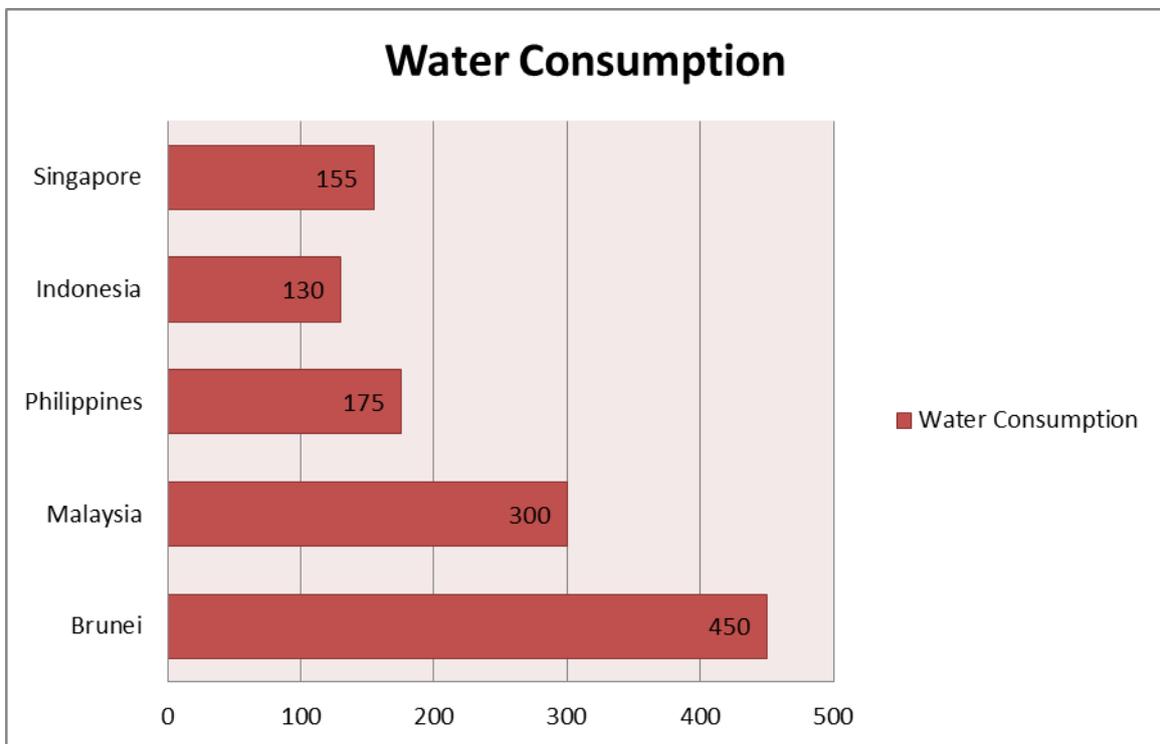
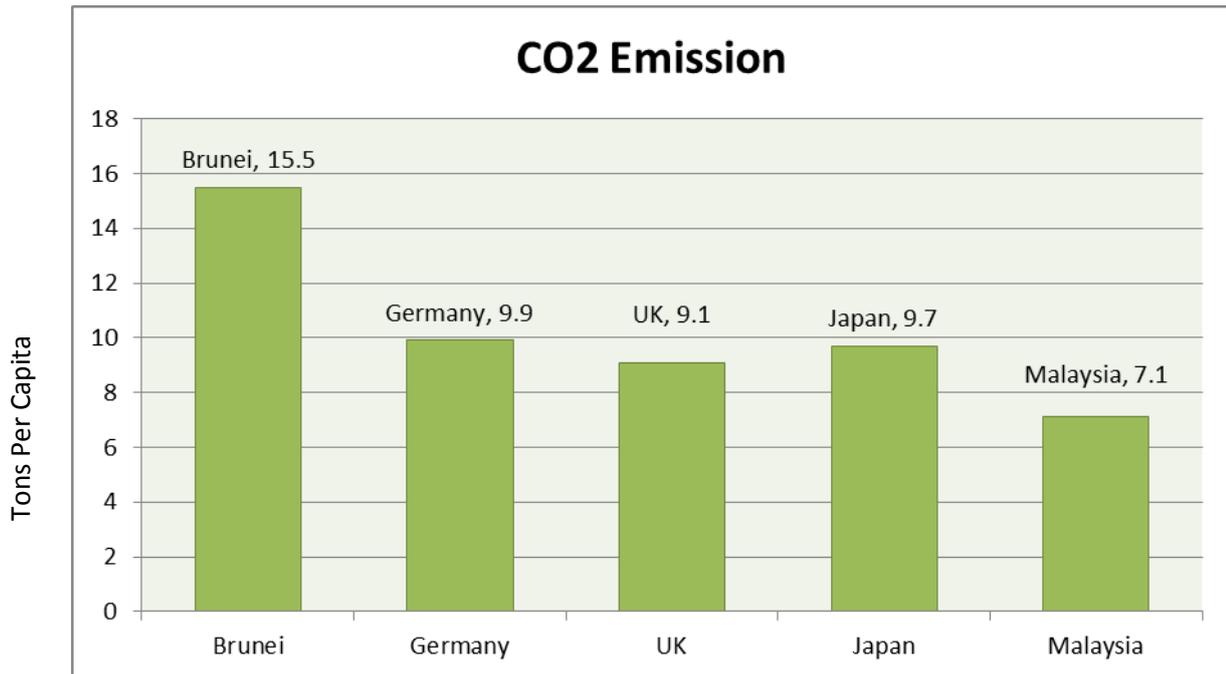
While sustainable development has long been one Brunei Darussalam's stated goals, the current state of our environment appear to indicate sustainability, but on a per capita basis, what we generate to the environment present a different reality that the Bruneian lifestyle habits may not fully fit into the sustainable development context.

Consider these facts:

- Energy Consumption: Brunei's energy consumption per capita is 8,842 kw hr/person, surpassing that of developed countries like Japan [8,459 kw hr/person], Germany [7,444 kw hr/person] and France [8, 231 kw hr/person]
- Solid Waste Generation: Brunei generates 1.4kg of solid waste per person/day. Most ASEAN countries generate about 1kg or less of solid waste per person/day.
- CO2 Emission: Brunei generates about 15.5 tons per capita per year. This is higher than what Annex 1 or developed countries generate. Germany generates 9.9 metric tonnes, the UK 9.1 metric tonnes, Japan 9.7 metric tonnes and Malaysia generate 7.1 metric tonnes.
- Water: Brunei uses 450 litres of water per person per day. This figure is twice that of Malaysia and thrice that of Singapore.

These figures are alarming for such a small country like ours. Therefore, the deterioration of our environment remains an issue in Brunei. The challenges are there, but so are the tools for us to overcome them.





## Session One: "The Future of Water"

How do global water issues affect Brunei? How do we deal with crucial water challenges in the face of growing population? How can government and industries help secure this resource for future generations?

Led by

- **Dr David Gallo**, Director of Special Projects, Woods Hole Oceanographic Institution, USA
- **Mr Wade Hughes**, Director, General Business Development & Public Strategy, Alcoa
- **Awg Hj Amer Hishamuddin bin POKAP DSS Hj Zakaria**, Director, Water Services, Public Works Department, Ministry of Development

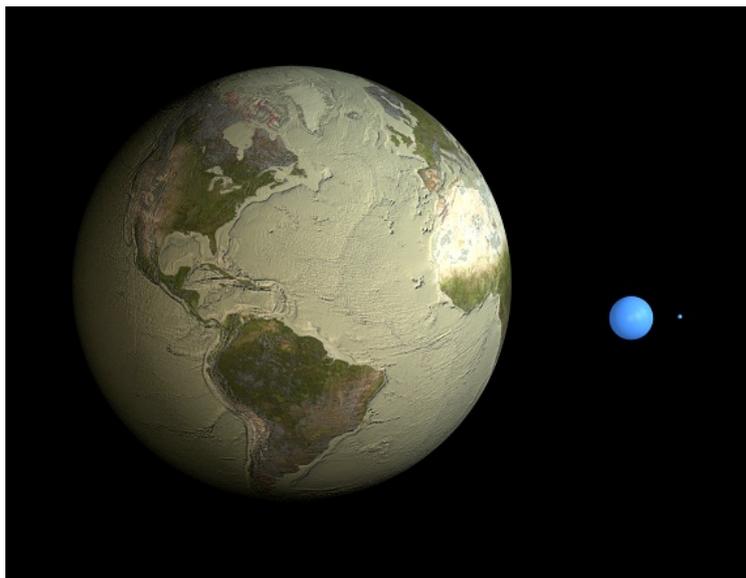
Moderated by **Ms Kumushay Hudaverdi**, Producer, Radio Television Brunei

**Keynote** on "The Future of Water" by **Dr David Gallo**, ocean explorer & Director of Special Projects, Woods Hole Oceanographic Institution, USA:



- The Earth is 70 per cent covered with water but we only explore about 5 per cent of the ocean and that only exploring will enable us to understand what is beyond the waves and how it affects us and how we can manage this incredible resource of the planet.
- Beneath the waves, there are the greatest underwater mountain range called the mid ocean range which wraps itself around the Earth and when you take the water away, it would be the most obvious figure of this planet. The volcanic mountain range is punctuated along the edge by thousands of peaks that are many times higher than the peaks at the Himalayas or in South America. The world beneath the sea is very dynamic- almost all the earthquakes, volcanoes that we have on Earth fall along that mountain range.

- We have underwater lakes in the ocean and beneath the sea around the Gulf of Mexico and the Mediterranean Ocean. These lakes can be ten kilometers long, deep and wide with abundant life living along the edge and inside the water.
- We see rivers in the sea that we call "currents both in shallow and deep water. So there are essentially rivers that float to the ocean, at the bottom of the sea and at the surface. Sometimes they go over underwater mountain ranges and valley. Underneath Iceland and Greenland, there is a tremendous underwater waterfall that is about 5 times higher than anything we have on land.
- We have this unknown world beneath the sea - when we think about the ocean, there are lessons that emerges in just what we see so far. This planet is a planet of change and it changes in two ways: the climate has changed for 5 billion years and has continued to change the surface of the earth through earthquakes, volcanoes, moving continents resulting in mountains coming and going and even today the surface of the earth constantly changes.
- When we talk about the ocean, evaporation and precipitation is turning out to be too complicated to understand- most of the evaporation and precipitation happen in the sea and today things like climate change is changing that cycle rapidly. We have essentially kicked up a system that is becoming very unpredictable so the question we have to ask is that how this is going to impact humanity.
- With seven billions people on this planet, we have managed to change the chemistry and temperatures of the ocean. We always thought the ocean is bountiful, capable of healing itself but it turns out to be untrue. Anyone familiar with an aquarium knows when changing the temperature or the chemistry of the water, you really affect the lives in the aquarium. In this case, when we affect the life of the sea, we affect ourselves.
- Now we wonder how fresh water can be such an issue. Think of the Earth as the size of football and take all the water off (and this may be surprising but the Pacific Ocean is 18 thousand kilometers across and the average depth is 4 kilometers) you will see that the layer of water is extremely thin and fresh water is only a couple percent of that.



- Looking at all the fresh water on this planet, we now understand how incredibly delicate the system is and how we can impact that system. You have to take that little tiny bit of water which is tinnier than a pinpoint and then sprinkle it around the

planet with precipitation in just the right place and in just the right amount at exactly the right time of the year or society begin to be unstable.

- Marcel Proust said that, “the true voyage of discovery consists not in seeking new lands but in seeing with new eyes.” In this case, with new technology, and the will to go out and collect new information and the technology to observe and share information, we can look at this planet and start to think about it differently.

Open Forum Discussion:



### **On the demand and supply of water**

**Dr David Gallo:**

We take water for granted. We turn the tap and expect fresh water to come out. Reality is, the patterns of water cycle changing. Rapid abrupt changes in weather patterns in the past thousands years and so have caused the collapse of society because they did not know what is coming next. Being able to adapt is very important. From the supply side, we have to prepare to adapt to the changing patterns of rainfall.

**Hj Amer Hishamuddin:**

Brunei is currently quite comfortable in terms of water supply; however we are mindful that the demand will keep rising along with population and industry growth. Our challenge is in preparing for the unpredictable dry seasons. In terms of demand, a survey conducted by the Water Services Department found that demand is expected to increase to 362 million liters a day by 2015, and 421 million liters a day by 2020 in the Brunei-Muara District.

## **On effective instrument for water conservation**

### **Wade Hughes:**

We need them all. Some form of economic instruments so we are aware of the true cost of consumption. We need education and enforcement programs so informed choices can be made, and we need technology. The consumption of resources of the planet has come to the point where the simple methodologies that once solved some of the problems cannot do so today. So we need technology and in-depth science to understand the magnitude of the issues that we need to confront. It's a bit of a combination of every single thing.

## **On how the global water crisis affect Brunei Darussalam**

### **Hj Amer Hishamuddin:**

Brunei has relatively stable rainfalls, low population, low industrial development and the agriculture sector is also relatively below development stage. Most of our water is used for domestic purposes (80 per cent) while only 15 per cent is used by the oil and gas sector. In terms of water resources, we produce about 400 million liters per day but we are actually extracting a total about 650 million liters from our two main rivers in Tutong and Belait. Our source (for taps) of water is from surface water where we are also fortunate that these upper areas are undeveloped and are now part of the Heart of Borneo, where we are able to protect and make sure the water is unpolluted.

The industrial development such as the Sungai Liang Industrial Park that is taking place however demands water. So we have to recess our water supply to meet with the need for industrial development in the future.

## **On how businesses can be a big part of the solution in solving the demand and supply issue of water**

### **Wade Hughes:**

Major industries consume a lot of resources and generate a lot of waste in manufacturing and supplying the products and services that we, as customers, depend on and demand. I think as an industrialist, we are privileged to be given the stewardship of quite a large quantity of resources but with the expectation to manage those resources responsibly. We have access to markets, finance, technology, and expertise so it is incumbent upon us to focus on finding the solutions. But we can't do that alone or in isolation. We need collaborative engagement- business, government, and the community – working together on a foundation based on science and technology.

## **On the value of water**

### **Hj Amer Hishamuddin:**

Water is priceless. In Brunei, water is cheaply priced and we do not charge the citizens for water but rather on the cost of treating and bringing water to the homes. We estimate that it cost us about a dollar (\$1) per cubic meter (1,000 liters) but we only charge 11 cents for domestic use. That's a subsidy of 90 per cent – it's a huge subsidies. But people still do not

use it wisely. Consumption rate here is one of the highest in the world, if not the highest. According to the UN, we only need 15 liters of water per person per day.

## **On the state of the ocean**

### **Dr David Gallo:**

The chemistry of sea water and temperature of the ocean is changing. If you go to the middle of the ocean or the Pacific Ocean and caught a fish, you'll see little micro-bits of plastic in its stomach content and if you examine its flesh, you'll find flame retardant and pesticides. We are coming to a point where we are eating our own garbage. In terms of recovery, the earth is changing its rhythms and cycles that we can't go back. We can do better and hope for the best. It's a matter of recognizing that we have an impact on the environment.

In Brunei, the corals and the ocean cloud is fantastic but there is no wall between Brunei and the rest of the planet. What happens on the other side of the earth has an impact here and changes in the chemistry eventually causing ocean suffocation and turning more acidic which makes life miserable for animals. That's a huge global threat.

### **Wade Hughes:**

If we take a broader look in 2008-09, for the first time in human history, the biomasses pulled from the ocean from fishing did not keep pace with the growth of human population. That tells us that we're pulling out way too much fish, too much life, from the sea every year and that biomass is starting to collapse. But that said, I'm of the view that it's possible if given space, time and proper management and global actions, some parts of the sea can return to something near their natural state. There is a vast amount of natural biological reserve in the sea. If it is given the chance, that reserve does recover.

## **On the sustainability of Brunei's water resource**

### **Hj Amer Hishamuddin:**

Based on our studies and projections, if managed and planned properly, we should not have problems in the future. Our worry is we are using too much for domestic consumption. Our research shows that even if we raise the price to a dollar, the cost of water is actually still very small. Therefore, it is debatable whether tariff would make a big impact on conservation or not.

### **Comments from the Floor:**

- In my research, what I found is that everywhere in the world, the per capital usage of water is high primarily of agriculture and industries – none of which is prominent in Brunei. In the future, as the country diversifies its economy, agriculture is going to gain importance. The half-path to solving water problems is to use technology but this does not encourage conservation. The public needs to know the real value of water - although they think it doesn't cost much, it costs the government so much to bring water to us. We are doing things that are really unnecessary with water.
- I think one of our central challenges is gaps between what we know, what we believe in and our willingness to act on what we know and believe in. Let me

illustrate them: if we did a survey in Brunei as to the importance of water, we have numinous opinions to its importance. If we did a survey in Brunei and probably anywhere else in the world as to the importance of conserving water, we will again have numinous opinions. At a certain level, we have complete consensus. But if we did a survey on whether we should increase the prices of water whether for private use, or industry, there we will have great disagreement so the central challenge seems to be and I am not certain if it's part of the human conditions, is that there is a gap between what people said they believed in and the willingness to act in our belief. I think in that gap lies our central political economic challenge if you like. We need to somehow find a way of getting human beings in their everyday life in the way they conduct their business to behavior in the way that is good for the environment. At this discussion at a general level, you will have complete agreements but when it comes to distributing the cost of delivering our belief, then we have tremendous difficulties. This is the challenge every policy makers, every regulators, anywhere in the world, faces. He or she knows what the right thing to do is but how they translate that into everyday practice is an everyday challenge.

## Session Two: Focused Concurrent Tracks

### Track 1: The Rainforest Factor: Conservation & Sustainable Development

How important is conservation to Brunei's economic development? How can we ensure sustainable environmental stewardship? What role should government, business and each of us play?



Led by:

- **Dyg Hjh Normah Suria Hayati binti Pehin Jawatan Dalam Seri Maharaja Dato Seri Utama (Dr.) Hj Mohd Jamil Al Sufri**, Permanent Secretary, Ministry of Industry and Primary Resources
- **Dr Joseph Charles**, Senior Lecturer, Biology Program, Faculty of Science, University Brunei Darussalam
- **Mr Lim Boon Teck**, Sustainability Manager, HSBC

Moderated by **Mr Danial Norjidi**, Journalist, Borneo Bulletin

#### **Hjh Normah (presentation):**

- It is not very often that you see a city in the forest which we believe is the strength of Brunei. If you look at Google earth, you will understand how our conservation policies actually work – Brunei's area is largely covered by the dark green matter reflecting a pristine forest compared to our neighbours who are in lighter green.
- Brunei supports a variety of forest types owing to our topography and geology. Among them are montane forests above 750 metres, mixed dipterocarp forests over the low lands and lower altitude, heath/kerangas forests on white sands, beach forest, peat swamp forests on waterlogged areas, freshwater swamp forests along the river banks and mangrove forests over the coastal swamps all of which individually have vital roles to the ecosystem.

- According to the study carried out by WWF, forest cover in the Borneo island have undergone rapid deforestation due to various economic activities as well as commercial logging and the conversion to agriculture. In order to conserve the rainforest, the Heart of Borneo Initiative was established to bring the Brunei, Malaysia and Indonesia government together to commit towards conserving and managing the forests sustainably.
- The Heart of Borneo has enormous economic potential as a prime spot for eco-tourism and research. Its plants too can cure some of the world's deadliest diseases hence, the focus of the Ministry of Industry and Primary Resources on the rainforest include bio-prospecting (discovery and commercialisation of product), research and innovation, product development and commercialisation. From Brunei's rainforest, products such as bio-fertilisers, carbon trading and biofuel can be generated for the country's profit.
- There is no point keeping the forest without understanding the value and generating profit and wealth. MIPR's aspiration is for Brunei to be a model country that cares about the environment we conserve.

#### **Dr Joseph Charles:**

- Many of us have this misconception of what a forest is. We think forests are mainly made up of trees but in reality, the forest has a very dynamic ecosystem- we need to look at the whole system including the wild life.
- Any kind of deforestation and disturbance to the natural ecosystem is reactive to the whole system dynamics. In talking about sustainable conservation, we need to first know what the resources are which essentially mean conducting research.
- While the government is one of the most important stakeholders, we should involve other agencies to play a role. For example, in the Heart of Borneo initiative, various research projects have been identified where many are still awaiting fund allocation. This is where the private sector could come in.
- Stakeholders are not only us- but also include those at the grass root level i.e. those at the village level. Making them understand about sustainability is critical. For example, in the Sungai Ingei expedition, we found that working together hand in hand with the village residents- those people who live very close to the land and people who actually use the forest has brought a completely different kind of dimension to our work.

#### **Lim Boon Teck:**

- HSBC has always been concerned in the sustainability of the environment, because sustainability and conservation is crucial for business. The concept is simple; the prosperity of any business depends on the health of the community that incorporates it. To have a healthy community, they need good education, a good healthcare system and most importantly, a healthy and clean environment.
- HSBC launched a US\$ 100 million, five year partnership with 3 international NGOs, WWF, Water Aid and Earthwatch Institute to bring safe water and improved sanitation; tackle water risks in river basins; and raise awareness about the global water challenge. This programme will provide clean water to 1.1 million people and sanitation and hygiene education to 1.9 million people in Bangladesh, India, Nepal, Pakistan, Nigeria and Ghana. Priorities include educating adolescent girls on menstrual hygiene management; providing separate water and sanitation facilities in

schools; and influencing national and local governments to prioritise water and sanitation services.

- One of the projects HSBC has done in China with WWF was to rehabilitate one of the lakes in China which was devastated after years of farming that uses chemical pesticide / fertilizer. The lake was rehabilitated thru introduction of local plant, fishes, organic fertilizer and making sure that the lake is connected to the rivers so that fresh water would flow in pushing out the dirty contaminated water. Within five years, life started to come back to the lake and farmers are able to grow a wider variety of crops, rear ducks, cattle and sheep. The economics of that area actually changed from farming a single crop to multiple products. So this is an example of how conservation of the environment actually helps economic growth in that context.

Open Forum Discussion:

### **On sustainable development in Brunei that will conserve the rainforests**

#### **Hjh Normah:**

The Ministry of Industries and Primary Resources is undergoing a workshop to re visit our mission and statement action plans and redo our action plans and the way forward. Our role is to secure economic diversification and socioeconomic well-being. When we talk about economic diversification, we are looking into Brunei halal to generate wealth from nature. Brunei is also looking at strengthening its Research and Development (R&D) which is nebular for foreign direct investment. We recognize that Brunei lags in terms of R&D compared to other countries so we need to catch-up through working in partnership.

### **On forest conservation and timber import**

#### **Hjh Normah:**

Brunei has a dedicated 30,000 hectares plantation forest to supply the requirement for wood in Brunei where trees are planted and harvested properly using correct techniques.

### **On the development of Pulau Muara Besar and its impact on ecology.**

#### **Hjh Normah:**

In Brunei, every project needs to undergo the environment impact assessment as per the requirement of the Ministry of Development to ensure that all the projects will have minimal impact on the environment.

### **On the role of corporates**

#### **Lim Boon Teck:**

HSBC have strict guideline in place to manage its sustainability risk. In addition to financial assessments companies that apply finance from HSBC will also be subjected to sustainability risk assessment. The guidelines state that HSBC is not to establish relationship with company that does not comply with international standards on environment protection.

## **On the challenge of research**

### **Dr Joseph Charles:**

Research scientists have different perspective all together with passion many of us do not understand. Science researchers need a lot of discipline to do monotonous work and find excitement and passion in their daily work which can run over the years. At the university, we are advocating for local students to take part in the research work which continues to be a challenge.

## Track 2: Towards a Resource-Efficient Brunei

Can Brunei become a resource-efficient nation? What are the fundamentals? What impacts do low carbon buildings and public transportation have?



Led by:

- **Mr Glen Plumbridge**, Director, Sustainable Development Capital Limited (SDCL), Hong Kong
- **Dato Paduka Hj Idris bin Hj Abas**, ProTem President, Brunei Darussalam Green Building Council
- **Dr Hj Supry bin Hj Ag Ladi**, Acting Director, Transport Policy, Ministry of Communications

Moderated by **Mr Stuart Kemp**, Executive Director & CEO, Asia Inc Forum

### **Glen Plumbridge (On Financing):**

- Sustainable Development Capital is a multi-disciplinary financial and investment advisory firm, specializing on financing for environmental and social infrastructure assets and services. Founded in 2007, it has offices in London, Hong Kong and New York. It has advised on the creation of several infrastructure and private equity investment vehicles and funds. It focuses on initiatives that provide long-term value, increased efficiency and superior risk-adjusted returns through scalable business models that positively impact the environment and society.
- SDCL's professionals are drawn from a variety of backgrounds including finance, engineering, environmental markets and law. Together they identify the challenges and opportunities in sustainable investing – and design innovative solutions through a blend of skills. This vision has created a unique working culture through a shared enthusiasm for making a difference.

- The investment Division of SDCL focuses exclusively on the development, implementation and financing of energy/resource efficiency projects. We focus on commercially viable projects with the view to generating significant savings, which are used to cover the capital and finance costs of the project. Provided that energy is valued at market cost it is possible to generate viable projects with simple payback periods of <4 years.
- People tend to view sustainability as costing money but being efficient can generate significant cost savings, making it commercially viable. Take lighting for example. There's an opportunity to replace the light bulb with a bulb that uses 20% of the energy and take that 80% savings and use that to finance the actual purchase of the bulb. A single light bulb is very small and the cost is small but once you aggregate all lighting and cooling opportunities together in single facility you can generate a bigger project at large scale.
- There are a number of hurdles to implementing energy efficiency projects such as access to capital and availability of expertise. We also come across the fact that a number of people battle with the concept of savings having a value and the concept of financing "energy efficiency" capital projects to fix up their existing facilities. Most organisations are geared towards making capital allocations for expansion/growth of the business.
- We were invited to Brunei by the EDPMO a year ago to look at options for assisting Brunei, which is one of the most energy-intensive countries in the world, to achieve their goals of dramatically reducing the energy intensity of Brunei.. The more efficient the system, the greater the savings and the greater the opportunity to acquire a financial solution to help drive change. We are currently working on developing a financing mechanism for Brunei to address the particular requirements of Brunei, with a goal of building an energy efficiency program for Brunei.
- To achieve a lower energy intensity Brunei needs to address two different scenarios. The first being the upgrade of existing buildings, facilities, etc., and the second is ensuring that new buildings are built right the first time.
- We have focused most of our effort on finding solutions to upgrading existing buildings using a "paid from savings" approach.
- For new build there is still a mentality, globally, of making decisions based on initial capital cost rather than looking at the life cycle cost of the system, which is affected by efficiency. The implementation of strict building energy codes will be necessary to ensure that new buildings and infrastructure are built efficiently.

#### **Dato Hj Idris (On Green Building):**

- The Brunei Darussalam Green Building Council is still in the process of legislation. Objectives in forming this council include:
  - To drive Brunei construction industry towards more environmental-friendly buildings.
  - To promote the sustainable facilities for the green environment.
  - To raise environmental awareness among the developers, designers, and builders on project conception designs as well as constructions.
  - To raise environmental awareness among the general public.
- The Ministry of Development has launched their green initiative recently to accelerate the green building development for Brunei and building a road map to promote

green buildings and energy-efficient concepts for Brunei firms. The Ministry has also issued a circular to all the consultants and architects who actually are lobbying for government projects to comply with the guidelines based on Singapore's Green Buildings Guidelines for green mark systems which is also our guidelines for the time being.

- Green Building Council aims to support the government's aspiration for promoting sustainable development and policies.

#### **Dr Hj Supry (On Transport):**

- Brunei is moving towards becoming a resource-efficient nation but this requires efforts in the construction and energy sectors through formulation of regulation and policies as well as establishing international community of energy-efficiency conservation.
- Transport sector is currently one of the largest carbon emitter in Brunei. Therefore, sustainable, efficient and attractive transport system plays a major role in the resource efficiency equation. The small population of Brunei poses a challenge for mass public transportation where private transportation i.e. car dominates 90 per cent of total vehicles.
- The current land and water transportation including public bus, bus services, road taxis, water taxis, speedboats for inland travel totals to about 2.5 to 3.5 million passengers annually for Brunei Muara and there are a total of 21 lines of buses within Brunei Muara Districts. There are about 120,000 to 140,000 passengers per line per year so a simple calculation shows 20 to 29 passengers per line per year.
- In terms of the fundamental subscription to resource-efficiency, it is very difficult to use policies that are acceptable (by all). We need to look at the economic, social and environmental aspects as well. There is a need to do research to understand the levels of pollutants from CO2 emission (from transport sector) to enable us to act accordingly.

Open Forum Discussion:

#### **On the price of hybrid cars**

##### **Dr Hj Supry:**

The Ministry is looking at the cost benefit analysis of hybrid cars and the preliminary finding suggests that it is one of the best solutions for resource efficiency in the Brunei context. Hybrids are priced higher than conventional cars but the prices have gone down to about \$36,000 recently which is an affordable figure for Bruneians.

#### **On why green building costs more than conventional buildings**

##### **Dato Hj Idris:**

The aspect of green building includes material, design of building, energy efficiency goal and et cetera. In terms of cost, it depends on what you are really trying to achieve. The equipments used in the building cost are expensive which contribute to high initial cost but

in the long term, will generate significant cost savings by reducing the need for electricity, water and so on.

For example, in terms of building design- once you get it right, you can minimize heat production in the building which essentially makes the building cooler and lessen the need to use air conditioning therefore in the long run there is cost validation however, it is not under much consideration in Brunei as the cost of energy i.e. electricity is not seen as a critical factor in a green building because the rate is very cheap compared to other countries, therefore the cost savings part is not critical in a sense hence, the perception of higher cost.

#### **Glen Plumbridge:**

The additional cost of energy and water efficient equipment will contribute to a higher initial capital cost but this should not be the barrier. Costs should be evaluated on the basis of life cycle cost of the building. An initial capital cost of 15-20 per cent higher than conventional construction is very high. I can understand the cost of a single component (say air conditioning units) having a higher cost in this sort of range but the air conditioning units are a small part of the overall building construction cost.. As an example, inverter air conditioner units have an initial cost about 30 per cent higher than conventional air conditioners, and no one wants to pay the 30 per cent more but they are more than 50-70 per cent more efficient so the additional capital cost is recovered through savings over time.

#### **On the challenge of mass transportation**

##### **Dr Hj Supry:**

At the moment, we are facilitating the operators by revising the mechanism. One of the major issues with the bus lines is connectivity issues that we are dealing with- not enough bus stops and also how to reduce the travel time, increasing efficiency, and ensuring hot spots have connectivity and so on.

The Ministry is also looking into sustainable policy strategies like getting people to use the bus which is a big challenge. So we are working on putting in the criteria for operators to provide connectivity especially in hotels, commercial areas and in schools.

#### **On solar powered roofs for Brunei**

##### **Dato Hj Idris:**

I think nowadays the cost of solar-panel has gone down hence, making it more affordable. But again for Brunei context, the rate for electricity is rather low and compare to investing in solar energy-panel, it is rather a challenge cost wise.

#### **If Brunei will be resource efficient**

##### **Glen Plumbridge:**

Yes, I do think Brunei will but it's a matter of when. I know that a huge amount of work has been done on this behind the scenes already. Brunei now needs to time and efforts on the implementation of systems/structures and policies to drive resource efficiency.

**Session Three**  
**Keynote Address on “Consumption and Wastage”**



by **Ms Annie Leonard**, Author of “The Story of Stuff” followed by a conversation moderated by **Mr Delwin Keasberry**, Brunei Program Manager, Asia Inc Forum

- Our consumer-focused society may look really good on the surface but if we look into more deeply, there are a lot of problems with how we make, use and throw away stuffs today - alongside that supply chain, there are hidden economic, environmental, social and health problems.
- We have a problem- our population is increasing and for many resources, our per capital use of stuffs is increasing, so we are bumping up against limits. We have one planet and we have to learn how to live within the limits of that one planet. Right now, we are using one and a half planet's resource production and waste assimilation capacity each year. Now, we're heading towards three planets by 2050.
- Another issue is because we regularly use so many different chemicals in our industrial facilities, it comes out as polluting-end product, whether through the workers, the smokestacks, or the product itself. These chemicals build up in the food chain result in everybody carrying a certain level harmful chemicals in our body. Many of these chemicals are linked to various health problems such as cancer, neurological problems, and reproductive problems.
- There are so many solutions on how we can do things differently. There are things like repairing and using our stuffs, reducing packaging, stop using disposable stuffs and sharing more – in US, sharing is called as ‘collaborative consumption’. It is also about designing stuffs to last longer, to be more enduring, and to be more easily repairable.
- Brunei is well-positioned to be a model at how a country can have healthy people, healthy economy and healthy environment. Because you have manageable scale, resources and such creative competent people with a thriving model economy.
  - The first step is to declare zero waste in Brunei. Zero waste is a fascinating new approach of waste and it goes much beyond recycling. It takes active

involvement and cooperation with businesses, government and people. There are three steps towards zero waste:

- The first is composting – simply by composting the organic part of the waste, we can reduce waste by 70 per cent. It is cheap, it provides jobs, it produces soils and it reduces methane.
  - The second is to design waste out of the system – getting rid of non-biodegradable containers like plastic bags and disposable bottles, and replacing them with environmentally-friendly alternatives such as reusable bags and bottles
  - The third step is ensuring there are no incinerators. Incinerators destroy resources that are too valuable to destroy. Incinerators locks society into continuous waste production and are absolutely incompatible with zero waste.
- The second step is protecting people and nature from harmful chemicals and prioritizing chemicals known to cause harm and substituting it with another alternative. There are many innovative, economical ways to reduce chemical use. Brunei might want to do a national Body Burden Testing like Body Burning Testing to see what chemicals are used in the community- just like some countries and this can be done every five years to see which chemical is increasing or decreasing.
  - The third step is nurturing non-consumer values and opportunities. The more we focus on having consumer-oriented society, the more we begin to feel like our primary role in society is that of the consumer. We need to be responsible consumers, students, citizens, educators and parents in every single task that we have. We need to work together for a sustainable, healthy, clean economically thriving Brunei.

### **Conversation followed by Q&A**

**Delwin Keasberry:**

**I like shopping – I like new things, I like shiny, new gadgets and shoes. Every day we are bombarded with message from the media and with our own upbringing, we have this idea embedded in our head that “I have a new job now so I want a new car” – that sort of things. How do you balance out that in your own life?**

**Annie Leonard:**

The one thing to be aware and to remember is that we are bombarded with messages telling us to buy more and more stuffs and we need to think for ourselves and think critically about “is the new stuff making us happy?”, “is it making us more healthy?” “is it making us more fulfilled?”. I am not saying that new stuffs never make us happy but there actually is a break in the relationship. For example, your second pairs of shoes will make you much happy with your forty-second pairs of shoes but if we are not aware of it or paying attention, then eventually more stuffs will undermine our happiness. There’s no one place on that balance for everyone. So what I’m just asking is to be aware. When you want to buy something, really think “is this making the world healthier?”, “is this making me happier?” or am I just stuck on this mindless consumer treadmill?

**Delwin Keasberry:**

**What do you throw away? What I would find in your trash?**

**Annie Leonard:**

I don't really throw very many things because I've been to the dumps so I can visualize where it's going. Once you've been to the dumps, it is so offensive – you will do whatever it takes to keep stuffs out of there. I'm also lucky because in our community, we have the structural support to support prevent throw away so our garbage system is called "pay as you throw" and this is very popular in many parts of the world. I have the smallest garbage can so my bills for the garbage disposal are very cheap.

There's not many stuff in there. I carry my own reusable bags when go to places, I carry my own reusable bottle, I compost everything - I have in my backyard this huge box of worms that composts my kitchen scraps into beautiful fertilizer.

**How do we strive that balance between not buying and also not supporting the economy? Because a lot of people are really depended on people buying stuffs they produce and especially the low-developed countries.**

**Annie Leonard:**

We have the same challenge in the United States - the bulk of our economic activities are based on consumerism. If we stop consumption overnight, we'll have a big problem. What we need to do instead is figure out a transition where we can move our economy from being a consumer-based society to a more productive and more value-add society. It's a physical impossibility that we will be able to continue consuming resources at the rate we are now into the future. Many people asked me if we are going to change but really the question is not that but rather how. You cannot use more than a planet's produce indefinitely. Change is inevitable. Are we going to change by design or are we going to change by disaster?

We need to start planning and figuring out how to build an economy that meets people's needs and lives within the limits of our one planet. While we have the resources in time, let's figure out that transition.

**What is your comment about incineration and open burning?**

**Annie Leonard:**

Open-burning is a huge problem all over the region. But there are a lot of communities that work together to solve it. Again the first thing is to compost and separate the organic from other stuffs. Second is government leadership – we need really good recycling and reuse programs. If you look at the Philippines, they have done fabulous work with their ecological solid waste management laws to implement a number of communities based solutions to waste. As long as you want, there are so many solutions to it. Waste is so solvable -if you have government business on board and the public on board.

## **Why do you think that people still things when they are aware of the problems that are prevailing today?**

**Annie Leonard:**

There's a very interesting concept called the "non-informational barriers to change". In this situation, we need to find out what is the non-informational barrier to change. For example, with recycling, the way most people try to get others to recycle, is to nag them. But you notice the number one factor that increases recycling is when there's a recycling program in the community. So we can go person by person and nag them to change every single daily behavior to be as green as possible. Or we can influence the context and the structures which we live to make it easier to do the right thing.

## **How do I get management buy-in as a business?**

**Annie Leonard:**

Well, we are so lucky because there really are a lot of solutions to make our industries cleaner, greener, more efficient that do save money. A company called Interface Carpet, the largest industrial carpet manufacturer in the world where the carpets are made using gigantic petroleum based toxic chemical – a very filthy company one day decided to be green. The man who ran it, Ray Anderson, implemented some sustainable goals of reducing water use, reducing waste production, reducing hazardous chemical use, reducing energy use resulting to an enormous amount of money saved. Ray Anderson says, "if we can do it, anyone can do it. If anyone can do it, everyone can do it." Businesses like this set very inspiring examples.

## Session Four: Litter-Free Brunei: What does it take?

How can Brunei become a litter-free country? What is the relevance to conservation? What are some innovative business ideas?



Led by:

- **Dr Pang Fung Yin**, Head of the Central Regional Office, Environment Health Department, National Environment Agency, Singapore
- **Mr Gabriel Yong**, Coordinator, Environment and Sustainable Development Research Cluster, Universiti Brunei Darussalam
- **Mr Yusrein Hady Abd Ghani**, Environment Engineer, Total E&P Borneo B.V.

Moderated by **Mr Stuart Lee**, Corporate Manager, Butra HeidelbergCement

Open Forum Discussion:

### Litter in Singapore

#### Dr Pang Fung Yin:

In the Singapore context, litter is unwanted items that end up in public areas, it can be anywhere from as small as a piece of tissue paper to huge bulky item which can have a negative impact on a public area. Over the years, we realize that there are a lot of efforts required not only from the government sector therefore, we have put in place an integrated frame work where we look at the various aspects to address the public cleanliness through Public Private Partnerships.

## **Relevance of litter to conservation**

### **Gabriel Yong:**

Trash is a waste of resource because the products we eat and use are derived from natural resources.

## **On Brunei producing 1.4 kg of waste daily per capita**

### **Yusrein Hady:**

The figure is alarming. If Brunei population doubles, it will cause terrible problems to the environment. Imagine when you're stepping on the patch of grass, once you leave your footprint on the grass it'll need a few days to regenerate. But if you keep on stepping onto the grass repeatedly, eventually the grass will die. So that's what we're doing right now and we need to change the habit. But the good thing is that we know the problem and so we can do as much as possible to address it.

### **Gabriel Yong:**

This goes back to the economic model of mindless consumption which is not an easy thing to tackle. We all like buying things without thinking much about wastage and garbage issues. It is a psychological problem.

On the other side of the coin, the waste management system in Brunei does not fit the current situation. Our current waste management is out of date- involving just collection of rubbish and disposal to the landfill. Recycling is a big part of the integrated waste management which is missing in the system. Moreover, recycling is more than throwing rubbish in color coded bins. What happens after that? We need the proper infrastructure and facilities.

## **The Singapore story**

### **Dr Pang Fung Yin:**

Back in 1960s to 1970s, Singapore was very dirty and had no proper infrastructure for dealing with waste. Singapore improved public cleanliness via five key components.

- Infrastructure including equipment, machinery and technology.
- Ground operations who are the cleaning contractors.
- Legislation and enforcement
- Public education achieved through PPP which is an integral part the equation.
- Monitoring tools including surveys, studies and field observation to continually ensure progress.

## **On the role of corporates**

### **Yusrein Hady:**

In Total we educate and get people to be aware of non-littering and reusing. We embarked on a waste management campaign this year in support of our HSE quality charter where we commit to decreasing our environment foot print by reducing waste and developing treatment for recycling and recoveries solutions. We work with all levels of stakeholders from the staff to cleaners to contractors and waste management recycling company like Daikyo and CICU (for hazardous waste).

Comment from the Floor (Wade Hughes):

Back in the 1980s when I was just a young manager working at the largest aluminum company in Australia, my boss went to the landfill, shook his head and said enough. He closed the landfill where at that point we putting in 38 thousand cubic meters of solid waste every year. We had no clue how to reduce that metal waste but David Judd did. In a space of two and half years we reduced our solid waste to 22 thousand cubic meters a year and during the same time we created the biggest worm farm in Australia. So it can be done with reasonable leadership and will.

**Dr Pang Fung Yin:**

I just would like to share a little bit more details on Singapore context. When it comes to recycling, we often hear question like 'what's in it for me?'. At school level, the National Environment Agency implemented a programme called 'Recycling in School' done as part of the Extra Curriculum Activities (ECA) which we implemented in partnership with various corporate partners who provide the facilities. We view this as a win-win partnership under the 3P framework. For corporates, this can become their 'Corporate Social Responsibility' so this approach can happen in Brunei too.

## **On the role of government**

**Gabriel Yong:**

The private sector and society operate around and within the structure created by the government. If we want to have an innovative waste management, we need to put in place a structure that people will follow. In the meantime, the academics can be part of the picture via research. Research plays an important role so there needs to be more collaboration on this end.

## **On recycling**

**Gabriel Yong:**

In waste management, there are more than 3Rs- there are 7Rs and two of them are re-think and re-engineer. You have to re-engineer policy regulatory structure so that people can come together and say "let's look at this situation and let's see how we can re-structure to make it more efficient".

Taking on the example of Kampong Ayer, based on our research and observation, not all of the rubbishes in the river are from the residents. In this case, animals like cats, dogs and monkeys also contribute to the littering. Moreover, during heavy rain and storm, garbage along the walkways (usually waiting to be picked up by rubbish collectors) tends to fall off

into the river where it later gets deposited on the banks. So we need to look at how we can deal with this problem.

## **On law enforcement**

### **Gabriel Yong:**

Culture is a major factor, but I don't think we need to come down hard on people. We can empower citizens to take ownership to take care of their own environment and then put in place the kind of measures to solve their own problem.

Comment from the floor (Annie Leonard):

In my experience working on garbage in 40 countries, they are two kinds of laws that have had the biggest impact on reducing litter and waste. One is bans or fees on disposable product like plastic bags. Ireland implemented a fee on plastic bags and almost overnight reduced plastic bag use by 80 per cent. The other is called the bottle bill. When you take a bottle from the store, you pay extra small amount of money and if you are done drinking, you can take your money back and if you still litter it someone else will needs the money and will go pick it up and take it back. Bottle bills have proven to be the number one most effective way to reduce litter anywhere and I wonder if there is any potential in Brunei to implement some product to bans a very wasteful product or fees or bottle bill such a proven tool to reduce waste.

## **Conclusion**

### **Gabrial Yong:**

We cannot just look at trash and deal with it but we need to look into the entire system.

### **Yusrein Hady:**

People need to understand that green growth does not mean slowing down growth but doing things more intelligently. We have to ask ourselves "are we really conscious?" How do you really know what you know when you don't even know what knowing is?

### **Dr Pang Fung Yin:**

I do believe that there is hope. We can work together to implement some of the solutions that has been discussed today and put it in a framework that will support sustainable programs weather for Brunei, for Singapore or even every city.

## Future Flash:

### **“The Global Energy Outlook: A World without Oil?”** Mr Yves Grosjean, General Manager, Total E&P Borneo B.V.



- In 2030, fossil energy- oil, coal and gas will still represent 76 per cent of the energy supply. Solar and biofuels are among the fast growing new energies with markets in the early stages of consolidation. Solar energy is expected to grow 17 per cent annually while biofuels will grow at least 5 per cent over the next 20 years.
- This is an era where multiplicity and the complimentary of the energy source is the new game or the new rule. The base of substitution and the respected role is played by each energy source as a function of their economic benefits and now has to be managed through careful economic policies in order to avoid shock and open the way to the future where the fossil fuel will be restricted to the usage.
- Total is positioning itself in solar and biomass which are the two growth segment, recently acquiring the leading position in solar with expected double digits profitability. Total is also positioning through R&D on segments that will experience technology breakthrough especially in the biofuel sector targeting valued creation through integration and innovative partnership and strengthening the group's ability to provide diverse energy solutions.
- Recently Total acquired 60% of SunPower in June 2011 and merged it with Tenesol to become a global player in the solar industry. SunPower has the ability produce silicon cells with 20-24% efficiency compared to conventional monocrystalline cells. Tenesol's well-established channels, manufacturing base and complementary global footprint will help expand SunPower's market reach.
- Total is developing a new service especially tailored to the oil-and-gas producing countries called "Total Integrated Energy Solutions" which aims is to initiate, promote and develop energy consulting activities where the objectives of sharing global long term visions on energy issues with other producer countries, proposing integrated and high technology business solutions - a multi-energy approach.

**On “Education for Sustainable Development”**  
**Mr David Taylor**, Executive Principal, International School Brunei



- The issue of trying to maintain expectations and what we want at the same time to restrict or inhibit exportation is a challenge.
- Teachers are among the most effective group in inspiring and shaping the young minds. In that sense, I came across a worldwide scheme which is primarily for school which is called the “Eco-Schools scheme” and it is basically designed to empower children to make observation and draw action plan and to learn to think for themselves for the children to lead and to discover.
- There is a clear overlap between the targets of government and school in term of saving electricity, water, energy and generally thinking in more sustainable way in developing and implementing policies in the course of time which eventually helps the community.
- In UK, there are 16,000 schools that are part of the eco-school programs and there are three awards for various degrees of commitments to the scheme: Bronze Award, Silver Award and the ultimate Green Flag. To truly develop the mindset of sustainable thinking, the sustainable thinking should not be an ECA, but become a main stream curriculum all the way through the school.
- ISB would become the first eco-school in Southeast Asia to get the Green Flag as it has been an eco-aspiring school for many years now. I hope this project would come to fruition in the next few years and become an iconic school for Brunei in leading the green way forward.

## “Light and Bright: The Future in Aluminum”

Mr Wade Hughes, Director, General Business Development & Public Strategy, Alcoa



- About 75% of all the aluminum ever produced is estimated to still be in use. Aluminum used to be a precious metal that only the rich could afford and it is today it is a commodity and is eminently usable for constructive, sustainable development.
- In material-science lab in the US, Alcoa has developed patented rib lets which are impressed into the metal from which airplanes skins, fuselages, trucks, trains, boats are made where the rib lets are improving fuel-efficiency. The rib lets are self-cleaning and when painted does not cause clogging and dirt through a photocatalytic process.
- Alcoa is applying the technology to all sorts of transportation applications that is driving fuel-efficiency even more than simple substitution of heavy weight materials into those applications. These days, understanding the characteristics of the energy, absorption, stiffness and the refinement of the aluminum alloy can lead to the creation of safer, cleaner and far more fuel-efficient cars than ever before.
- In terms of packaging, bottle-shaped aluminum cans can significantly increase fuel-efficiency benefits in packaging alone. It takes less weight to contain so much coke, peps and whatever. It takes less fuel therefore to transport them. This is an extremely sophisticated design manufacturing technology.
- Alcoa has also recently come up with a smog eating buildings technology called Reynobond which cleans both the building and the air around it by decomposing smog, dirt, diesel fumes and all other pollutants that hover around building surfaces. A decent-sized building has the same oxygen-generating capability of about 80 trees.
- Futuristic gadgets today are possible because of the innovation that has taken place within the aluminum research base. Simply conducting electricity more efficiently, taking huge amounts of waste out of the human generation cycle through new alloys and new innovation.