
This is a raw transcript of the Flagship Urban Solutions session on Biodiverse Cities of the World Cities Summit, held at Marina Bay Sands, Singapore, on 3 July 2012. The panel comprised:

- **Shawn LUM** – MODERATOR
President, Nature Society
 - **Lena CHAN**
Deputy Director, National Biodiversity Centre, National Parks Board of Singapore
 - **Edgar CHUA**
Director, Urbis Pty Ltd, ULI Australia Chairman
 - **LIAK Teng Lit**
Group CEO, Alexandra Health
 - **Peter NEWMAN**
Director & Professor, Curtin University
 - **Lawrence LEONG**
Deputy CEO, National Parks Board, Singapore
 - **Ilmar REEPALU**
Mayor of Malmö, Sweden
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Dr Lum: “Hi, good afternoon everyone. Thank you very much for attending this session. I’m Shawn Lum and I’ll moderate the session. I’ll keep it very quick here. I think it’s unprecedented session that we have in the sense even in previous cities summits you would never have had or expected to see a session on biodiversity so I think hopefully this is a harbinger for even more such initiatives in the future. Our first speaker was to have been the CEO of the National Parks Board, Mr Poon Hong Yuen who unfortunately is delayed and in his place will be the Deputy CEO, Dr Lawrence Leong. So maybe if we could just ask you to deliver the address Dr Leong.”

Dr Leong: “Well, good afternoon, ladies and gentlemen. In the year 2008, the world crossed a significant threshold because for the first time, more people lived in cities than in rural areas. By 2050, more than 70 per cent of the world’s population will be living in urban areas and the number of city dwellers is expected to almost double from 3.3 billion today to 6.4 billion in 2050. Despite occupying only two per cent of the Earth’s surface, cities consumed about 75 per cent of the planet’s natural resources. The ecological footprint of cities impacts on areas vastly beyond that boundaries, contributing significantly to biodiversity laws at the local and global levels. However the growth of cities need not be viewed as a threat to biodiversity. The paradigm is changing and cities increasingly can be seen as part of the solution to global biodiversity laws. The year 2008

also was a watershed year for the global movement on urban biodiversity conservation because at the high level segment of the ninth meeting of the Conference of Parties to the Convention of Biodiversity (CBD), mayors from four cities namely, Bonn, Curitiba, Montreal and Nagoya addressed ministers and high-ranking government officials and presented the Bonn Call for Action in which the mayors reaffirmed their commitment towards conserving urban biodiversity. This was significant in that it was the first time cities spoke at the highest level of United Nations Environmental Convention.

Recognising the potential of cities to contribute to the biodiversity agenda, parties at the 10th meeting of the Conference of Parties of the CBD in October 2010 in Nagoya endorsed a plan of action which encouraged national governments to engage cities and local authorities in national biodiversity conservation strategies. The international framework and support are in place and it is timely for most cities to share and to invest in ideas on conserving urban biodiversity and in so doing fulfil their sustainability objectives. One may ask if biodiversity even exist in cities. Well, based on what we see in Singapore, we dare say that it can. Despite being a dense city, Singapore enjoys a warm tropical climate that makes it a haven for biodiversity. We have a land area of 710 square kilometres in which can be found 2000 species of native vascular plants, 355 species of birds, 282 species of butterflies and 57 mammal species. In fact, one of our four nature reserves, the Bukit Timah Nature Reserve, well, it's 163 hectares in size yet it is home to most species of trees than the whole of United Kingdom. In another of our nature reserve, the Sungei Buloh Wetland Reserve serves as an important site for migratory bird along the East Asia-Australasian flyway.

We also have rich marine biodiversity. Dr Daphne Fautin, a world authority on sea anemones, said that Singapore has more than 50 species of sea anemones which is more than what can be found in the west coast of North America. Well, land is expensive in cities and we in Singapore are fully aware of that. What then do city dwellers stand to gain if some land is set aside for biodiversity conservation instead of for development? Well, biodiversity and greenery are known for their positive impact on health and the ability to mitigate local climate change impacts. They reduce urban heat island effect, they reduce air pollution and storm water runoff and they provide shade and cool ambience temperature. Mangroves along coastlines buffer a city's coast against the increased runoffs from intense storms due to climate change. Enhancing urban greenery also makes economic sense. In New York City, the innovative redevelopment of the High Line has stimulated commercial and residential development in the surrounding areas. City officials have estimated that the development around the High Line will bring US\$400 billion in private investments and US\$900 million in revenues to the city over the next 30 years. But how do we create a biodiverse city? In his book, Biophilic Cities, Professor James Beatley describes a biophilic city as one that is biodiverse, a city full of nature, a place where the normal course of work play and lie, residents feel and experience rich nature. There many ways to enrich biodiversity in an urban area. Well, based on Singapore's experience, we have adopted a long term and integrated approach in our land use planning. We strive to pursue economic vibrancy and at the same time, provide a high quality living environment for residents. It is through careful planning and optimising land use that we are able to increase greenery cover in Singapore from 36 per cent in 1986 to 47 per cent in 2007. This 10 per cent increase over 20 years took place despite that the population grew from 68 per cent, grew from 2.7 million to 4.6 million people during that same 20-year period, which was a 68 per cent growth in population.

Our greening effort started in the 1960s through the foresight and direction of the then Prime Minister, Mr Lee Kuan Yew. Today, we are evolving Singapore from a garden city to a city in a garden. We envision Singaporeans having a home within a garden instead of just having a garden outside a home and this includes enriching biodiversity in our urban areas which we will carry out in three ways. First we will enhance the natural habitats by protecting biodiversity found in our nature reserves and by restoring the created habitats through reforestation projects. Second, we will bring people closer to nature. We plan to develop a nationwide park connector network by 2015 that will span 300 kilometres islandwide. The park connector network will link green spaces and provide a wide spectrum of nature-based recreation for Singaporeans. The different loops within the park connector network will be ideal for spotting events, such as cycling and marathons, and yet at the same time, residents can enjoy unique views of our natural landscapes and experience our rich biodiversity. Because we are land scarce, we believe that a park connector network will actually increase the recreational opportunities for the people that live here. Third, we will bring nature closer to people by reintroducing native species into our urban areas. We have been successful in increasing the number of some native species like dragonflies, butterflies and birds. One good example is that of the oriental pipe hondell. This species was actually locally extinct for more than 100 years but returned on their own due to our efforts to make our environment more conducive to them and today there are hundreds of these bird in Singapore.

In our efforts to infuse biodiversity in our urban environment, NParks also creates platforms to facilitate dialogue between stakeholders from different disciplines to understand one another's perspectives and to work together to develop practical and innovative solutions. It is important for us to take stock and to assess our progress from time to time. We, like several other like-minded cities worldwide, are using the Singapore index on city's biodiversity as a monitoring tool to evaluate our biodiversity conservation effort. Dr Lena Chan, also of NParks, will be talking more about this later. Let me conclude by stating that biodiversity is a key element of the liveability and sustainability of cities. Singapore has shown that urbanisation and biodiversity can coexist. In fact, I would say we can even be mutually reinforcing. This is does not mean that it is easy. It takes planning, hard work and collaboration among city authorities, among businesses and most importantly the entire community to address this multidisciplinary challenge. I hope today's session will generate meaningful discussions on how cities can sustain a model of coexistence between development and urban biodiversity conservation. Thank you."

Mr Lum: "Thank you, Dr Leong. If I may say, I mean, the one constant through the past 25 years of greenery and urban biodiversity accomplishments in Singapore, the one constant has been Dr Leong as the Deputy CEO. So many of the things that you can admire in the city in a garden, thanks to Dr Leong working in conjunction with the CEO and managements of National Parks and Mr Poon, our CEO. I hope you get a chance to meet him during the discussion. Now there have been some incredible people that I have met over the past two days and our session has more than its fair share. The first is our next speaker, His Excellency, Mr Ilmar Reepalu, who is mayor of the City of Malmo, Sweden's third largest city and model for green cities everywhere. It's a real honour to have you here and I would like to invite you to give your speech, Your Excellency."

Mr Reepalu: “Thank you and thank you for giving the possibility also to speak with you here and have a discussion about biodiversity. I’m supposed to show some pictures about the region of Europe but I won’t do that so I will just go on use and reuse some of my old pictures from yesterday but add another discussion to it. This is, so we should know where Malmo is located. We are not in a tropical area. We don’t have all the wonderful birds and the nature that you have here, of course. We are in a sub-Arctic part of all the world and this picture is not a picture about biodiversity. When we have this picture, then in our city we don’t think so much about biodiversity. We don’t think so much about nature. It was more on how we are creating money, in what way we are getting people richer. This was the way it was some 50 years ago. That was the map mindset of the people. And here, here we started to reshape this former shipyard area and when we wanted to do that, we had a discussion. When I told you yesterday about the Rio ’92, that was about climate change but that was also about biodiversity. It was about the forest that’s gone away, the rainforest that has been kept down and when this has been evacuated, this area, we had a lot of birds here. We had the black headed seagulls and all and we said we are going to build houses here and then we said, how can you do that? You are destroying the bird nests so we had a very much discussion how shall we preserve the nature while we are trying to make a sustainable society here. So it started with and then I continue to show here, is there a pointer in this one? Yes, there is one like that.

Look here, here we have the green area out here where that was still nature preserve and when are building this part, it was very important for us to build this green corridor. That green corridor is for the spaces to be able to connect with this part and the part up here. So that was the mindset of it. Look on the biodiversity at the same time as you are creating a society that is sustainable from other points of view. And here you can see the green channel how it looks when it’s coming into here where we try to get the different nature. You see the green canopy that’s coming in between there and in that way, when we look on these roofs, yesterday I told about this from Brazilian point of way, how you prevent the storm water to make flooding but this at the same time, is a perfect area for biodiversity. A 12-year-old child told me about this, I heard when she explained for her fellows, why do we have these green roofs? Oh, here we had grass before and then they put the house on this grass so all the insects and birds didn’t have anywhere to live so they would lift up the grass and put it on the top of the roofs so the insects and birds could survive in that way. That was that girl’s way of looking at this and I think that was wonderful. And of course, water is the source of life and here where we have this storm water, here we have all these sorts of frogs, you have the butterflies, you have the dragonflies, you have all these sorts of insects, just in the centre. And then when we built these houses, we told them the prerequisite to be able to build this house you must keep up to some green points. We bought that from Berlin whether use this green point system. So if you build a house, either you make a pond or you make grass or grass on the roof or the green wall or you make this hives for the birds or things like that. And they have to show that they did that so they came up with many different ways. And importantly is when you’re talking about biodiversity, don’t think about the big parks, the splendid things where we preserve the red-listed animals and birds. But it’s also about the daily life of what’s happening outside my window. That is the understanding of biodiversity. And of course, in these ponds, here you have flounder fish, you have crabs and things like that. We don’t know how they came here because it’s not

contact with the sea but we believe maybe the seagulls or drop something down there so now there's lots of lives inside these ponds also. And of course, the green roofs and the green wall are very important. This is one of the prerequisite when I make masterplan to see what is the *bio-talk* before making the planning, what sort of soil is it, what sort of prerequisite for animal life and birds are there before you're making the plans there? So that is one part before you make the masterplan and of course,, there are also NGOs, those that are counting the birds because they keep up the knowledge about it. You can see they are counting all the birds, how many they save and which parts they found them also and then they put these rings on them and follow them. And then in forests and parks, make this a sort of easy things for the kids to understand what are these special birds feeding on and what's the name of the bird that looks like that and sings like that because the most important is to get the next generation to understand the nature, to feel the wonders of the nature.

And of course, the marine life, you know about 70 per cent of the life on the Earth that is under the sea. Of course, we don't have the corals, fishes and things like you have here or the sea stones but we have quite nice prawns and we have these fishes and things like that and it's very important when the kids go out there and look and see the wonders that are going on at the bottom and they take their parents there and this is sort of open your eyes for the kids there. And this is NGOs that started this so from the city we enhance the NGOs to keep on like that of course. And of course here you have old (inaudible) that is a limestone quarry, one and a half kilometre long, one kilometre wide and 60 metres below sea level down there. This is an (inaudible) and when that was finished some 10 years ago, more, 20 years ago, then we just let the water come in and fill it up so it will become a lake. But no, this has become the cause of very precious part for the nature because here you have spaces that you don't have in other places. And so for instance, we have green dotted toad and a red-listed toad, we have the paragon falcon's nest in there and we have the St Martin's nest and all these, and deers found there and foxes and all these sort of animals there. So we had a discussion with the government to make this a nature reserve there. So today we can go down, people from the city can go there in guided tours to see there, not to disturb the life that is down there but see the wonders what's happening. When you leave that wound open, how nature comes back and what sort of animals, birds take that in position. And for instance when we are making landfills, like we do the same way as you are doing here in Singapore, of course it's very important to see that we also there can enhance the nature, see that you preserve some part of it to make it a better *bio-talk*. For instance, you can see here the crab that is walking there and you can the others walking there. So in that way, we can also see not only to destroy the *bio-talk* but also try to get a new *biotalk* to come back here, to make the society more rich in that ways. And of course, when you're making like that in the nature putting the highway through that, then we make tunnels under, the tunnels that sometimes can just be pipes for snakes to go through or for the hedgehogs to go through. And, we make bridges over that for the animal life to go over from one part to another. Other parts, we lift all the road up to make an (inaudible) where all the nature goes under that to have an understanding when nature has to be connected with each other. And of course, I told you yesterday about this green roofs. On top of these green roofs we have beehives, we have bumblebees and things like that and even on our opera house, we have beehives, lots of beehives up on the top of the roof of the Opera House singing their songs and we think that is wonderful also, of course. You can see that there can be quite rich life on top of the roofs here where we

have trees and bushes like that. And of course, that was mentioned before, in Nagoya, we had the first, I was taking part in Nagoya, representing the European committee of the regions and there we had these negotiations that it's not only a question for the national state. It's also a question on the local and regional authorities. The same as we did in Rio, we are not part of the major groups, women, children, indigenous people, business sector farmers. We are governmental stakeholders. In that way, we must take the responsibility for what we are doing. I'm not going to read this, I've done it already. And the scroll of honour that is also backed by diversity and not only about energy. So thank you very much for your kind attention."

Mr Lum: "I think Your Excellency, you must hold the dual appointment for the Swedish Tourism Association. I think many of us are going. Our next speaker, Professor Peter Newman is one of the leading thinkers on environmental sustainability. He's a professor of Sustainability at the Curtin University in Australia and also holds a visiting professorship at the National University of Singapore. So he's an honorary Singaporean, Prof Newman."

Prof Newman: "Well, it's a great pleasure to be introduced as an honorary Singaporean. It's been a great conference and there's a lot of hard sell going on, quite subtle at times, about how great individual cities are. Well, I'm not going to talk about my city at all. I'm going to talk about Singapore because to me it is the international best practise in biophilic cities. So much of the biodiversity side of things in town planning has been about finding space between buildings or between developments. Try and save as much of the city as you can away from development and here's an example of my city and it's got a lot of green space that's been set aside and that's where the biodiversity happens. You don't worry about the urban development part of it. That's the dark spaces. And this has tended to spread the cities out particularly in America and Australia. We are very good at sprawling our cities and one of the reasons is we want to space for nature and we save a bit of nature in between the developments. And that's fine but there's not a great deal of biodiversity going on in suburbs. It's not actually saving a lot of nature and a lot of cities have spread outside having engulfed and destroyed a lot of nature. This is Los Angeles, this is Perth. You can see little bits of nature left there but the suburbs pretty much devoured it and you get a lot of swimming pools and grass.

So what can we do about high density areas? This is the question now and it's been a focus really of a lot of the attention in this conference. E O Wilson came up with this idea of biophilia, that human beings need nature. We co-evolve with nature so it's not just like it's nice to have nature, we need it. And Tim Beatley, who's a colleague that I work with from the University of Virginia, has written this book called Biophilic Cities. He's actually got a grant from the health sector in the US to look at what is the minimum daily dose of nature that we need, minimum daily dose like a chemical or some particular food. But nature is something we need in our daily life. That means the building not just kept separate from them. So we have a burst of creative activity happening in cities around the world, along these lines. This is one of Patrick Blanc's green walls, one in Paris and the idea has come perhaps we can landscape buildings themselves. We can do green roofs and green walls and green balconies and green edges and in this way is bringing biodiversity to the city but also doing a lot of other things like air-conditioning the city. And in fact, Chicago was one of the first cities take this on because they had a heat wave

and they worked out the urban heat island effect was affecting the city more than climate change and the temperatures were going up quite dramatically so they had to cool the city with air-conditioning. So they now require green roofs and they have 600 green roofs now in Chicago. Toronto has done similar things. This is in London where there is this beautiful wall in Trafalgar Square, green wall. So there's lots of cities beginning this journey and starting to realise that this is a new technology for cities that needs to be adopted.

But I do believe that Singapore is the leading city in this direction. So we came here to make a film about it in January and February this year and this film is 45 minutes long so I'm not going to show it to you but I will show a little bit of it because it's pretty sensational. It costs a whole lot of money, \$10,000, to make so you can imagine it's not Hollywood but it is really exciting to see because the people who were interviewed are incredibly excited about what they are doing. You have one of them speaking here shortly, two of them in fact and the work that National Parks here are doing in demonstrating how you can make nature a part of high density cities is amazing. Now I believe that in future we'll look on that scene and not only can we see that the canopy cover on the ground covers all the streets and so on. You can't see anything much other than trees there but in future you probably won't even be able to see the buildings. That's where we are heading – a city in the garden, in fact, a city in the forest. And you will see examples like this interview with Kelvin Kang (?) who developed a green wall on 136 Cecil Street. Now this is a building that was abandoned basically. It was so poorly designed, they couldn't attract people to lease the office space but after he'd done this wonderful green wall, it's like a cathedral, he then build these walkways out into it, dramatically changed the economics of that building. They now have Facebook and Google in there. You don't get much cooler than that.

So there we have an example of the economics works but it's also the aesthetics that's brilliant. It is just so beautiful and when you get technology that's not just functional but beautiful, you know you're winning something. And the greatest example you can talk about anywhere in the world and people start saying what, they built a hospital on a biophilic principles, KTP Hospital? Well, you'll from the CEO shortly but it is fantastic story and it is demonstrating that you can have a healthier kind of urbanism as well through this biophilic. And on top of it, they have a community garden, they can grow food in these areas as well. Now it's only just starting this. There are 400 or so community gardens growing in Singapore which you don't hear a lot about. Some of them on rooftops like this and maybe we'll get one data doing this but probably not. It will only be a minor part of cities but it's an important part nevertheless. The big question I would like to ask and that we need to constantly debate in this is okay, it's aesthetic and economics and functional and healthy but is it actually improving biodiversity and we need to be able to measure and that's the kind of thing that is very important to do the kind of biodiversity index that Singapore is doing. And I'd like to see that eventually the high density cities can show us how to do it and we can create biophilic cities in places like the low density cities of Australia. This is actually my street. We got a guerrilla gardener who's taken over the street and started doing these gardens that are covering the canopy and it's great to see. It does show what can happen but let show you're the film, just two minutes of it.

Biophillic building, what's that? Biophillic cities according to Tim Beatley in his famous book is about bringing nature into the daily lives of ordinary city dwellers, which means that you have to build it into the way you build the city and that is new because there's a whole lot of new techniques and technologies with green roofs and green walls and green edges and we are trying to find the innovative edge in this area and I think it's Singapore. Now I had to convince Tim Beatley to come with me and I really sold Singapore so he came in for a week, we have to check out a whole lot of case studies, meet a lot of people, do some interviews, it's going to be very intense and we hope to have a sense of whether Singapore really is the biophillic city of the future. We've got a bit of help, some of my students, in fact 35 students from the National University of Singapore who are studying Masters in Urban Design and they're doing a course with me and Tim are going to help us. And this combination we hope will unfold the secrets and mysteries and wonders of Singapore as a biophillic city.

"The ideal thing will not just be a city in the garden but city in the forest and that will be like the aspirational thing that we want to do."

"I was actually inspired by the St Pauls in Notre dame, gothic architecture, with the amount kind of, the grand space that they have."

"Loving plants is the most important thing that everyone has to do because if you don't love plants, that's going to be the end of civilisation."

"I think the most proud aspect of this project is that I'm doing a difference to the patients in creating a healing environment for them."

"Of course, that is the main purpose, I mean, to get people close to nature."

"Terrific week, we've been here in Singapore learning about all the amazing the city has been doing to incorporate nature into its design and planning building and we've had some pretty amazing visits with people and projects that show that even on a very vertical dense city like Singapore, you can have a rich natural world and it happens in lots of different places. It's the ground level reserve, it's the canopy that's all around us here along the streets, multiple layers, it's on the rooftops of very high building and the facades of high buildings. And so here, in Singapore this is one very compelling model for how you can have the urban conditions, the density and also the nature."

Prof Newman: "You can see that yourself. You don't have to buy it. It's on YouTube so if you Google Singapore Biophillic City, you can get to see it. It's in six or seven different parts so you can watch the whole thing and you can add to the growing list of people around the world who are discovering about Singapore's biophillic city and thank you very much to National Parks for all their help in this."

Dr Lum: "I was mistaken, Prof Newman, when I said you're an honorary Singaporean. I think with that film you'll be granted citizenship soon. I've a lump in my throat, really. Our next speaker, Mr Edgar Chua, has been the chairman of the Shell Group of Companies in the Philippines since 2003. A man of many accolades and accomplishment so it gives me great pleasure to introduce Mr Chua to all of you."

Mr Chua: "Thank you and good afternoon ladies and gentlemen. I'm here to present the perspective of biodiversity and sustainable development from a global company's point of view. Shell is a global energy company with around 90,000 employees in more than 80

countries and we in Shell believe that the energy challenge facing the world is formidable. How to deliver more energy, how to keep supply secure and at the same time, reduce energy's environmental and social impacts. Our commitment to contribute towards sustainable development requires us to balance short and long term interests and to integrate economic, environmental and social considerations into our business decision making. Today I'll present to you how business and biodiversity are linked and how promoting and protecting biodiversity is a core value in Shell. I'll present how we contribute to sustainable development by both delivering benefits and reducing our impacts. Lastly, I'll present how biodiversities can happen and should happen through shared responsibilities. Biodiversity and sustainability cities should not just be the work of one but the joint efforts of many, including the business sector.

Shell's business actually covers the so-called upstream sector and the downstream sector and in upstream, we search for, recover and produce crude oil and natural gas. We also convert the natural gas into liquids by chemical means to yield cleaner burning fuels. And in downstream, we refine the oil and gas and sell a range of petroleum based products for domestic, industrial and transport use. We also develop biofuels and hydrogen and market the synthetic gas to liquid products. Sustainable development has been ingrained in how we do business. In fact, it has been imbedded in our business principals since 1997 and you can see here excerpts from that business principle. In practise, we contribute to sustainable development by delivering benefits through our products and services and by reducing the impacts of our operations. So you can see here that we offer products which will as we said deliver benefits and higher better fuel efficiency, cleaner fuel and sustainable mobility but at the same time, it starts in our operations by making sure that first of all from a health and safety point of view, we have what we called Goal Zero and we also practice product stewardship and at the same time, we measure all these things which as far as we're concerned are important in terms of sustainable development.

Liveable cities, issues and dilemmas – striking the right balance between economic developments in biodiversity conversation remains a key sustainability challenge. Action is urgently needed to reverse the trend of biodiversity laws and this requires work not just from governments. Beyond policies and regulations that require business and consumers to reduce their environmental footprint, what is needed is to find ways to establish a stronger business case for biodiversity conservation. A public-private partnership has therefore become an imperative. It is key to identify new opportunities and mechanisms that can mobilise a broad coalition of businesses, technical experts and other stakeholders around a shared vision of market based or business oriented approaches to biodiversity conservation. Shell's long term energy scenarios show that global energy demand is expected to double or even triple by the year 2030 and a significant portion of this demand is expected to be met with oil and gas. Oil and gas activities are therefore likely to grow over the next few decades with continued risk of impacting biodiversity. Protecting biodiversity is therefore crucial to the future of our operations. In addition to legal and inventory incentives, there are strategic operational, reputational and financial reasons for Shell to focus on biodiversity. Employees and contractors simply appreciate employers who aspired to high environmental standards that in turn reflect their own values. Employees want to work for companies that care. By being seen and being credible as a good corporate citizen whose performance matches its words, we become the organisation of first choice for customers, staff, investors, suppliers

and partners in the communities in which we operate. Financial institutions, investment banks and expert credit agencies are beginning to integrate biodiversity elements into conditions for lending to large infrastructure development such as oil and gas projects. They are changing the way they assess company's performance accordingly. In May 2000, we became the first energy company to publish a biodiversity standard which provides Shell companies with an overall management framework and direction in biodiversity. This biodiversity standard spell out our commitment to work with others to maintain our eco systems which have been put in place. Business investments in support of biodiversity come in different forms, which might include direct financial contributions to protected area management, support for scientific research or government capacity building which have been proven to be particularly valuable, especially in cities where capacities and resources for protecting their environment are limited. Shell currently has around 100 biodiversity-related projects worldwide ranging from conservation, science and environmental education to capacity building and communication projects. Shell has worked closely with governments, NGOs and other stakeholders to identify and implement effective programmes and strategies towards biodiversity conservation and in particular, in promoting sustainability of cities.

Let me give you some example of this project and these examples come from the Philippines where I come from and the first is actually the Malampaya depot gas project and Malampaya Gas actually supplies 30 per cent of the Philippines electricity requirements. Through our efforts with the Malampaya joint venture partners, we help development sustainable cities through numerous community development projects in a number of provinces like Batangas, Mindoro and Palawan in the Philippines. One such project is the *Sanayan sa Kakayahang*. This is actually a training out of school youths on new farming technologies and organic farming methods while emphasising that farming is a viable business enterprise if properly managed. To date, over 1000 beneficiaries have benefitted from this programme. What's important is we convince people in the rural areas they do not have to go to the cities to earn a living. We see this as supply management. Now while on one hand we are looking at how we can keep people in the provinces or in the rural areas, on the other, we have also tackled, I'll give you an example how we have tackled urban decay. In here, we have actually supported the Pasig River rehabilitation programme, a multi-sectoral initiative spearheaded by an environmental NGO with various cities in Metro Manila. Pasig River actually snakes through a number of cities and municipalities in Manila and one can compare it to the River Thames in London. The problem there is the river is so polluted and you see here, this is an example one of the canals, they called it the *stereo*, that leaks or actually put water into the river. And here you can see there have been a lot of informal settlers. This is an example where there's so much garbage, water can hardly flow. This is the before and the present and again it's a combination of informal settlers, very bad solid waste management and this contributes to pollution, environment degradation and the what has happened is we have worked with a number of NGOs to, one actually clean the river, two, relocate settlers there. And this is the building, behind it is a school and you can see that on the other side of the fence of the school are houses that were built. We have since relocated these people and communities there and we have planted trees and plants on the river banks and also most of the things that have been planted are actually weed banks because they are also good in filtering the pollution. So hopefully this is just one of several canals that needs to be cleaned up to ensure that the river really gets back to the its original pristine,

now you can never even call it pristine. You see the river, people were telling me those in their 80s that they used to swim in the river with lots of life. Now about 10 years ago, the river has been so polluted that if you swim there you'll get sick. But we now see slowly the start of life coming back. We see some fishes coming back into the river but still a lot needs to be done.

Now that's the river but as I mentioned earlier, a large part of this because the informal settlers have started moving in and living in these river bank. We have actually partnered with an NGOs called Gawad Kalinga on a number of development projects in the Philippines and this one is about building homes. It's similar to habitat but in this case, the equity of the recipients is a sweat equity. They are the poorest of the poor, they cannot pay back any loan so what happens is that they contribute their labour, that's their equity and here you can see some of our staff helping build homes for them. What this does is this builds pride in people who never own homes and also it brings back the faith in their fellow man because they see a lot of people helping whom they don't really know. And one part is providing homes but the other one is actually in providing livelihood. It's one thing to have a home and after a few weeks, I think the euphoria will diminish and reality sets in because you need food. So what we have done is we have actually supported livelihood programmes one of which specially fits in the rural areas. We normally relocate the residents to back where they came from and this is where actually we provide them with livelihood because they, many of them move to the city because there is livelihood and t the same time, also because they are victims of natural calamities, landslides, flooding, part of which were because of environmental degradation. So we have partnered with Gawad Kalinga in a programme aimed to eradicate hunger in the Philippines. It's a very lofty aspiration but the idea here is to be, to support the food sustenance programme with the establishment of what we called Bayan Anihan sites or community harvest in villages all over the country. In the Philippines, there are four million household or 20 millions at present who are suffering from what we called involuntary hunger. Fortunately, as of when we launched the programme in March 2009, it has already reaped the total of 60 metric tons in the first harvest alone and this continues to grow. The programme aims not only to provide Filipinos a long term food source but to restore human dignity as it liberates an individual from reliance to self-sufficiency.

So lastly, I'd like to say partnership is a joint action. By working with others, Shell is able to address hopes and concerns related to our business operation as well bring benefits to the environment and society. We are truly delighted that we will make part of the discussion in the World Cities Summit where businesses such as ourselves have the opportunity a shared vision and draw a route map of the future with government leaders and other industry experts and define sustainability challenges. More importantly the summit and similar types of collaborative action enable us to define the opportunities, share innovative approaches and forge important partnerships towards our common aims of supporting the growing population and allowing us to live well in our cities in the coming years. Thank you very much and (55:30) thank you."

Mr Lum: "Thank you Mr Chua. Our next speaker, well chief executive officers don't get any greener than our next speaker, Mr Liak Teng Lit who is the CEO of Alexandra Health.

He's right up here, a straight-talking biodiversity loving, always immersed in community activities and it's a great honour for me to introduce you Mr Liak."

Mr Liak: "Good afternoon everybody. We were asked by the former Minister for Health to go and build a hospital and the main tag is make is patient-centred. But he forgot to tell me not to do something else. We shifted from the old hospital, which had a very nice big compound, Alexandra Hospital, up to the north there. We were very fortunate, URA gave us quite a few plots of land to choose from and this beautiful piece of land was just waiting there for us to grab. And we chose it because the train station is nearby but also mostly because there is a very nice storm pond right in front of the hospital. That pond doesn't belong to us but we saw some potential in that pond so that was why we chose this site to build that hospital. When we started work, it was just bare ground. There were three species of butterflies there and nothing else. These are the specs that we gave the architect when we were planning this hospital. This hospital of course is located right in the middle of a matured housing estate and right from the beginning we wanted to build a building that doesn't overwhelm the neighbourhood. It becomes part of neighbourhood and this was just the specs. And we wanted tropical design because Singapore is hot and humid. We also projected that the energy costs will go up quite a lot in the future so therefore we wanted it to be energy efficient. So a lot of the things that we did was one to build a hospital to take care of patients, two, to make sure that when we operate it, it doesn't cost too much and it's comfortable for the patient.

Our philosophy was actually to add to the neighbourhood, to become part of the neighbourhood and instead of becoming the obstacle to other neighbours and also in terms of nation too, we wanted to be a part of it and add to it rather than subtract it. Because I want to show you a lot of slides on greenery, I thought I have to remind you that we are first and foremost a hospital and this is a very high-tech hospital and we all sorts of technology and all sorts of things in there that take care of very critically ill patient and we save lives. These are just some of our facilities and note that most of our windows have brought down almost to the floor level so that the patient lying on the bed could see outside and almost every patient, whether in the waiting area or on the bed, they will see greenery outside. So if you look the window and most of them, you see some greenery out there. And of course, the reminder again, this place is oozing out of our ears with technology and a lot of stainless steel stuff. But having added all those things, we wrap it up to make it as comfortable as possible for our patients and staff and of course, also take care of nature.

So this is the end product. This is the entrance of the hospital. Right next to it is a nice big pond and throughout the whole project we have water flowing through it and we planted lots of plants as there's a stream flowing right through from hospital level one to basement one and then to level one again. And the balcony planting is about 1.4 kilometres long and we had a green replacement ratio of more than four, meaning for every square metres of land that we took away, we actually add more than four square metres of greenery because of all the vertical planting on the balconies and on the roof. Right from the beginning, we involved our staff a great deal because we wanted them to plant because when they plant, they have a sense of ownership. So they were planting not just inside the hospital but around the neighbourhood and we plant lots and lots of jungle trees because the jungle trees will grow to 30 metres high so we thought that one day the whole neighbourhood and our hospitals will be totally shaded from the hot sun so that was our intention. We were very fortunate. Lots of people came in and join us, including

NParks staff who spends his spare time coming to the hospital to help us with the support of their boss actually. And we have nature lovers, we have architects and we have all sorts of people coming in. These two volunteers helped us design the pond system and after that they spent thousands of dollars of their own money to put in the fishes into this pond.

About two years before we completed the project, we found a group of residents pottering around nearby and they were very proud of their vegetable plot. Unfortunately they were going to be evicted because the land will be redeveloped and basically out of friendship, we offered them some space on top of the roof of the hospital and say why don't you come and do it. We were actually a little bit worried because we were worried that it will be untidy and then the insects and all that kind of stuff but to our great surprise, after they have done that, when we asked our patients, they love it because they say they are bored to death lying around on the bed and they're looking out on the roof and seeing people pottering around was great stuff. So this thing has turned out to be very good and we now have 140 fruit trees on the roof and we produce lots and lots of vegetables up there. We don't eat all the fruits, lots of birds are going up there to share the fruits with us and it's now very likely up on the roof, not with human beings but with birds as well. And these are just some of the fruits that are bearing fruit on the rooftop now.

We were very fortunate. Our friends at NParks, URA, PUB, they were very open about helping us and working together with us. Remember the storm pond in front of us? It used to be quite ugly and it was very bare. You can see all the granites on the site and you can see all the granite walls. Well, after all the discussion, we managed to get all the government agencies to put their budget together with us and we call for one single tender and that creates totally seamless park. So this is what happens now and you can see that HDB has got a nice tower to go into the park and PUB has planted all the plants, including floating islands and all, and it's now attracting the wildlife and everything around the area. One round is one kilometre long so it's now an exercise park as well. The whole project now, including the hospital has become a public park for the neighbourhood. And this is a typical scene everyday, you have students from the neighbourhood coming around to the hospital to study here and you find parents bringing in their children to go and enjoy the park and look at the fishes and all that kinds of stuff. But aside from people, this project is also a conservation project. We planted largely indigenous plants with lots of jungle trees and we wanted to bring in 100 species of butterflies. We wanted 100 species of birds to be around there and also we wanted 100 species of fishes to be there. And we have a lot of people helping us to get, create the right environment to bring them in and we count them. So the butterfly interest group that actually come in and audit. We are still a little bit away from 100 species but we have now hit about 36 species of butterflies. We are fairly confident is about a year or two we probably would hit 100 species. The fish, we now have got about 96 species and so we're close to 100 species of fishes. More than half of them are actually endangered and with the help of a lot of people we managed to gather some of these endangered species and some of them are actually breeding very successfully and we are offering it any who wants to concert it in their project, we can share them because then they can multiple somewhere else and the birds are also coming in into that area. Dragonflies are lovely but they are also very ferocious carnivore. Apparently, a dragonfly can eat about 100

mosquitoes a day so this is our biological air force so it helps us eliminate the mosquitoes and we do something very simple. We have pots of water like that, we plant water plants and we put two or three fishes inside and then that's where we're breeding the dragonflies as well. Now the dragonflies and (1:04:09) flies are now coming into the compound. So this is what we more or less have tried to achieve. It's to eventually become a hospital within a tropical rainforest which I define as not more than two percent of the sunlight managed to hit the ground. It will take us a few years before the trees are matured enough to cover it up but I think we are increasingly seeing that happening in the hospital.

The quickest success factor is our mindset. Some people have a scarcity mindset. When you ask them to do something, this is their reaction – this is such a difficult thing, such a big thing; we have so little resources, so few people, it can't be done so they don't do much. The opposite of scarcity is abundance. When you ask people with abundance mindset to do something, this is their reaction – wow, this is a beautiful thing, the small part, the small little circle and I'm sure we can find lots of people out there who will love to do this with us. The people with abundance mindset soon gather a whole bunch of people to do the thing and I like to think that this project was successful because we had a lot of people with abundance mindset coming together to say let's do it. The second thing is, there are people who can only look a pile of shit and they worry and they worry. Every time they do something the worry about everything that can possibly go wrong. The opposite of that is people who see fertilisers and they look at everything and say whatever it is, I'm sure we can turn it around and do something good with it. And again I like to think that this project is reasonably successful because there are lots of people who saw shit as fertiliser and turn whatever that was bad into something that is good and we are now enjoying it. Thank you.”

Mr Lum: “Thank you, Mr Liak. Our final speaker is Director of Singapore's National Biodiversity Centre, Lena Chan and she has been with the National Parks Board for most of my duration as a rainforest ecologist. So for the past 20 years, I've been getting my research permits through Lena and so I better be nice to you Lena. So it gives me great pleasure to introduce Dr Lena Chan who also sits on the technical task force for the Singapore Index, which is part of the conventional biodiversity so please share your insights with us Lena, looking forward to the talk.”

Ms Chan: “Thanks Shawn. He added five more years to my life with NParks. All of the speakers here actually challenged traditions so today we challenged tradition. So instead of ladies first, it's ladies last but jokes aside. The reasons why I'm last is because all the speakers had such wonderful experiences of what they are doing to biodiversity and so the key thing in my role here is to say how do you measure, how do we evaluate what you are doing. Are you doing what you are supposed to do? Is it giving you the results you have? So just quick reminder, Rio+20 just ended on June 22. It seemed like just yesterday that we actually negotiated the text for the 2010 biodiversity targets which need to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level. Even before 20, somebody done the work for me, good, even more 2010 the assessment was that nations would not meet that target. But it was obvious that there were different trends set by cities because as you heard all those wonderful stories, wonderful things, not only today but yesterday, that cities were doing so much on sustainability greenery and biodiversity conservation.

There is this junk there, what is it? Why? And European cities are all vying to be the biodiversity capital, American cities want to be biophilic so we felt that the only way to try and resolve this discrepancy was to actually find a way of actually measuring it quantitatively the status of biodiversity and we search around for two and we couldn't in 2008. All we could find was World Economic Forum Environmental Sustainability and Performance Indexes but these were for countries but not for cities. And therefore, Singapore being very pragmatic initiated this development of an evaluation tool for cities to actually monitor and evaluate the biodiversity conservation. Just quick scroll on some of the landmark developments. So 2008 we actually announced that we were going to, Singapore was going to help and that was in called Conference of the Parties of Six meeting and 2009, we held the first technical workshop. And there what happened is that the meeting actually drew up a framework and selected indicators. The key thing was that we felt that there were many people who couldn't attend the workshop and therefore we develop or wrote a user's manual and that user's manual is like an idiot's guide to the CBI. And what was important was that in this project or in this initiative the key thing was that there was sharing, sharing of experience, very important. Then at the second expert workshop in 2010, the indicators were refined and again the next important thing in this initiative was that the engagement of cities, cities were empowered, they then came back to us and say what were the things that were right or wrong with the indicators and so we then fine-tuned it.

In 2010 at Cop 10, as Dr Leong had mentioned, there was a landmark decision and this was the first time and I think other people had mentioned that 2010 was crucial because it was the first time that the CBD recognised the role of cities and again now in Rio 20, sustainable cities is a major issue in the Rio+20 document. In the third workshop last year, we finalised the indicators and interestingly enough at the same time, Professor Tim Beatley wrote his biophilic book and by the time I read chapter three and I saw his indicators, I thought my goodness, his indicators were so similar to what we were doing and there was definitely synergy in things that we're doing around the world, that cities were coming to the fore. As of June 15, 2010, more than 50 cities are in various stages of actually applying the Singapore index. Cities have actually called us up and said well, we can't do all the indicators, we don't have data for any data, can we still join in this project. And we said of course because each of us are going at a different phase and while they have data, the fact that these indicators show the importance of what is needed for biodiversity conservation, they can then start collecting data that are relevant. And does this work, can this work? And it does because more than 30 cities have actually tested it and they have shown that all the indicators are relevant and you can get data for it. So it's not something that's really difficult.

This map shows the spread of the different cities that have actually test-bedded the index and it's obvious that there are geographical gaps but we hope that amongst the audience here, there will cities who will come up to us and say that, yes, we would like to partake in this initiative. For the benefit of those who are not familiar with the Singapore index, I'll just give a brief introduction to the structure and indicators. I'm just trying to use the pointer here, never mind. So there are two parts to the index. The first part is the profile of the city, thank you, the first is the profile of the city and here it gives a snapshot of where the city is, where it's situated, how big is it, small or big cities located in the temperate or tropical part of the world. The second part is actually the quantitative part and we were quite adamant that we should actually have quantitative figures because when we're at the first workshop, people were saying that we should use the traffic light

system and we felt that the traffic light system, well, I think we're doing better or I think, I feel we are doing worse. We felt that to be scientifically credible, we wanted quantitative data which is the reason why we have a scoring system for indicators from zero to four. The three components of the index are first the question is what biodiversity do you have, native biodiversity in the city and we have 10 indicators. And the second is if you have biodiversity in the city, what eco system services do they provide and we have four indicators. And third, if you have good biodiversity in the city and they provide eco system services, what are you doing about it, which are the governance and management of biodiversity in the city.

So very quickly I'm going to highlight some of the indicators for example for native biodiversity in the city, I'm going to just bring in indicator one measure the natural areas in the city and natural areas are the ones who harbour most biodiversity and that's the reason why we want to measure it. Now, again one of the key principles in this, when we selected the indicators, was that we didn't want to measure things that were beyond our control like how many extinct species you have simply because it was beyond our control. So what we wanted to do was to take a positive step that is to measure the change in number of natural species, which means that you have a positive slant to it. What are going to actually reintroduce extinct species? What are you actually doing to improve the biodiversity status? Are you doing more surveys like in Singapore? We actually found 150 new species of flies. Yes, they are not just for swapping but it's quite amazing that you've new species of flies to science. So there is lots of biodiversity here but you need to go and survey. The next group of indicators are actually eco system services and I'm going to just highlight one of them and that is the indicator 12 which actually measures canopy cover because if you've got good canopy cover, what you do is basically you have all the advantages of trees, carbon, it helps to reduce your temperature, it absorbs your particulate, health settle particulate solutions so quite a range of good things. So we, that was the reasons why we selected indicator 12 as canopy cover. And the third set of indicators are actually governance and management of biodiversity and one of the important ones is actually institutional capacity because you can't actually try and do biodiversity conservation without the appropriate institutional set up and the other thing is actually partnership and participation. I can see Shawn getting a bit nervous there. Okay, time, next.

So the three versions of the user's manual were developed and all the time we are mindful that we want useful friendly calculations, scientific credibility and consultative refinement. And quick results because we just got the cities to come back to us on June 15. What we found is that most cities could provide the following data which are basically mostly the ones on native biodiversity. So what is sadly lacking are actually on eco system services. So again doing this gives us a diagnostic tool on what are the information we really lack and what is it that we want to measure. Now I'll just quickly quote to you two, okay just one more thing. The thing is that originally, sorry, some of the things that we have is the latest progress is that the users has been translated into German, French and Japanese and I think it's in the process of being translated in Portuguese and Chinese so it's really spreading and more and more cities want to partake and so they want it translated. And we found that it used to be just city officials doing it but now we have graduate students, we have NGOs, all contributing data. So city officials, you are not alone because there are lots of people out there to help you. Okay, two quotes from people who have used the index. Ms Mahtet Grecel (?) said that for the past 20 years, she's from Brussels, we have been looking into biodiversity so we have a lot of data

on it. But it showed it lacked precise data on how many programmes and visits to nature areas that we have which is part of the ecosystem component. So what she's doing now is to collect mu more of that data. And Mr Grant Persel (?) from Edmonton said he attributed Edmonton and Montreal's perfect score of 10 biodiversity monitoring in the Corporate Knights study on good sustainability practises in Canadian cities through their participate in the Singapore Index. We hope that more cities will join us in the journey towards becoming a biophillic city so that our quality of life and health will improve with development. Thank you."

Mr Lum: "Thank you. Lena, may I ask you to stay up here and may I invite our previous speakers Mayor Ilmar Reepulu who's going to do a high jump up here, Professor Peter Newman, Mr Edgar Chua, Mr Liak. We have 15 minutes for question and answer. So far there's been a couple of question on the Pigeonhole but we'll more than happy to take questions from the audience. So if you got a question, please make your way to the microphone so we do have a question."

Question: "(inaudible) a programme sponsored by Child Foundation and I really congratulate the whole panel because it has been an eye opener and really interesting approach. We'll be helpful and probably work with some of you on the spreading of the Singapore Index but mostly the Singapore experience. For the colleague in Shell, it's interesting to see these business perspectives and these business perspectives may mean that the cost of doing business is higher and in a competitive environment and competing with other global companies that are in the same field. How is it special to have this approach and still keep the bottom line?"

Mr Chua: "Thank you. Actually, we see this as an investment and we see that this investment pays for itself because if you are seen as a good neighbour, if you're seen that you're following all the regulations policies and even more, just on project execution, the delays that can happen, significant, and the cost per day for delay is huge. So if only for that we believe that investing in biodiversity in sustainable development is well worth it. As I mentioned earlier, the other benefits are in the aspect of attracting talent. All companies, we have, we say that we have various assets in the companies. You can have a manufacturing facilities, you can have a network of retailers but at the end of the day, it's really about the people you attract in the company, the people that you retain. And we have seen how important this is especially to the young people now that a company seen as a responsible company so we're able to attract very, very good talent. It helps in the reputation. People would like to be associated with good company so we really see that it's an investment which gives a very good return."

Mr Lum: "Thank you. Let's to one of the pigeon hole question and then we'll take a question from the audience. The question is can you put a price to eco system services and biodiversity that makes it competitive or is it something that has to be a public policy issue? Mayor?"

Mr Reepalu: "First of all, today we are just normally measuring the GDP and with the GDP, we believe that we are measuring the success for a better world. And everybody knows that GDP is not enough. GDP just measures commercial sources we're using and GDP don't take any account of natural services, natural capital. Today we don't have any

way to measure that. We know that for instance we have problem with fishery. When we are over-fishing areas, we can see that we are taking out so much fishes so they can't come back and we can of course calculate what will happen with the people that are reliant on having that fishes. For instance in West Africa where the big ships from Portugal and other parts of Europe are taking away almost all the fishes there. There we have today negotiations on how to handle that of course. That's of course you could put money on it but you haven't reached that level today. We haven't told you about how we make bridge with Malmö, Copenhagen. We made a wind generated power offshore. When we build that bridge, we are very much anxious what will happen in the marine (inaudible) while we are building that bridge. Are we going to destroy the marine (inaudible) by putting that bridge down there? So we calculated what's happened with the marine life and what we note is that enhance has been much better than it ever been before. Lots of mussels are growing on the bridge. Where we put the wind park, there was shallow water where lots of fishermen like to put the nets out and take the fish. Now they can't do that anymore. That's an excellent breeding park for cods today so the best way to see that you can enhance the fishes for breeding when you're doing like that. That is done without purpose. But if you do with purpose, of course, you can do much more and much better. So I think we are just in the starting point but we are trying to calculate the value of the natural capital and how much you can take out from these eco services and what the value of them is."

Prof Newman: "I'll just add a quick thing. The question asked is there a benefit cost ratio that you can do that shows nature actually would be better left there rather building a city and I think that's a false economy because you won't actually be able to show a benefit cost ratio that says leave it alone. But if you do city design that incorporates this biophillic into it, then you can have a better benefit cost ratio which includes nature in a new way. The difference is either you have an anti-urban approach or a pro-urban approach. If it's anti-urban I don't think we're going to win on biodiversity because the cities are going to keep growing. They are providing the opportunities that people are flocking to around the world and we have tended to think, oh it's going to ruin nature. Well, maybe if we keep doing the way we have been but now we have an opportunity with this new technologies and new approaches to actually incorporate nature in the city itself and increase biodiversity. There are opportunities of making a city a regenerative force for nature. That's the new thing that's happening now."

Ms Chan: "Just two quick points here. One, there, we have not measured eco system services because we are just not aware of it because like for example hospital and you are put on the oxygen tank, you pay a lot of money for the oxygen. But we breathe in and out oxygen all the time and we take for granted it's the trees that actually provide the oxygen and we don't pay a single cent for it. So these are the eco system services that we have discounted because it's not put into the monetary system or economic system. The other thing is, the second point is there is actually a big project called TEEB, the economics of eco system and biodiversity services and biodiversity and that actually tries to address some of these externalities and things that we have not included into our GDP and our economic systems yeah, thanks."

Mr Lum: "I think Mayor Reepalu has something to add to this too."

Mr Reepalu: “Yes, even if we don’t pay for the ecosystem, service is like that, we still do it in the other way. We have the polluters pay principle so we can start and say how much are the polluters paying? Is that the damage they are doing to the nature? That we can start with calculating from that way and I should like to ask the percentage from Shell, for instance. When you’re using the (1:28:38) for instance with all these (inaudible) how are you calculating the polluters pay principle in that way?”

Mr Lum: “I think there is a question. Yes, I think we can one from the audience.”

Question: “I’m Kelvin. I’m asking the question from the point of view of an architect and also community participant in gardening. I notice there is a few patterns. One is that we try to integrate nature into the city and new buildings. From a very infrastructure point of view, we design to make sure there’s public space, biodiversity and greenery in buildings. That’s one way we’ve seen it done. The other way is to have some ownership in hospital. We have community participating in making farms and gardens et cetera because it gives them a sense of ownership. That’s important too. And then of course there’s a benefit of the inhabitant, be it a patient hospital looking at the greenery and feeling better or this potential for a minimum consumption of nature in everyday basis. But I seem to sense that there’s very much of a top-down approach where it’s either provided by the state or the designer or there is a passive on the consumer of nature approach. So given that cities going to continue being high density and possibly high rise, how should we bridge the gap that we would really allow for the individual as a garden or as a household to participate in creating this greenery instead of being very passive and enjoying it? Would there be a difference in outcome or in the sustainability of this approach? Thank you.”

Prof Newman: “Let me just add something and I think our hospital CEO may be able to add but I think that is a different approach to public policy in general that you’re raising and every time if it’s done, it is a better result. I’ve never seen one where it doesn’t actually work this deliberative process that engages community earlier on and enables them to have a say at every stage of the development. I am totally convinced that that works and can work in this case. We are developing biophilic process in Australia and it’s very much a bottom up process at the moment. We’ve got a lot of community gardeners who are keen to be part of it but we also got small businesses creating new ways of doing it in an Australian kind of way. We’ve got milk crates that are being piled together with plants in them and you can just build up a wall out of nothing and just put it there and it will work. Now this came from a young guy who was a gardener who said I think I think I can do this at very much less cost than the top-down way you’re suggesting. I think that we’ll get more and more of that and that’s a good sign I think of a really important development when you’ve got grassroots ideas coming up and together with top-down things and they’re meeting in a way that is very creative, I love it.”

Mr Lum: “Before Mayor Reepalu takes the mike, I just want to thank Wendy Yap and Musliman Sharif from National Parks along with Chee Chiang (?) and Janet Chuang (?) from the Urban Redevelopment Authority made this whole symposium possible. The last question basically, I mean, going into this one is can Singapore be replicable, same with Malmo or with Khoo Teck Phuat Hospital? Can we replicate this elsewhere? Very quickly, three minutes left but we can do it.”

Prof Newman: “Everyone?”

Mr Lum: “Yes, sure, everyone.”

Ms Chan: “Yes I think it’s replicable because the thing is that our Community in Bloom groups and they are coming up and people are asking, even vertical greenery there is request for it. Where I live, the neighbourhood park, the residents will actually come and do the gardening, it’s not NParks staff doing it or pushing it. They just go and do it and everyone is just very enthusiastic about this. I think it’s not a top-down. I think people are beginning to see there is really this is what we want and this what we want to do. And I think NParks we quite often have surveys asking what people want so I think that’s important.”

Mr Liak: “Maybe I’ll address the earlier question of top down bottom up. I think it takes two hands to clap. I think whoever that is a land owner, let’s say the authority, need to have some degree of self confident that they won’t lose control, that they also need to be the type of people that are not afraid that things will go wrong but if they are afraid, then they won’t let anything happen. On the other hand for the bottoms up, the people need to have a passion. Two, if you have passion you also need to be competent because there are people who are passionate but they are not competent, they don’t have a good idea of how to do things then it wouldn’t work. So I think when you have both sides that happen, of course it’s replicable and things like that happen all over the world. If you look around there are good projects going on. In Singapore too, there are many, many very good things that are happening except that sometimes you don’t know about it.”

Mr Chua: “It’s replicable. I think it’s a matter of mindset and political will in most cases. There are pockets all over the world but having it rolled out in the same as Singapore means really having political will and mindset. Thank you.”

Mr Reepalu: “I believe this urban farming, that is of course very nice and some places may be you can even get food enough. Havana, for instance, they work very much with the urban farming and they get a lot out of it. In my city, we get only one harvest and we should have some problems if we try to survive in that way. From our own point of view, it’s very important to see in what way the city is growing, what sort of land are you taking to build the houses on and what you preserve so that you have city-closed (?) farming. In that way, you enhance so you can have the food quite close to you and not have that carbon dioxide footprint to be too big. Then of course the greening and working like that, that’s very good for the human being. We use it for instance for people that have chronic stress syndromes so you rehabilitate people with working like that with farming cities.”

Mr Lum: “Prof, last words?”

Prof Newman: “The writer, Jane Jacobs says that the history of cities is about innovation that gets copied from one group to the next and then improved and then someone else copies that, and it goes around the world very quickly through city to city. This is what this conference is all about and it is really what sustainability is about. At the point where innovations are happening and we hear about them, and we go back and we try them out

in our city and then we share that experience. And we'll probably do better than Malmö or Singapore because we've got innovation that we're learning from and that's the way of the world. That's the way sustainability is spreading and I write books about this sort of things and they get out of date very quickly because they are doing it so quickly these days. The innovation is extraordinary and that's why we're moving to make films because the word could get out there quicker."

Mr Lum: "Fantastic. Please join me in thanking our wonderful array of speakers. I'd like to thank all of you for attending and taking part in this dialogue and I hope you have enjoyed the session as much as I have. We have the plenary at five o'clock right?"

[End of Transcript]