

Centre for Liveable Cities Lecture Series

The Port and City of Rotterdam — “Era of Transition”

Transcript of the lecture by Mr Adriaan Visser, (Vice Mayor, Municipality of Rotterdam) & Mr Allard Castelein (President, Port of Rotterdam).

An opening address was made by Ambassador Jacques Werner of the Kingdom of the Netherlands. The Q&A session was moderated by Mr Andrew Tan, CEO of the Maritime Port Authority, Singapore.

MND Auditorium
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Jacques Werner:

Ladies and gentlemen, thank you very much. I will only take two minutes of your time. I don't want to be in the way between you and two interesting lectures, and hopefully a very interesting discussion. I would like to take this opportunity to thank our friends here, Andrew Tan of MPA and Khoo Teng Chye of the CLC, for the excellent cooperation that we have already for a very long time. And for partnering with us in this lecture in your very renowned lecture series. Thank you for that opportunity. As you know, my embassy stands for highlighting the Netherlands in Singapore — in particular, trade, innovation and investment. It's all about connecting the Netherlands and Singapore to our mutual benefit.

In our efforts, obviously water and high tech are important sectors. The income paths, the traditional and the new economy. And ports are at the heart of this. Maritime and Port Authority of Singapore and Port of Rotterdam — they understand this. Both are aware of the era of transition that is taking place and how important adaptability to change is. And both take a leading role in maritime research and development. Both in fact, work with industry to promote and enhance capabilities. And they're both open for pilots and field labs. Both ports are venturing out in green technologies to enhance sustainability. Sustainable is not only green; it is also staying relevant and thinking ahead. Trying to combine the interests of planets and profit. So I'm very pleased that recently, an MOU was signed between the Port of Rotterdam and MPA that covers a number of these important areas, including port development, innovation, sustainability and LNG. And this will accelerate development by cooperation and by sharing.

And sharing is what we're doing today. It is sharing what we know, what we're doing right and what we're doing wrong, for the benefit of the ports of sustainable maritime transport and for both our economies that rely so much on world trade and trade in our respective regions. So I hope and I trust that you will have interesting lectures to listen to and a fruitful debate afterwards. Thank you very much.

Emcee:

We'll now have a short video. [Video presentation]

I now have the pleasure to invite the Vice Mayor of Rotterdam, Mr Adriaan Visser to the stage please, thank you.

Adriaan Visser:

Thank you. Ladies and gentlemen, good afternoon. Hope you enjoyed this little film of the Rotterdam Innovation District. As Vice Mayor of the city of Rotterdam, it is a great honour for me to be here and speak to you today. I have seen just, for about 24 hours now, how beautiful Singapore is, in the short time that I've been here. It is also a pleasure to enjoy the hospitality that Singapore is known for, and to think along with you about the development task for your country. Of course Singapore and my city of Rotterdam differ from each other. And perhaps the climate is the biggest difference, but I also see the similarities. Both of us have a world-class port and it evokes mutual recognition. Like us, you have worked very, very hard, long and hard on the port to make it such a great success. Over time, Singapore has become the third largest seaport in the world and the second international seaport when we look at the transshipment. Our position in the world also brings about great challenges in the transition to a more sustainable economy and further digitisation. Let's see how this works, there we are [referring to slides]. But there is more that binds us. Rotterdam was long known, very long known as a real working city. Not a truly beautiful one. Mostly, people came to see the port. But we've been able to turn that image around rapidly within a short time. Architecturally realised, visible and such buildings as the Rotterdam or, as you can see here, the new Market Hall and the new Central Station have led the famous tourist guide *The Lonely Planet*, to praise Rotterdam as a "must-see city". And it goes without saying that we are very, very proud of it. Please come to visit our city, you're very welcome. But *The Lonely Planet* is also very enthusiastic about Singapore. This is what I read about Singapore, "Long dismissed as little more than a sterile stopover, Singapore has reinvented itself as one of the world's hot list destination." So, we can also shake our hands on this one.

But ladies and gentlemen of course, you did not invite me here to sing Singapore's praises, but to talk about the development of the city ports of Rotterdam and the new economic challenges. Well, Rotterdam has the largest port in Europe and is the eighth on the world rankings. But the era where ships loaded and unloaded their cargo in the

heart of the city is gone for good. Until the middle of the last century, the sea-going vessels sailed in and out of the city, large [indistinct] the townscape. They sailed up the river to the city where ports were located on the banks of the river. On the south shore, was a great city in which the sights and sounds were [indistinct] by the smokestacks of ships, the cranes and of course freight trains and trucks driving to and from the ports. In that time, the city was always on the go. The port was in the heart of the city. And the port was also in the hearts of the residents of Rotterdam. And I'm very proud to say that that still is the case. In the middle of the last century, the cityscape changed. The ships became too large to sail up on the city river, making the city ports less essential. In addition, and you all know that, shipping increased enormously. Rotterdam started to build new ports in the Maasvlakte, a large area that was constructed in the sea. Those new ports were larger and offered vessels with a greater depth and possibility to enter the Rotterdam ports. The Maasvlakte had proved successful and recently, we have even been able to make, to add a second Maasvlakte, also in the North Sea.

To put a new question to Rotterdam: What do we do to the ports in the heart of the city? Some ports remain in function as inland ports and others were filled up and utilised for housing. However, in addition, there are ports that have been transformed into innovative living and working areas, I'll come to that later. They were known under the name "City Ports of Rotterdam". This development has everything to do with the major challenges facing the city and the port in the areas of economic growth, smart industry and clean transport. Rotterdam is the prime European hub of energy, hi tech industry, manufacturing industry and logistics. Rotterdam can only grow by creating a broader economic profile and using its unique qualities.

In Rotterdam, it comes down to the combination of thinking, manufacturing and supply. As we like to say, you saw it already in the film, make it happen. But that's not all. It is precisely in the area of the city ports that we see opportunities to give concrete shape to the circular economy. It is all about an economy that is largely based on the reuse of materials and energy with a minimum of waste and with far reaching digitisation. In Rotterdam, we have a tradition that you could summarise with the words "cooperation" and "getting to work".

Tackling big jobs is the lifeblood of the city. But collaboration is just as much a good fit. In Rotterdam, it's not a question of either the government or the market. Here it is all about a combination of the two. The market and the government together constitute an entrepreneurship in which the independent Port of Rotterdam obviously plays an important role. The results of the joint entrepreneurship can be seen in the transition of the economy and the transition of the old city ports. In our city, they have much in common. Our economy is still largely based on increasingly scarce energy resources and raw materials. It will cost more and more money to extract them and they have a negative effect on our climate and on our health. Moreover, the world population is still growing and the demand for products will increase further. These developments require sustainable economic systems. Sustainability no longer is a choice; the choice is in the question of how we are going to become more sustainable. Moreover, we must keep in mind that the use of fossil fuels cannot be discontinued from one moment to the other. And this will take time and I'm sure Mr Allard Castelein will reflect on this later on.

In 2007, we took an important step forward with the Rotterdam Climate Initiative. Again, this was not an initiative of the local government alone but an initiative that emerged from a fruitful collaboration between municipality, the business community, the Port of Rotterdam Authority and the Regional Environmental Department. The results achieved are quite striking. To name a few, this is about heat, that you see; 20% of the waste heat from companies we now use for heating homes. Ships in our port use more and more shore-based power. And for buildings, we have an energy saving of 30%. Rotterdam is also a global trendsetter in the field of water management and delta technology. And I just heard that Henk Ovink — he's very famous in Rotterdam and the Netherlands because of his understanding in water management — he will be here I think in July. Last year, our city council set up the Sustainability Programme 2015, 2018. This programme is comprised of 14 themes, including of course, a focus on a biobased and circular economy. The traditional linear production line "take, make, dispose" is based on the easy extraction of large amounts of cheap raw materials and energy sources. That production line is now reaching its limits. And this necessitates an economy that is based on long-term use and reuse of materials and energy with minimal waste and minimal pollution. In Rotterdam, this means we expand our trial of "think,

make, supply” to include reuse so that we come full circle. And the reason why I think, why I’m convinced this is going to succeed is due to a number of factors that reinforce each other. The support among the population and politics is increasing. For the results of the Climate Summit in Paris, I think you will all have seen it. Quite appropriately achieved on a relatively warm winter sun, it was quite warm in Paris but it was the environment and it was what we call, it’s the environment [indistinct], there is a broad approval. What is also important is that major financiers increasingly considered investments in traditional raw materials and energy sources to be high risked investments. On the other hand, the willingness to invest in the natural and environmentally friendly extraction of energy and raw materials, any technologies to reuse existing resources has increased. What is wonderful is that many initiatives for the circular economy do not come from above but rather from involved residents and businesses. For example, a Rotterdam entrepreneur set himself up in a former swimming pool to grow oysters on coffee grounds. Really, it is the case. He picked up those coffee grounds by bike every day from all sorts of cafes and restaurants. People like you and me, can now go to this nursery for a household kit, with which you can grow mushrooms at home. Believe me, I did not try this myself at home yet, but I think it’s a brilliant example of sustainable entrepreneurship. Another example, the initiative of a number of Rotterdam carpenters to set up a do-it-yourself shop. They sell materials left over from construction sites and which were previously discarded. The carpenters approached developers to set up agreements on a steady influx of wood and other materials. The shop includes a workshop where customers can make their own things such as furniture. The carpenters provide help and guidance with this. Thus, the shop cum workshop not only has the function to reuse waste materials but the shop also has a social function where people come into contact with each other. Another initiative is a soil bank where excess soil from urban development projects is used again in other projects. Together with the Municipal Port Authority, the World Wildlife Fund and numerous other partners, a tidal park has been set upon the river. There’s a new habitat for flora and fauna and the soil banks protect the city against the effects of high tides. Such examples are evidence of the strength of the Rotterdam society. That strength is also reflected on the redevelopment of the former city ports. We find these ports in two areas, on the south bank, large part, into RDM Rotterdam. And on the north side around the Merwe-Vierhavens. Together, they form the Rotterdam Innovation District. Here are

the largest innovation workplaces in Europe. You see here, a lot of people working on the southern part and northern part of the river. Such examples are evidence of the strengths of the Rotterdam economy and the Rotterdam society. It is the ideal place where startups and scale ups in all shapes and sizes originate and enhance each other. Education plays a prominent role, from primary school to college to university. In addition to top educational institutions, top-ranking companies work together with starting entrepreneurs on innovative developments. The city facilitates this by providing both physical space and mental support to these entrepreneurs and investors. In this way, we can make it possible for them to contribute to the flourishing of the circular economy. With all these examples and hard infrastructure on which the city ports are embedded and we see an area that the Europe's largest port next door was Amsterdam Airport, Schiphol, 20 minutes away. The high-speed lines to enter Brussels and Paris — the best maintained road infrastructure in Europe. A fairly well-oiled metro, tram and bus system in the city. And in conclusion, and that's equipped with a finely braided fibre optic network. In short, the companies in the city ports are in constantly contact with the world both physically and digitally.

As a welcome spin off, we see that the developments in the area around the city ports reinforce one another. And together, produce more than all of the initiative separately. Residential areas in the area profit from the developments in the city ports. And I think that's the best way to start our social strategy. The city ports of Rotterdam is the area where there are interesting new jobs. In addition, the Rotterdam City Ports Innovation District is interesting for investors. Those who invest here are given space, they can experiment and they will find a platform to invent, create and innovate.

Ladies and gentlemen, I think you will notice my enthusiasm and that my feeling is really completely authentic because why I am excited. As a Rotterdam Vice Mayor for ports, I see how everything comes together here. Start of multinationals, knowledge institutions and students, research and education. And not to be forgotten, in Rotterdam, we have a young, creative population. And a culture that encourages rather than inhibits. The sharing of knowledge, the bringing together of innovation and the creation of unexpected crossovers, creates a huge power to all involved that transcends

the boundaries of the city of Rotterdam and adds meaning for our entire delta metropolis and the Netherlands as a whole.

May I illustrate briefly with some concrete examples of the redevelopment of former port buildings and warehouses? The first example is the RDM Rotterdam, that as a former shipyard has been converted into a venue for companies and educational and research institutions. Together, they are working on the youth manufacturing industry for the port and the sea. A wide range of business and cultural events compliments this and makes it a dynamic and energetic hotspot. RDM is the innovation showcase of the Rotterdam port area, which presents technology in an attractive manner. Right in the port yet surprisingly close to the city. Example two is SuGu. I'll tell you what SuGu is later on. SuGu is redeveloping a former gas-fired power station from 1929 into a new icon for the manufacturing industry. With this newly renovated building, SuGu is offering housing to a cluster of companies that focuses on the creative industries. It does this by creating a circular economic cluster of businesses with a variety of skills in one space. Focussed on biobased and recycling plastics at fast production and circular designs. "Su" stands for stand ups and "Gu" for grownups — SuGu. And it precisely has the mix that determines to a large extent, this success. It is a powerful cluster that offers added value to SMEs and multinationals. An inspiring example is the 3D printing of a mini submarine, which can be seen on the website. Ladies and gentlemen, I will complete this presentation. These are all examples that inspire us in Rotterdam. These are steps on the road towards another use of the old ports. We view the connection with residents of Rotterdam as a great advantage.

Here, jobs are created that attract young people. And here is where the vital cross fertilisation between business and education can be found and that is how it should be. Because, as I stated in the beginning of my contribution, the port is in the heart of the city and its residents. Each year, the Port Authority of Rotterdam organises in the first weekend of September, a weekend fair for 3 days. Virtually all port related companies open up the activities to the public. These World Port days, typically attracts more than 400,000 visitors from all over and often whole families take advantage of this opportunity to see the port in operation. It is a testament to the strong involvement of the people with the port of Rotterdam. It is a great port that is great in its accessibility

for the large ships in the world, for entrepreneurs, for the 90,000 people who work in the maritime complex every day and ultimately for a wide audience from all over the world who enjoy taking a boat tour to see a global company in action.

Finally, ladies and gentlemen, I would like to use this opportunity to draw your attention to the 15th World Conference of Cities and Ports. This congress of the Association Internationale Ville et Ports, French, focuses on the transformation of all ports and the social issues that many port cities have in common. From 5 to 7 October of this year, Rotterdam will be the host city for this meeting. And it would be a great pleasure to me and of course to all the people from Rotterdam, if we could all meet again in Rotterdam. Thank you.

Emcee:

Thank you, Your Excellency. May we now invite Mr Allard Castelein on the stage for the second part of the presentation please?

Allard Castelein:

Trying to catch it [referring to bottle of mineral water]. Ladies and gentlemen, thank you for joining us this afternoon. Many, many years ago, the oil tycoon, Jean Paul Getty addressed an audience I believe, similar to this audience, and he took a question from the audience and the question was, "Mr Getty, how did you become so rich and what do we need to do to match that?" And he said, "Well first, work hard," that kind of made sense. And he said, "Get up early so you many more hours in the day to work hard," and the third thing he said was, "strike oil." And I think what I'd like to do with you today is to share that that has changed. It has changed because of some of the features that are visible on this slide. It's not only that we are in the midst of an energy transition. Yes we are. Oil prices are testimony to that. But it's also the other elements that feature in the industry — whether it's digitisation or whether it's the emergence of shale gas, or whether it's the Internet of things, or whether it's the mergers and the alliances and the size of the vessels. The future will not be as we've known it and that certainly applies to ports and that certainly applies to a port like Rotterdam, which is resident not only to many businesses like the Vice Mayor alluded to, but unlike Singapore, it's a port that is based largely on a hugely efficient petrochemical refinery complex as well as to a huge

distribution system. So although... and this works [referring to slides]. This are the data from the Port of Rotterdam, just to set the scene and how important it is therefore that we do accept that we are about to face changes. And I actually prefer to talk about not so much an era of transition as do I prefer to talk about a transition of an era. And I believe the latter is the case. So these are for instance numbers 2015, 2016, which show that the Port of Rotterdam, to some almost 50% is dependent upon the fossil fuel business. Those could be refineries or petrochemical complexes. But what is clear is that although fossil fuels will be here for quite some time, we will actually have to face a future that is considerably different. Lower oil prices are here to stay and yet at the same time, the expectation of the market is that biofuels and biorefineries, biochemicals should begin to feature as part of our portfolio as well. So sustainable ports and sustainable industries are not only about the existing, it's also about a future. So this afternoon I'll try to go into how we're handling the challenges and the changes in Rotterdam. And how we're promoting sustainable development as a key feature and competence of the port and actually as a differentiate compared to other ports of the world. And I hope you will accept my apologies upfront because if I talk about competitive advantages I tend to refer to the competitive advantages in northwest Europe.

Because we are great friends with the Port of Singapore, I do not consider the Port of Singapore as a competitor. I consider Singapore as an ally, a friend who needs to address the same issues and challenges as we have, as I would refer to the port of Houston. Therefore our competitive approach relates predominantly to northwest Europe. My apologies on that. The port itself uses a huge amount of fossil industry fuels. We have these petrochemical complexes, we have these refineries and the coexistence of the old and the new, making the refineries' footprints less, addressing the climate change issues is of the challenge and are the elements we are working on. So even while we nurture and facilitate the existing, we also work hard on minimising that footprint, releasing less carbons into the atmosphere. And this is the way we like to do it. We house about 45 petrochemical facilities. 2.6 million barrels of oil are being refined. That's about 16% of Europe's capacity. There's a storage capacity of 90 million barrels of crude oil and 80 million barrels of mineral oil products and we are home to world-class players like Singapore as well. This year, or last year I should say, 2015, both

Exxon and Shell for instance, announced investments in their existing facilities for up to a billion euros a piece, not in order to make more products, they have each quite a significant capacity. But in order to make their products less demanding upon the environment, so less polluting. The reason why we're keen to continue to attract these businesses is because whatever way you look at it, one can replace fossil fuels from the energy generation mix but it's very hard to replace fossil fuels from the existing day to day life issues and products that are being produced. Whether it is your interior from your car or whether it's the screen from your PC, or the chips in your mobile phone, or the household effects you have in your home, it all kind of seems to be related to the fossil industry. So we're keen to ensure that these refineries, these facilities become greener and cleaner. And in order to do so, and in order to help them, we've set about developing specific projects with specific role for the Port of Rotterdam Authority in order to facilitate this reduction in footprint. And let me try and share some specific examples with you.

And the one example to start off with is the expansion of a pipeline that is set up by the Port Authority to distribute steam. Because while one company treats steam as a residual product without any further value, emitting it into society and into the atmosphere, the other company actually purposely accesses and attempts to generate steam for its local processes, its requirements. So by connecting the companies and offering them facilities for exchanging the residual steam, we can actually reduce the overall power consumption in the area and within the network. A second example is what we call as the heat roundabout. Often these ideas are possibly too simple to even dare to name them. But yet they are very complicated. This example refers to what the Vice Mayor alluded to where we exchange residual heat from the petrochemical industry, in order to heat homes and greenhouses in the vicinity of the port area. And the dotted lines indicate where the heat is coming from and where it's subsequently moved to, which are the residential areas of the Hague, the cities of the Hague Delft and Rotterdam itself. So this saved the petrochemical companies money because they need not to invest energy to reduce their output because they can just ship it. And it also reduces the environmental impact because the households need not to, if you like, buy molecules, gas molecules, or other molecules to generate heat. It also allows us to generate and create a much closer interaction between the residential areas and the

industrial area. Because like the Vice Mayor mentioned and showed on the map, the port has moved out towards the west, if you like. But by now offering residential heat from the processes in the port, there's actually again, a combination and a link emerging between residential areas and industrial areas, so it creates closer ties and strengthens the licence to operate and licence to grow for these businesses.

The third project we are working on in order to make the system more resilient is to pull off a carbon capture and storage project. Again, by just the title, one would think that sounds like a simple idea. It isn't. This is a post combustion capture of the carbon and rather than have that emitted into the atmosphere, transport it through infrastructure which the Port of Rotterdam will create and own, to an offshore, depleted oil or gas field and injected possibly for eternity but maybe in future there will be uses of carbon which then could be re-extracted and applied if feasible.

Unfortunately, our current legislative framework across the globe doesn't allow for a normal price of CO₂. When I left Europe on Sunday, the price of a tonne of carbon was approximately 3.5 dollars. In order to make these projects work, one would need 60 to 80 dollars. But is the latter feasible or isn't it? Is it an idea or is it feasible? We think it's feasible. And we think, and we're not the only ones, NGOs would agree with us, including other entities like the International Energy Agency but also the Paris Climate Accord agreed that carbon capture and storage will be required in order to meet the two degree limitations that we've set out to achieve. So, although initially this may need subsidies, be it from government, be it from the port, we believe that these pathfinders will actually lead to a more resilient and sustainable industrial complex creating therefore an environment where large international companies that will need to adhere to the restrictions that we put upon them, will find the Port of Rotterdam the most attractive investment climate and area in northwest Europe. So these 3 examples: steam, heat, carbon, are very specific projects that we run, that we operate as a port and which in total will require probably in the order of 1.5 to 2 billion euros or to say dollars at the current exchange rate. The other thing I'd like to mention to you is the importance of biobased. Although you've heard me say that the fuel industry will be here to stay for a long time, biobased will be an essential part of the mix. So at this moment in time, Rotterdam is already home to one of the largest biobased clusters in

the world. We have 4 bio refineries, we have 4 biofuel plants and we have 2 bio chemical facilities. We produce 1.2 million tonnes of biofuels. We import a million tonnes of biomass and we produce 200 thousand tonnes of biochemicals. So the biobased economy will play a part in energy, in transportation, in chemicals and in all kinds of processes that are linked to our way of living. So rather than approaching customers like Neste, who also have a presence here in Singapore, with an offer of, "Why don't you just come along and make your investment in Rotterdam? We've created an environment which we call plug and play." So we realised that for these companies making a return at the current oil prices is actually, at this juncture, is exceedingly difficult. We said, "So how could we take away most of your concerns?" Well, possibly by providing these companies with land and the rest of the infrastructure and facilities is taken care of by the Port of Rotterdam.

So, whether it's water, steam, heat, waste, electricity, additional facilities for which pipelines or other infrastructure is required, the Port of Rotterdam Authority will either invest in that specific infrastructure or we will look for alliance partners to co-create the solutions these entities may be looking for. Thus creating an environment with the lowest possible barriers for sustainable industries like the biobased economy. So this transition will take many, many years to come. There're no myths about it, I've no unrealistic expectations. Yet I feel that it's important that we take a first step in order to start moving. Otherwise, we can continue to analyse till, as the English would say, "the cows come home."

Neste is investing this year, in a new facility through which they will use a residual stream, which until that time was not used in the processes to produce biopropane, which will be spiked in propane. And propane, for those of you who may not know, is also called LPG. So they will make their LPG even more environmentally friendly. Talking about LPG, let me move to LNG, which is another fuel, transportation fuel, where the Port of Rotterdam believes we have huge opportunities, which we'd like to capture. Again, sharing information with MPA Singapore. Because LNG is a transportation fuel, it's actually from a footprint perspective, 30% less CO₂, 70% less NOX and SOX. So it's, if you like, at this juncture, the most efficient fuel to use. We've created bunker facilities and we are developing the necessary legislations, rules,

regulations, safety measures, in order to allow shipping firms to efficiently and reliably use LNG as their new bunker fuel. At the same time, we are actively involved in global legislation in order to create a level playing field so that the maritime industry and sectors' footprint is reduced as well.

Let me just take a step back to the renewal industry. So in addition to the bioenergy, we're active as a port in solar and in wind energy. The development of offshore winds for instance, is likely to take off enormously in Europe. The energy transition for Europe is about creating sufficient wind-generated energy and the North Sea, which is, to which the Dutch ports border is an ideal location. It's a shallow sea and it kind of always, one could expect that the wind reliability is better than anywhere else. So, this is a picture of an entity, a company, who've just established presence in Rotterdam and these are the pylons for the offshore wind turbines. If you were to ask me to give you some dimensions, these pylons will ultimately become a hundred metres tall. But the next generation of wind turbines will actually sit on pylons of 200 metres tall. So it needs space and it needs water depth and Rotterdam is very suitable to that. On the opposite side perhaps of the construction of wind farms offshore, there's a decommissioning of the existing oil and gas platforms. So the decommissioning element, is again an element where ports can play a role in this transition of an era because I've flown over the coastline of Bangladesh and India where ships that need to be demolished are driven ashore with the highest possible speed and subsequently dismantled with no awareness of circularity and or environment at all and let me not even touch upon the issue of safety.

I think major ports like Singapore and Rotterdam could play a role in sustainable, resilient, safe, demolition of platforms. The picture here is of one of the largest vessels in the world called The Pioneering Spirit, which is not only 323 metres long, which isn't the longest vessel but it's also 123 metres wide, which makes it by far the widest vessel in the world. And it's actually built and designed to lift platforms up to 50,000 tonnes off their jackets and then move them lot, stock and barrel to shore where they can subsequently be demolished along the lines as I've described. And I think the Port of Rotterdam will play a role in setting up such a sustainable environment for dismantling of platforms. So these last 2 examples, the manufacturing of pylons for

wind turbines and the decommissioning of the redundant platforms, for those facilities, we use this newly reclaimed Maasvlakte 2 area. This is 2,000 hectares reclaimed between 2008 and 2013 and is a new area to the port. And when the first terminal was opened, our King was in the audience and I had the pleasure to compliment him with the fact that he had acquired 2,000 hectares of land without firing a shot and fighting a war. But one of the interesting things for sustainability perspective is that both in the design phase as well as construction as well as today, we take sustainability very close to our heart. To start off with, the outline selected for the land reclamation ensures that it fits naturally with the Dutch coastline so there's as little as possible influence on the sea currents as one could imagine. The construction also meant that the existing sea wall that protected the old coastline was not necessary and needed anymore. And amongst other things, 20,000 concrete blocks that were part of the previous wall were used to create the new sea wall. Each block weighing about 40 tonnes apiece. And finally within the operation of the port area, the terminals that we gave permits to and leased the land to, one of the features in the selection process was their sustainability. And both terminals, world class terminals that we now host are zero emission terminals. So, they're fully automated, self-sufficient, with no emissions. So we've made agreements with the terminals from the start regarding their footprint. But not only that, we also made agreements with these terminals regarding how they would move their goods, their containers to the hinterland. Because Rotterdam is not only the port to 16 million Dutchman, it's a port to 350 million Europeans. And we move goods all the way, well into southern Germany, northern Switzerland, northern Italy and Austria. And the requirement upon these terminals is that they should move a particular percentage of their goods via roads, inland barges and trains. Thus also influencing the footprint of the movement of goods following the arrival in the Port of Rotterdam. So performance agreements are one way through which we can reduce the footprint of the activities and coexist with society.

There's another element where I have high expectations, which is in the entire distribution value chain, because logistics are efficient in Rotterdam but I believe also on a verge of their transition of an era. So we're working together with the private sector on a variety of projects to raise that efficiency by using data, by using smart applications, by strengthening the value chain of the various players involved in order

to cut inefficiencies. Because whatever way you look at it, although inefficiencies may be a lease of life to a single entity, inefficiencies in my textbook by definition mean not sustainable because there is waste in the system and there is therefore not an optimum use of the space one has, whether it's the space from a climate perspective or the space in which you operate. So what I'm looking for is the Airbnb or the Uber of the transportation and logistics world. We haven't seen them yet but they will arrive and Rotterdam is keen to host their activities. More competitive and cleaner — that is one of the reasons why we're also keen to put a lot of emphasis regarding the challenges we have, regarding this transition of an era. That we put a lot of emphasis on what I describe as the Innovation Ecosystem. Innovation is not only about a couple of folk who'd like to be called innovators or who would like to spend time on innovation. It's about the environment which creates in order to make sure they can flourish they can nurture, they can cultivate, they can grow. And we start from left to right by being involved as a Port of Rotterdam Authority in university competitions by physical space. By calling to the world even, through the Port Accelerator Programme, for new ideas in the segments described above: transportation, logistics, energy, chemical refinery and maritime industry. And we will select the 30 best companies and entrepreneurs to come to Rotterdam. And for a period of three months, during which they will be coached by leading companies and industrials and businessmen, including former prime ministers and other renowned people in the business world in order to help them mature their ideas and hopefully then allow them to set off on a successful future endeavour. This is how we believe we can create an environment in which innovation will lead to more resilience, will lead to reduction in footprint and will lead to a licence to operate, a licence to grow with the society in which it's based.

The final example I'd like to give, it was referred to earlier, is the 3D printing opportunity. I do not have a crystal ball, I have no idea on how important 3D printing will become. I do know that this technology as part of the maritime sector is interesting enough to invest in it. And what we've done is that we've set up a pilot, field lab type of environment which constitutes to the fact that the Port of Rotterdam Authority will invest some 5 million euros in creating the 3D printing facilities in the port area for maritime applications in metal 3D printing. And any company who'd like with respect for their own intellectual property by providing just equity, may use this 3D printing

facilities. Ultimately my belief is, that if there's business opportunity related to it, it will prove itself in the forthcoming years. And that may very well mean that an individual company out of the 15 or so that have currently signed up already may decide to make their own investments in 3D printing and create their own activities. My hope is, that together with Singapore and possibly together with Houston, we could create some 3 or four 3D maritime application printing facilities. And thus offer a network of facilities to the big shipping lines around the world.

Ladies and gentlemen, I hope I've been able to convey to you that in this transition of an era, where we are moving away from fossil dominated industries and traditional logistics businesses to unknown years and era to come. Whether it's based on energy transition or whether it's based on new business models or whether it's based on new materials — that we have a role to play and that ports by far, are redundant and a dinosaur type of industry. I strongly believe and I am exceedingly excited when I talk to students across the world, how exciting the maritime business is and how exciting ports are. There's a huge amount of innovation taking place in ports. And there're huge business opportunities and there's fantastic businesses that play their role and play their part. The Port of Rotterdam wants to play its part. We want to be leading. We want to improve on the existing. We will not turn our backs to the existing, we want to improve the existing and certainly we want to embrace innovation. Through this, what I describe as the and-and approach, so it's not the either or, it's an and-and approach, we will address the challenges we're faced with during this transition of an era and we will have a very prosperous and bright future. I'm convinced of that. Ladies and gentlemen, thank you very much.

Emcee:

Thank you, Mr Castelein. Ladies and gentlemen, we now come to the interactive portion of our programme, the Q&A. During the Q&A we ask that you please state your name and your organisation before asking the questions or making comments. You may raise your hand and our staff will walk to you with the microphones. I would now, one second... like to invite Mr Andrew Tan, Mr Adriaan Visser and Mr Allard Castelein on the stage for the moderated discussion and Q&A. Thank you. I'll now hand the time over to Mr Tan.

Andrew Tan:

Thank you very much Vice Mayor Visser and Allard for giving us such an interesting presentation today that outlines a bold and visionary approach towards how you see the port being a platform in which you could transform the economy and I thought before I open up the session for Q&A, I've been also asked to share a bit about what the Port of Singapore for that matter and what the Maritime and Port Authority is doing vis-a-vis, the Port of Singapore. Because we're also in an era of transition, or as Allard puts it, a transition of an era, I can't recall which is which but I think they are both very important points. Nuances are quite important as well. But I like to highlight that we're also in a similar situation where, having reached the stage of the development where the port has been the source of our economic growth over the centuries. We started off as many would say, a small fishing village, although I dispute that account, I think that we were more than a small fishing village. I think we've always been a hub in this part of the world, it may not be a very hi tech hub in those days but nonetheless it was a hub that allowed people, goods, services of that day to converge in Singapore and the question was: How did we as a hub continue to reinvent ourselves over the centuries?

Coming back to the opening analogy, yes you have to work hard. You need to sleep early so that or wake up early so that you can have more hours to work. But no, we did not strike any oil. So, the Port of Singapore has been a cornerstone of this economic transformation and today we handle up to about 30 million TUs, making us the second largest port by container volumes after Shanghai. And we are the largest bunkering hub in the world still, and the fifth largest ship registry. And there are more than 5,000 maritime related companies that are based in Singapore itself. So we are a large maritime hub and the question for us as we go forward is: How does the port continue to generate economic value for the economy? The port, together with the maritime cluster comprises some 7% of the GDP and provides employment for 170,000 people. So it's not an insignificant contribution to the economy and of course it plays more than just the role of moving goods. Allard's spoke about the similarities between the roles that we play but also the differences in terms of the role that our ports play.

Rotterdam is a gateway port to the rest of Europe, whereas we are a global transshipment hub. Up to about 80% of the boxes that come to us are actually moved to other parts, to other corners of the world itself. So, we're at this stage where we would have to look at, as the port expands, we've reached the finite expansion limits within the current terminals which we have right in the heart of the city itself. Just like where Rotterdam found itself many years ago. They probably have a head start in terms of moving the port to the mouth of the Maas River and for us too, we have to move the port. It's already started at staggered movement. It's now expanding into Pasir Panjang Terminals 3 and 4, which in a steady state will allow us to handle even larger volumes, up to 50 million TUs. But being the long-term planners that we are, we are looking at a time frame that extends the role of the port way into the 2030s, 2040s. Those are 2020, 2030, 2040 time frames and that's where eventually we hope to consolidate all the container operations in the western part of the island in Tuas and this will be a greenfield site which then opens up a lot more opportunities us — the sort of opportunities for which we are also interested to engage the Port of Rotterdam because they've had a head start. As I mentioned earlier on, there are advantages and disadvantages of being the first mover. But be it as it may, there are important learning points that can be shared not only with us but also with the rest of the world and the same way in which we have present amongst us today, students from the World Maritime University, I think. From the show of hands, where are you, I think... So, quite a number of you from all over parts of the world. Very interested to hear what we have to say today. And with that move to Tuas, our thinking is not to replicate what we are currently doing for the city terminals. In other words, we want to build a port that is not only more efficient and competitive, which has to be a key consideration, but also a port that is safe and secure, a port that is also sustainable and a port that's also community oriented and environmentally friendly. So these four key thrusts form the key considerations for our next generation port as we embark on this effort. And we have put in place a framework and we have put in place, brought in all the agencies to start thinking, to conceptualise what the port of the future would entail.

So, many of the things that you've talked about strike a chord with us, but I would credit you for thinking very bold indeed, because I think the Port of Rotterdam Authority seems to me to have a very large and wide mandate, which it is using to good effect in

terms of leveraging on the port itself as a hotbed for innovation. As a testbed for new ideas, for experimentation and in a way help you find a solution to what the new economy entails. I don't think any of us at this stage can forecast what the world economy, the new economy is going to be like. I myself don't have the answer. But we do know that it's going to be a convergence of multiple factors. One would be of course, worldwide developments. Global developments which Singapore is too small just like Rotterdam to influence. So we have to adapt to the changes that are taking place around us and to the roles in which it's expected of us in this part of the world and also for Rotterdam in their part of Europe. And secondly also in terms of what are the strengths that we can all respectively build upon. So, for Singapore, we see ourselves as a logistics hub, we see ourselves as a financial hub, we see ourselves as a knowledge hub and I think these are some of the strengths that we want to build on, including the fact that we have a strong governance framework in place. So we have to find a way to translate these factors into competitive advantages for us and to ensure they remain relevant. So, those are some opening remarks, which I would like to share with you in terms of what's going on through the policy makers' minds as we build the new port. But to kick off the discussion, before I throw open to the floor, I would like to ask the Vice Mayor, how do you go about creating this concept of a circular economy and how do you mobilise public support for this concept because it seems to me, the most critical starting point for all the efforts that follow?

Adriaan Visser:

Thank you for the question. I think it's a very good question. And I'm afraid I do not have the, the, answer for it. I think it's a combination of things, the people of Rotterdam, it's a very young city, with a lot of students. That are I think, more and more interested in the things of innovative action. Not the big companies but the smaller companies, and we have a lot of space for them. So I think that's one of them. It's an innovative system, we are creating port excel and other kind of financing measurements and I think it is the time of the century. We are now going into this combination of facts that we are creating new things, innovative things, smaller things that will grow. And I think that will continue in Rotterdam for the coming years. I hope so.

Andrew Tan:

And in this process of experimentation, as a follow up question, there is bound to be risk of failure, and how would you deal with such situations?

Adriaan Visser:

There's a risk of failure you say?

Andrew Tan:

Failure.

Adriaan Visser:

Yes, that's the one thing that's good about that. Because if we don't make that failures, we won't learn for the future. And I think Rotterdam has become the city that it is now also by making, not big one, but some failures in city development sometimes. In taking care of industry or not taking care of industry. And at this moment, I'm a very proud shareholder of the Port of Rotterdam, also the Ministry of Finance that's the other shareholder. And I think the experiment, the start of the experiment is the most interesting thing. And of course we will make mistakes and failure, but I'm absolutely convinced that most of them will succeed. But you have to make some failures.

Andrew Tan:

That's a good point. I would now like to ask Allard. You spoke a bit about Maasvlakte 2. But I felt that you did not speak enough about Maasvlakte 2 because Maasvlakte 2 has become a sort of iconic project. Maybe iconic is not the word because it carries a certain baggage, but certainly it is that project that has really catapulted the Port of Rotterdam into the forefront of everyone's attention and some of the measures that you've introduced in Maasvlakte 2, I think it would be useful for the audience to sort of understand what sort of measures you put in there particularly when in Singapore itself, we're also facing some of the challenges vis-a-vis having to deal with manpower crunch, having to deal with high business cost and also having to find ways to be more efficient and productive in the way we're doing things and I understand that for Maasvlakte 2, these were some of the similar considerations that went into the planning of Maasvlakte 2 itself and we'll be happy to hear some of your views as to how then you

managed to operationalize this into the systems and the equipment and the approach that's being taken in Maasvlakte 2 to be the first port of its kind to be almost fully, if not fully, automated.

Allard Castelein:

This could be a question where we could talk for some length of time. There's a Dutch football coach who was once interviewed after my favourite home team, Feyenoord, won a match in Germany. And he was asked the question, could you tell us what's wrong with the German football? And then he said in German, [speaks in German], in other words, do you have an hour because I can go on and on and on. These are the good old days by the way, because the Vice Mayor and some of the people in the audience and I do realise that our football has passed its heydays. The Maasvlakte 2 is not. Clearly I wasn't part of the Port of Rotterdam Authority when the decision was made to expand the port area but the basic idea behind is clearly... so let me try, with a bird's eye view, to address some of the challenges, Andrew, you put forward. First of all, the port was getting congested. Predictions regarding container growth, container volumes were such that it became apparent that there wasn't enough space to accommodate the new container volumes. Secondly interestingly enough, there was a perception the petrochemical industry would grow significantly and would require additional space. So altogether, decision was made to expand the port area. And just by, to give you some dimensions, it's 2,000 hectares. Whenever I engage with European audiences, I tend to express as well that if were to have another 3 of these, we will have reached England. And we will have set up a new European domain for that matter. The entire, from the word go, to get the licenses from the Netherlands, it was necessary to engage with all the multiple stakeholders involved to get the permits. There was no way in the Netherlands setting, that a permit to reclaim this amount of land and increase the port area by this size, one could do so without proactive engagement with NGOs and environmental entities and organisations. And meets their concerns or their apprehension or their anxiety. And that's what in a, if you like, multi-party agreement was set forth and long term agreements were made with regards to compensation related to environmental impact of the reclamation of the land. That wasn't only part of the reconstruction phase but that's also part of the commitment going forward for many decades to come. So, that's one element.

We used that clearly when we started the construction phase and hence my picture of the former keyhole and breakwaters that I showed. But then the interesting thing indeed feature that as part of the tender process that we embarked upon, the port authority made a clear reference to the footprint of the entities that would want to qualify for a long term land lease. And hence it became a pre-requisite as part of the selection process. And these new terminals were pleased to embark upon for them, a first and world-class facility as I alluded to from a zero emission perspective. Now, I don't think they would have moved that far out if we hadn't put in that requirement up front as an authority. And again I speak with modesty because I wasn't part of the decision making process at that juncture. But clearly these terminals felt that in order to qualify and in the context of the multi-state involvement in the Netherlands, this was a requirement. And I'm pleased to say that if you now go to these operations, that is indeed a feature. There's another side to the coin because from an employment perspective, these are fully automated terminals — self-sufficient from an energy perspective. So, although they're huge in layout and design and each ultimately will have a capacity of 5 million TU per annum, per capacity, per facility. There's hardly [indistinct]. It's a control room setting. An interesting feature emerges as well, that you start to appeal to different people, different category of employees, because whereas in the past, working on a terminal might have been associated with, certainly in northwest Europe, it's cold and windy and heavy work type of environment, nowadays it's a control room environment where young folk aged 20, 25, female and male with a perfect hand eye coordination, operate a joystick. So it's remote control and there's no hardship associated. So the setting has changed dramatically and lastly, again from this perspective of this multi stakeholder involvement. At this point in time, we ship about 10% of our volumes from the Maasvlakte 2 via train to Germany, Switzerland and Austria etc. And we kind of set out a long-term goal, of increasing that percentage by 10%, so from 10 to 20. And take that 10% off the road traffic because road, of all the 3 modalities that we use in Rotterdam, has the biggest footprint. So there's an expectation and a commitment by the terminals as well as by the Port of Rotterdam Authority in order to provide facilities required to increase the road transportation by 10% and reduce the... oh sorry. Reduce the road by 10 and increase the rail by the same 10%. So all in all, it's a long-term commitment.

Now the final thing I'd like to allude to is that as a port, and you know this, Andrew, we tend to measure ourselves in tonnage right? How big is a port? Rotterdam used to be the biggest port until 2004, and subsequently the Asian ports, including Singapore, came up and the Chinese ports came up and they are now by far bigger in tonnage than Rotterdam is. And with respect to any port that does a huge amount in tonnage, because we're still not small of course, we've added the element that we should also look at those opportunities that provide employment because if you consider it from a liveable cities perspective, we think that is an important feature as well in particular given the shareholders we have. So, I'm not only keen to attract tonnage to the Maasvlakte 2, which could be it's like our goal, but we're also keen to attract businesses that will need people to execute the businesses. So employment as part of the proposition, employment opportunities as part of the proposition is clearly an aspiration with regards to the remaining land Maasvlakte 2 and offshore wind industry facilities may apply. It also may be the dismantling of the oil platforms or biobased industry activities. So there's various axes along which we will measure which opportunities we should want to welcome at the Maasvlakte 2 area. But it's clear we have plenty space for growth. But we will continue to look for a combination of tonnage, environmental impact, as well as employment in order to create that sustainable environment, and resilient environment, which we think is necessary at this point in time.

Andrew Tan:

Thank you very much. I think at this stage, I think many of you would have some questions to us, so maybe I would like to open it up to the floor. Anyone would like to pose the first question? There is a gentleman right at the centre. Could someone hand him the mic? Could you please give us your name and the organisation you're from?

Audience 1:

Good afternoon, everybody. I stand on existing protocol. My name is Ohas Austin Brown. I'm from Nigeria, a student World Maritime University. Thank you for this speech, Mr President. My question is this, from the port operator's point of view, what can the port administrator do to implement this, your concept and what specific activities must he carry out?

Allard Castelein:

Could you repeat because the speakers are actually directed towards the audience so I...

Audience 1:

I say that from the port operator's point of view, in this sustainability and adaptability of the port, what implementation, what concept would the port operator implement and what are the specific activities he must carry out in order to make his port adaptable and sustainable.

Allard Castelein:

Ok thank you, I think I believe I understand your question. So, the role we take as a port authority is possibly slightly different than other authorities and I have no judgement call because that depends on your mandates, which the shareholder provides you with right? So, I do not wish to be judgmental and indicate that other ports should do the same. So, with that for starters, if I may, but let me use one example in order to hopefully address your question. When we talk about the heat roundabout or we talk about carbon capture and storage, we talk about exchanging steam and creating efficient value change in infrastructure, it's become apparent that in the Netherlands, so our area, it's become apparent that none of the companies as individual entities, either have the capabilities or the permits or would their capex be prioritised to invest in overarching infrastructure. So if you want to make the port more resilient and reduce the footprint for which overarching infrastructure is required, then there is no natural owner of that infrastructure other than the Port of Rotterdam Authority. So that when we engage with the businesses in the port, we house about 3,000 or so, when we talk about making the port more resilient and what is required in order to achieve that, then invariably the discussion emerges that it needs, if you like, more general overarching infrastructure for which these individual entities do not have the permit nor the capability nor is it their priority because they have a focus from their shareholders to maximize the return from that individual vicinity. If you talk to a Shell refinery manager in Singapore or in Rotterdam, he will be judged upon how efficient he runs his refinery. But if you can liaise with that international entity at head office level and say, in order to make your business more resilient, in order for you as a corporate international to

address the climate change challenges and to show and lead to the world that petrochemicals can still feature in a climate restrained environment and if you allow us to use your residual heat for better purposes, but all you need to do is create a piece of infrastructure up to your fence, we will take it from there. Then the proposition becomes appealing. And that's exactly what we're doing. So, we've taken a very proactive role as a business developer, as a project manager, as an initiator of new ideas. We could have sat back and not embark upon the investment in 3D printing, but our understanding by talking to everyone in the maritime sector was — yes, there's music in this initiative in this innovation but it's too much for us to grapple with at this juncture. We do not have the time, capability, money, facilities to invest more than 'x' amount of money let alone 3 to 5 million euros required to create that 3D printing environment. So we said that, "Well why don't we take that initiative?" Have the companies join because if the companies in the port area operate well and profitably, it is in the best interest of the port, it therefore is in the best interest of the city. So it starts with the companies, we facilitate or initiate and the city and ourselves benefit because the companies benefit. So that's how I see, if you like, the role of an active developing port authority but I fully accept, I fully accept that that is different for every port authority in every different country.

Andrew Tan:

Vice Mayor, you have some comments?

Adriaan Visser:

Just a few words. I think Mr Castelein is very right. It must not be easy for you to have public stakeholders always. And what I like about the port development is that they combine the knowledge of a lot of people. But they always make the business case. And they are supposed to make the business case. But they are making the business case also a cost benefit analysis but also on a public value analysis. And I think that's quite good and that will not be the case on all the port authorities.

Andrew Tan:

Before I open up to the next question, just to add, indeed I think one of the important things that any country or port would have to consider is — how do you organise your

agency? In the case of Singapore, the Maritime Port Authority is also quite a unique entity. We are a combination of two roles - we have a regulatory role and we have a promotional role. And the real change to the role that we played came when the promotional role came into being, into being part MPA. So, rather than just looking after the port, which is important, making sure that there's safety of navigation, there is security, the port is efficient... All that is important but at the same time, just the port by itself, doesn't really bring the economic value to its full potential than if you're also trying to bring in maritime establishments to anchor themselves based on the port's existence but at the same time also generating spin offs to the rest of the economy. So, building up the rest of the maritime cluster, is the other part of my role that takes up half of my time. But we don't go into business development as the Port of Rotterdam Authority does because that would require me to double my management team and that might even involve bandwidth taken away from these other two tasks, or maybe away from the core primary task and this is something which you have to look at very fundamental organisation level in terms of what you want to do. But I think there's a lot of interest now in terms of port authorities taking on more than simple a regulatory role and taking on a promotional role. So, I think that's something that you also want to think about when you go back home. So can we another question? I saw a hand earlier on. Ah... right at the back there's a gentleman.

Audience 2:

Yes, good afternoon all. I'm Ramesh from Ram Investments. Now, the Innovative City that has been developed in Rotterdam seems to be a very interesting concept and idea, which I believe has already started to bear fruit for Rotterdam. We here have got two very interesting projects with the mega yard and mega port that's being developed and basically put up into a very nice spot on the island. Are we able to do anything similar in that context? I just understand what you just said that it might require a bandwidth that may exceed MPA's covering mandate. But perhaps something along the lines of the launch pad at Ayer Rajah. If you could consider that, it would make the maritime industry a lot more sexier than what it is right now. We can't seem to get entrepreneurs even looking at the industry per se. All the youngsters that we have a looking at the digital world, technology in that sense. Mark Zuckerberg seems to be their rallying point. But none of them are actually interested to get near the maritime industry, the

ones that I've spoken to. Now we invest in quite a few companies, startups in general. And my concern is - where are we and how are we going to get them interested in starting up the next era of transition? Thank you.

Andrew Tan:

I think the question is directed towards me but I'm in a conflicted position right now because I'm a moderator and not really a presenter. But having said that....

Adriaan Visser:

Let me moderate.

Andrew Tan:

Yeah, why don't you moderate? Vice Mayor moderate and probably this will be the last time he will moderate for an event on Singapore. But jokes aside, I'll like to say that you might be interested to know that MPA has actually organised the second Smart Port Hackathon already. And through that Hackathon we are able to find that actually there's a lot of interest. What was stopping the interest was actually not the fact that we lack the idea of organising a community to come about with e-solutions but it's more because data itself was not readily available. So the first step that we had to do was actually to get the different stakeholders to come together and to contribute some data to the common pool, at least for the purposes of the Hackathon. And through that effort, we were able to bring together different communities and then there were also funding that we provided and the stakeholders that were interested in the projects, pursued these project with the respective communities. And the other thing we are interested to do of course and we they've been in discussion on this at the staff level is what the Port of Rotterdam and the Maritime Port Authority can do together in terms of perhaps even organising a Hackathon that transcends our boundaries. So that's a sort of ideas that we have to be discussed and I think this is again a way in which we can bring ports that connect with one another already, to get themselves even more connected closely. And we believe that data analytics, the Internet of things and coming up with mobile platforms, e-solutions, is the way to go. Because the maritime sector itself is a centre that thrives on being mobile. Right? So that is one small example but it does highlight that, there are opportunities and as I mentioned earlier on, pick which trust you're

interested in. You're interested in, making the port more efficient or competitive? You're interested in making the port safer and secure? You're interested in making the port more environmentally friendly? Or making the port more community oriented? There are enough of these areas that we can work on as we conceptualise the next generation port in Singapore itself. So, thank you for that question. Can we also take other questions? Oh sorry, I missed you. Go ahead.

Audience 3:

Hello, I'm Aus Ferta from the Netherlands Embassy. I would like to ask, both Singapore and the Dutch, Singaporeans and the Dutch are very proud of their ports, and their ports are obviously within the city centre, visible for everyone. But now that ports are moving more out of the city, how do you make sure that people still feel connected to the port?

Allard Castelein:

That is to a certain extent a challenge. And to start off, my favourite topic football again. In the past, if our favourite football club in Rotterdam, Feyenoord, had lost on a Sunday, on Monday's performance in the port was lousy. Given the performance of the football team, we are pleased that that alliance has kind of loosened up a bit because we tend to lose so many matches that production would be appalling. But I think it's more a reflection of the era in which we live than there is a reflection of the fact that ports are moving outside of cities. I think the emotional attachments we have with parts to society in the current era of individualisation does also mean that one is not so easily attracted and emotionally bonded with the employer for instance. If you take the future generation or the current generation folk at least at any rate are much younger than I am, this lifelong employment and loyalty to employment has a different connotation than it had 20, 30 years ago already. So I think we should be pragmatic in that as well. But altogether like the examples I gave, as a port authority, we are very keen to continuously reach out to the general public the residential areas that we are adjacent to. So we have a proactive stakeholder engagement. We proactively go out, not only to the decision makers but to the population and the people at large through researches, but also through proactive reaching out in communication regarding the activities in the port.

I'll give you a couple of examples, we've set up an electronic network of sensors that measure the quality of the ambient air and we've shared with the residential areas where these electronic sensors are placed, that this is an early warning signal which could help them in case of any mishappenings or misgivings in a particular production facility. So, this is a very transparent process of electronic sensors where we tell people that live in the neighbourhoods what the quality of air is in which they live. And we report out on those. In addition to that there is specific communication means and activities. Whether it's a quarterly journal that we publish or whether it's the World Port Days like the Vice Mayor alluded to which attract indeed some 400,000 folk on 3 days. So altogether I think there's plenty opportunity. It starts when you arrive at Rotterdam Central Station, the train station. Where the huge video screen, funded by the Port of Rotterdam Authority with images from the port. To cruise liners that come into the city area. And our connection to the various companies. I think the biggest challenge we actually have is not so much the emotional connectivity with port's activities because we have 180,000 people working in the port area, 3,000 companies. There are entire families and livelihoods and cities and neighbourhoods associated and linked to the port. I think the biggest challenge we actually have is to get youngsters like the gentleman who posed the question a minute ago. In order to have young people from schools to feel that a job opportunity in the port is actually an exciting opportunity and it's not so much about the emotional bond as far as I'm concerned. But it's much more about there's innovation, there's employment, there's long term jobs, there's satisfying work environment that port businesses can actually generate. So reaching out to schools and colleges etc. is almost the biggest challenge. But I'm not too worried about it, just to find a word, the technical jobs, vocational as well as higher educational and the jobs, at this point in time in the Port of Rotterdam, there's a job guarantee. So if you're a school going kid and in your final stages you need to spend the six-month internship with the company. The companies will give you a job guarantee if you satisfy the needs and qualify for the job that they come for this internship for. So the job opportunities are huge. It's a highly attractive business environment.

Adriaan Visser:

Mr Castelein is a good Ambassador of the City of Rotterdam because I already wrote down: Central Station, the big screen. I think we will never forget the Port of Rotterdam

in our city because the River Maas is going through the city. So you can see smaller ships — yes, not the big container ships — the smaller ships every moment of the day. And we have all kinds of SMEs and big companies in the inner city. All kinds of related to the big companies, the shipping companies, but also the law firms and as Mr Castelein has said, a lot of people work in the harbour but live in the city of Rotterdam and the cities around Rotterdam. But nevertheless, as Vice Mayor for the ports, I will also start the programme “City and the Ports”, to elaborate again the combination of the city and the ports for the coming years. And I think we’re on the right track, but because of the big ships, and the big companies, and the big container terminals going outside, it gives us all kinds of new opportunities and I think we will do well but it’s not easy. It’s not easy because it’s quite far away from the inner city. Not everybody knows to find it. And still we have the image of the city is still, that it’s not very high level work and I think it is and we have to do a lot of communication about that in the coming years.

Andrew Tan:

Just add on my comments to this. It is a very real challenge that we ourselves have been thinking deeply about over the last few years and particularly over the last 2 years since I’ve come into this role. And I recalled one of my earlier visits to the Port of Rotterdam, and having listened to the exact same point, when you have a port that is situated out of sight, out of mind then I think you would have other unintended consequences like, it’s going to be more difficult to raise awareness of the port. It’s going to be more challenging to recruit maybe, young people into the sector. And on top of that you might even find winning public support for any port activities. So, when I came back to the MPA I said, “Look, when we build this next generation port, look at what’s happening in other parts of the world. Then pressures have, forcing the ports to be moved out further away from the city. And likewise, when we build Tuas, make sure you put in this key trust amongst the other key trust, which I know you’ll put it in. Which is it has to be efficient. It has to be competitive. It has to be safe, secure and so on. But make sure it is also environmentally sustainable and community oriented. And these considerations have to come in early at the start when you’re conceptualising the whole port, not as an afterthought. And I think here is where you know, once we can build that into the design of the port then whether it is through, having a visitor centre, whether it’s having more community spaces that are available, community spaces you can double up for families

who can go to a part of the island that you don't usually visit at all for family activities and to organize outreach activities in these community spaces then I think you can actually bring life to the port. And I think this what we hope to do through the next generation port and even before we have that physical infrastructure in place, this year we'll be also starting the first Maritime Youth Festival so that we can start building up the community support for the port even before it moves to the western part of the island itself. And then if you work on the basis that no part of Singapore is going to be too far, indeed we are very small, little red dot as most of us know, 670 or so square kilometres. It's a very small place, so no part of Singapore is going to be distant from the heart of the city. So you have to work on the basis that every part of Singapore will be connected at one stage or the other and eventually the economic structure of the country changes, I can't predict what it will be. But I have to anticipate that one day you might have mixed use developments, residential, non-residential developments, being situated quite close to the port. So I have to build a port that is future proofed, to the extent that I must assume that communities will be living closer and closer to the port. Which must be the case for Singapore, so I think we work on this basis then I think we have something going and that's the approach that we want to take. So it's very exciting for us that to have some of these new elements being brought into the design of the port. And I think when the Prime Minister commissioned the Pasir Panjang Terminals 3 and 4, he also mentioned this aspect as equally important to the design of the new port itself. So I think that within Singapore there's already buying into this ideas for us, limited by our own imagination in terms of what we want to do. Going forward. So, can I just take, in the interest of time, one more question? This gentleman in front. Yes.

Audience 4:

It'll be quite... Is it working? [Examining microphone] Hello?

Andrew Tan:

Okay, we'll bring you a backup mic.

Audience 4:

I thought my voice is loud enough. Raymond Kwok here.

Andrew Tan:

Quite loud.

Audience 4:

Raymond Kwok. Just following up from what Andrew says and maybe the Vice Mayor as well as the President of the port can share with us. Further down the road, what other things can we develop from the ports onwards into the sea? Because I saw that reclaimed land is fantastic ideas but I got second question related to that. But for developments, I think what Andrew is trying to say is that there could be a development of residents. But I'm talking about whether are we thinking about water city underneath or water city floating, going forward, because I think that is where you are able to sort of embrace the shipment, the business side as well as the resident and the fun part of it. Related to the reclaimed land, like if you do it 3 times, you will hit England, Singapore I think we are quite close. We are reclaiming as well, it's 744 square kilometres, so we have another 700 square kilometres of sea. My question is that as we start going further, what is the rule of engagement or the ceiling because I think you know now in South China Sea there's a lot of dispute. But how do we handle those issue when you start reclaiming land and reach England? Thanks.

Andrew Tan:

Sorry, you didn't give your name and organisation.

Audience 4:

Raymond Kwok. Kwok Group LLP.

Adriaan Visser:

Well, let me start with the old ports and I think Mr Castelein can tell if the second Maasvlakte will be continued with a third Maasvlakte in the North Sea or not. Maybe you can elaborate on that. I think we are doing well with the old harbour ports. But there is always restraint. We cannot build a lot of houses in the neighbourhood of the port because of noise and pollution, etc. But as the big companies are going to the Maasvlakte, the second Maasvlakte, there will be more space for innovative action. Housing, floating houses, innovative new companies, we're trying to do that and we're

using the old ports and they were with port development, they came over to the city of Rotterdam, few of the ports are now in our position, to be called. We can do with what we want. And we are starting quite some innovative things. We would like to have floating houses in a substantial way. But we first have a lot of other projects in the city. And that's the whole problem, it's not a problem, it's an opportunity I could say, and we have a lot to do in the city. The coming over of the old ports is a new chance for us. And we try and we try and we try. Just part by part, to use the old ports. They're, I think — I don't know how much hectares they are — do you know that? No, but the old ports that are now over to the city, I don't know, but it's quite a big kind of space for the city of Rotterdam to fill it. But we started. And we're doing port, by port, by port. And we're doing well I think. The second Maasvlakte I think that will begin. But I think Allard will tell where the third Maasvlakte will be.

Allard Castelein:

So I think just indeed the area that we will return to the city is probably between 40 and 60 hectares. It's my best guess at this juncture. Rotterdam wanting to build the third Maasvlakte, I think what we want to do is to continue to redevelop existing areas. For instance we've just closed the first part of our container port that was established in 1957. New vessels because of their size, do not want to come all the way to the city centre. Rather than assuming that that area can't be used, we're redeveloping it as a cool port, with cool houses for fresh vegetable and fruits. And so there's an entire redevelopment of an existing area. So there are opportunities where the city residential development, feasible and or there is new businesses feasible. My hypothesis is that we won't need a new Maasvlakte anytime soon and that's because some of the new developments that we're witnessing, we're witnessing for instance the importance and relevance of 3D printing. We're witnessing in Rotterdam this challenge with regards to energy transition. We house five refineries. We will make those as resilient as we can but I'm not entirely sure that we will continue to need all 5. So we will get new or old land in return which we can reuse again, so if you were to ask me, "What is your third Maasvlakte like?" It could very well be in the city centre as part of a data, in the clouds type of setting, an environment where smart applications are thought of, that have a role on the port, but do not require as much physical space. So that's my guess for a third Maasvlakte.

Adriaan Visser:

I forgot one very, very, big opportunity but it's far away. It might be the case that we will hear that the coming months that Rotterdam will be a candidate for the World Expo in 2025. And that will also be the old ports as well. The candidacy is very far away and we will have a lot of competitors but it is a very, very exciting idea for Rotterdam: World Expo 2025.

Andrew Tan;

Well, before we consider Raymond's suggestion of expanding out further into the sea, and you know we don't have very much room left to reclaim, I think what you missed out on and which we are exploring is what we can do to make use of underground space as well as aboveground space. So when we build the next generation port, we'll be looking at how we can make use of underground space because it's a huge site as well as aboveground space, and here is where we can look at the cluster activities that we can organize around these spaces and some of the things we talked about will be certainly some of the things we can look at in terms of whether we can build a cluster of maritime activities around there. But until then, I think right now, we don't have much old port area to regenerate, although when PSA moves out of the city terminals, URA will have to look into how that area is rezoned and the sort of activities that will be put in that very precious waterfront space and I'm quite sure there will be a lot of ideas for that. But in the meantime I think what we need to do is to make sure that our port remains competitive, it remains relevant and this is where we are working together with other ports to look at how, beyond this nationally making the ports competitive, but also internationally how we can also link up with people who are thinking ahead, as you clearly are. This idea of Maasvlakte 3 as a virtual port almost, maybe exist in the cloud or maybe what would be the successor to the cloud? It could be the heavens right? Well, we can't rule things out, but whatever it is, I think this is certainly the direction that we too are thinking, which is why there are a number of projects between the Port of Rotterdam and the Maritime Port Authority together with PSA to look at how we can, at a very mundane level, at least increase the optimisation for port calls. To look at how we can leverage on data to promote more data exchange and how that could also translate into mobile and e-solutions, which then brings in industry players and those who find

an opportunity to make this useful in some way or the other. And the other thing that we've have been doing together is organising this Roundtable of Port Authority. So, we organised the first one last year - The Port Authorities Roundtable, at the side lines of Singapore Maritime Week and this year we are hoping to convince the Port of Rotterdam, I think I don't want to jump the gun, I don't want to put you in an awkward position, but I think you are going to host it this year.

Allard Castelein:

I'm waiting for your answer, you just received the invitation.

Andrew Tan:

So, very good. This is another example where we can work across ports to promote greater collaboration and exchange of best practices. John, we have actually reached the end of the session, maybe after this session, you can come up and talk to any one of us. But let us join hands to thank our two presenters for an excellent presentation and a very lively discussion. Thank you very much.

Emcee:

Thank you, panels for the excellent presentation and discussion. We have come to the last segment of today's lecture and we would first kindly invite all panellists back to the seats please, thank you. And now we would like to invite Mr Khoo, the Executive Director of Centre for Liveable Cities, on stage to launch the eighth issue of CLC's bi-annual magazine, *Urban Solutions*.

Khoo Teng Chye:

Okay, thank you. It's been a long session, I hope you found it useful. It's really been a great honour and pleasure for us to be able to host this lecture this afternoon. It's a great honour to host the Ambassador to the Netherlands, whom we jointly organise this with. And of course the Vice Mayor of Rotterdam and the two dynamic and visionary chiefs of the two ports, Singapore and Rotterdam. I say this with a bit of tinge of nostalgia because I happen to have a short stint with PSA in the late 90s, early 2000. And I'm glad that one my colleagues from PSA, Mr Tan Puay Hin is also here with us today. I think the topic of port and the city is an extremely important one because most

cities grew out of ports and I think there's a really strong link between what ports do and how cities develop. So I'm glad that both Singapore and Rotterdam are taking the initiative to look at the relationship of the port with the city with their visionary plans. The Maasvlakte 2 and the Innovation District and in the case of Singapore, the mega port in Tuas. At the CLC, I think we're trying to do our bit, little bit, we think that's important for, especially the people who come to our training programmes, and some of them are senior civil servants, to come and take a look at what's happening around the world. And so, we've developed this strong relationship with Netherlands and the city of Rotterdam in particular.

And over the last two or three years, we have sent I think probably by now, about 100 civil servants throughout the public sector to visit the city of Rotterdam and the Port of Rotterdam. I must thank the city of Rotterdam and the Port of Rotterdam for always being so kind, gracious host. And of course, in particular, the Mayor of Rotterdam, who is also a frequent visitor to Singapore. He always hosts our groups and talk to them. He was also one of the pioneer lecturer, in this CLC Lecture Series and he is coming again to Singapore at the World City Summit in July. Now the reason why I'm here is really to talk to you about one of our knowledge products. I think you all have a copy. It is "Urban Solutions", which is a bi-annual magazine that we produce. It's done in a way that is very accessible to very busy people, like mayors, port executives and people like you. And so, it's written in very simple way, pictures well illustrated. Lots of practical examples from cities all around the world including Singapore of course. And the coming issue, we feature the idea of building a city with nature. And the reason why we decided to launch it this afternoon is because one of the cities I think that is really at the leading edge of building with nature is really Rotterdam. I think, as the Vice Mayor mentioned 2006, actually my association with Netherlands and Rotterdam went after PSA because I was then in PUB and looking at water. And as you all know, the Dutch have 500 years of living with water and the floods and so on. And Rotterdam really is one of the cities that is really at the cutting edge of dealing with climate change, of climate proofing. So I think there are a lot of lessons that we can learn from Rotterdam. And in this issue, we talk about how cities can become more resilient by, rather than fighting nature, build a city that is harnessing really nature. And I think in the Maasvlakte 2 project which is featured in this issue, I think it talk about here a little bit

more detail, how they reclaim the land not in the traditional way, but reclaim the land, trying to harness the natural forces, with a lot of science actually and creating wetlands and the haven for biodiversity and so on. So you find that this issue has got a lot that is perhaps not talked about today which is really about the port and the economy primarily, but this one is really a little bit more about the environment, about nature and the examples from all over the world, including Singapore when we talk about ABC waters, clean tech park and so on. We have also examples from Portland Tokyo. And we also feature an interview with the Chief Minister of Andhra Pradesh. Where Singapore is helping him to build a new capital city and we hope it will be a new capital city built with nature because the city is next to a wonderful river. It's in a wonderful site. So, read this one. There are copies also available online if you don't want the hard copy. But, thank you very much.