

Webinar Presenter

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This Transcript

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Sean Esterly

We are very fortunate to have Dr. Dario Hidalgo joining us today. Dr. Dario will be speaking on the focus on planning and financing sustainable low carbon urban transportation.

One important note of mention before we begin our presentations is that the Clean Energy Solutions Center does not endorse or recommend specific products or services. The information provided in this webinar is featured in the Solutions Center's resource library as one of many best practices resources reviewed and collected by technical experts.

Now, before we begin, I just want to go over some of the webinar features. First, go to webinar for audio. You have two options. You may either listen to your computer or over your telephone. If you choose to listen to your computer, please select the 'mic and speakers' option in the audio pane. By doing this will eliminate the possibility of feedback and echo and if you listen to your telephone, selecting telephone option and a box on the right side will display the telephone number and audio PIN you should use to dial in. Panelists, we ask that you please mute your audio device while you're not presenting. If anyone has any technical difficulties with the webinar, you may contact that number on the slide, which is 888.259.3826.

We encourage any of the attendees today to submit questions throughout the webinar. We do have a question and answer session at the end where we can address those and present them to Dr. Dario. The questions pane is located in the 'Go To Webinar' window. You can select those there. If anyone is having trouble viewing the materials through the webinar portal, you can find PDF copies of the presentation at cleanenergysolutions.org/training and you may follow along as our speakers present. Also, an audio recording of the presentations will be posted to the Solutions Center training page following the webinar.

We have great agenda prepared for you today that is focused on lessons learned from financing urban transportation policies and programs. Before

our speakers begin their presentations, I'll provide a short informative overview of the Clean Energy Solutions Center initiative and LEDS GP. Then following the presentation, we'll have a question and answer session and then wrap up with closing remarks and a brief survey.

This slide provides a bit of background in terms of how the Solutions Center came to be. The Solutions Center is an initiative of the Clean Energy Ministerial and is supported through a partnership with UN-Energy. It was launched in April of 2011 and is primarily led by Australia, the United States and other CEM partners. A couple of outcomes to this unique partnership include support of developing countries through enhancement of resources on policies relating to energy access, no cost expert policy assistance, and peer to peer learning and training tools such as the webinar you are attending today.

There are four goals for the Solutions Center. It serves as a clearinghouse of clean energy policy resources. Second, it also serves to share policy best practices, data, and analysis tools specific to clean energy policies and programs. Third, the Solutions Center delivers dynamic services that enable expert assistance, learning, and peer to peer sharing of experiences. Lastly, the center fosters dialogue on emerging policy issues and innovation around the globe. Our primary audience is energy policy makers and analysts from government and technical organizations in all countries. We also strive to engage with the private sector, NGOs and civil society.

One of the more key features of the Solutions Center is the expert policy assistance. This is known as 'Ask an Expert' and it's a valuable service offered to the Solutions Center at zero cost. We have established a broad team of over 30 experts from around the globe who are available to provide remote policy advice and analysis to all countries. For example, on the area of clean transport, we are very pleased to have Jane Wilkinson, associate director of the Climate Policy initiative serving as our expert.

So, if you have a need for policy assistance on clean transport or any other clean energy sector, we encourage you to use this useful service. Again, it's provided free of charge. To request assistance, you may submit your request by registering through our 'Ask an Expert' feature at cleanenergysolutions.org/expert. We also invite you to spread the word about this service to those in your networks and organizations.

This next slide provides a little bit of information about the LEDS Global Partnership. The Low Emission Development Strategies Global Partnership or LEDS GP capitalizes action and collaboration across more than 120 countries and international organizations. The LEDS Global Partnership works to strengthen support for LEDS, mobilize capacity and advance peer-to-peer learning and collaboration on LEDS, and also improve coordination of LEDS at the country, regional, and global levels.

You can visit ledsgp.org at ledsgp.org for additional information on their initiative and to find out more.

Now, I'd like to provide a brief introduction for our speaker today. Dr. Dario Hidalgo is the director of research and practice at EMBARQ. He will be providing introduction and discussing the issues around development of clean transport and programs and speak the possible solutions. So, with that introduction, please join me in welcoming Dr. Hidalgo to the webinar.

Dr. Dario Hidalgo

Hello. This is Dario Hidalgo. I am currently in Bangalore, India. I'm usually based in Bogota, Colombia. My activity, well, it spans in many places of the world supporting governments. National but very particularly local governments and work in some program of the Global Resource Institute focusing on transport, sustainable transport and urban development in global cities.

The presentation today, it's about financing urban transport policies and programs. What we're going—I'm presenting is an overview of the problem that we know well but also ways to get out of the problem. Probably one of the keys to unlock the difficulties we are having in sustainable mobility of urban level are in this area of financing. The element that we insist a lot is that for 100 and more years, we have been focusing on moving cars as the main way of providing mobility. Well, not the main way but the main focus of all the efforts from government, from the industry. It has been a way that unfortunately has not solved the mobility solutions of the—had the solved the mobility problems at the urban level.

So we insist unlocking a paradigm shift from moving cars to moving people, designing the surface infrastructure to provide mobility to those that need the most; the people walking, the people biking. The people in public transportation could make the most efficient use of their existing space. This type of approach is the approach that has been mainstreamed by UN organizations and by development banks.

A recent report from the global—from UN Habitat, the Global Report of Human Settlements 2013 really focuses on these and provides a really good guidance on the way forward. So, in terms of the solution, we feel that we have—it's clear now. We feel that it is clear what are the steps that are needed to help the cities and the planet become more sustainable. This solution, it's summarized in three words. We call it 'Avoid, Shift, and Improve.' 'Avoid' the quantity and the length of motorized trips. 'Shift' to the most efficient modes and 'Improve' the technology and the operations.

From the research that we have been doing and the context and the practice with several cities around the world, we understand that it is not possible to come to a solution with a single—it's spreading. It's not that technology will save us. Or only if we work on the urban space and the

way the cities are planned we'll make it. So we need a combined approach that brings these three things together. This is very well known and has been promoted and discussed in many ways but not enough change is happening.

That paradigm shift is still far from becoming the main way we do our activity in mobility in cities. We are facing really, really difficult problems. More than 10% of the GDP in some countries is wasted in inefficient transport systems. We have more than 1.2 million people dying every year as a result of crashes. A bad quality of air in many places is contributing to 2.1 million people dying prematurely. We have also 3.2 million people dying from the consequences of sedentarism and obesity and diabetes, which are a result of lack of physical activity. We also have 80% of the emissions projected could come from transporting greenhouse gas emissions projected to come from transporting year 2050.

So the change is not happening at the pace we need. Why? Well, we have been doing things during the 20th century in a way that is not helping. We have been using more dispersed land uses as the cities continue growing. This is was not the case in many developing cities but now it's the case. The tranche of the cities is very low density and simple to use. So, that is increasing in the urban area. We have been increasing the number of motor vehicles in our streets and as—with the increased motorization, we have been trying to solve the problem by predicting how many vehicles will be on the road and providing enough infrastructure for those vehicles to provide.

We are feeding back into a circle of unsustainability. Actually, this has not been the solution. It is like when we try to do the things with ourselves. If we eat a lot, in this we eat a lot of land and we are having not enough exercise, we get fat. We get obese. If we try to solve obesity by expanding the size of the pants, well, we will never do it. What we are trying to break into the solutions of space is a different way of thinking in which it is not eating more land. We need more vehicles, motorized vehicles into the mix but the other way around; avoiding long motorized streets, shifting to the most efficient modes, and improving the technologies and the operations of the transport system.

Now we, because of this concept that started with motorization in the early 20th century, we have now a lock-in effect. Government is organized to provide more roads and financing and maintain those roads. There are very strong institutions in governments around the world that are dedicated only to the solution of road construction and little to other options. We have the industry organized around motorization. Not just the automakers there. It's also the housing industry, the construction industry, the finance industry, which have developed many ways to support motorization as the way to go. The people in terms of their mindset are feeling in many places of the world that the only way to solve our problems is this way of the 20th century.

We have this lock-in effect, which is difficult to change. I'm going to give you a paradigm. The keys to 'unlock' these effects are mainly three. First: re-allocating finance, the purpose of our talk today. Second: building capacity at all levels. Not just in government, in local government but also in the industry. I mean in the people themselves so the people moves to different ways of consumption. Last, which is very important, capturing the trends.

There are many things happening in terms of changing ways that we move and we relate to each other. We have been reporting on them on our own blog called the cityfix. You can follow that. But today we are really trying to advance is the conversation on re-allocating finance. So for the rest of the conversation today, I will only be talking about re-allocating finance. The keys then to unlock are there. The reason, the main reason we talked about re-allocating finance is because this lock-in effect has caused that most of the private flows that the money that is used by people and by industry in transport and most of the domestic finance and partially the official development assistance is going mainly into unsustainable transport that is mainly building urban roads which is not necessarily the solution for urban mobility.

I'm not talking about the access to markets and access to areas where the road is needed in the rural realm with many, many connectivity is still missing. I'm talking urban highways, which may not be the most sustainable form of addressing the urban problems. So, all these money which in some calculations goes to billion dollars in investment every year and trying to—to trillion dollars. Sorry. I correct it, people, to trillion dollars in to some estimations. Most of this is going to unsustainable transport while only a fraction of it is going to what we call sustainable mobility partially from the official development assistance and mainly from climate finance.

But when see in relative measure these numbers, well actually, the climate finance is, it's only a really tiny fraction of all the money available. It's really a small as compared with what you could find directly in domestic finance. ODA, the Official Development Assistance, is also a fraction. It's not a lot of money. So those money that is going mainly to sustainable mobility is only a little fraction of the public finance. So, we really need to find ways to leverage this tiny fraction of climate finance, environmental funds and official development assistance to move towards the real money, the big money that is in the domestic finance.

This is what many development banks have been trying to do when they signed a declaration in Rio+20 to try to do more sustainable mobility and allocate 175 billion to that. But the main result to that is leveraging the domestic finance and furthermore leveraging the private finance. What we are seeing is some change in this area. We are happy to report that there are some really good activities in terms of making these happen. International organizations and especially the major development banks

are working hard on ways to measure and report on how they do better in terms of sustainability of their portfolio. So national governments are taking notice and changing their paradigms as well. But most—and also many cities are following the great examples of New York or Singapore or CDC Europe like Copenhagen and shifting their way of doing things towards more sustainable thing. The feeling that we have is that this is the starting and this is starting in a good direction but a lot needs to happen.

Some examples of national programs, we have been following up or reported in this publication that EMBARQ, the World Resources Institute, together with GIZ is targeted mainly for Chinese audience and which we revealed several programs around the world and try to draw lessons so to provide some recommendations and ideas to the Chinese government. But this publication is about the works of—I invite you to browse it and see what would create information that would be useful for your own practice. We have been also doing some review on the evaluation of national problems and how the national problems to evaluate and make the selection of projects and programs. This is reported in this publication by EMBARQ WRI that you can find in our webpage.

Some of the things we find in this combination of research is a movement in some developing countries to follow the example of US, follow the example of UK, France, and Germany which have very, very strong national programs to support urban transport and support urban mobility especially in the form of support to mass transit and other sustainable mobility options. Some of these examples are Brazil. Brazil recently re-launched its law on mobility and with the National Urban Policy. It's a really, really important initiative which is asking the cities in Brazil. All the cities in Brazil greater than 20,000 will plan for mobility in a comprehensive way. It's funded with more than 9.5 billion USD and mainly for BRT, Light Rail Transit, metro infrastructure, requires co-funding of—from the state and local level.

It's not everything coming from the federal government. We are seeing that Brazil is changing really fast and investing a lot in mass transit in many cities. They have big events coming especially the World Cup next year, the football—what we call football World Cup in next year and the Summer Olympics in Rio. So they are moving their finance really fast to be able to prepare for these big events. They are also helping the private sector with loans for rolling stock or for buses so the services can be provided. They do that to loans in the national development bank, BNDES. This is setting a good incentive structure for the cities to shift their funding towards sustainable mobility.

Another good example is my own country Colombia which since 2003 after the success of the initiative in Bogota of a large-scale bus rapid transit system called TransMilenio, the national government decided to support other, not just Bogota but other cities in the country up to 70% of the financing in the infrastructure and set aside 2.5 billion in USD and

which have been mainly used for BRT in the seven major cities in the country. Also now, it's moving to integrated transport networks in intermediate cities. It's not just the large cities that are receiving the support from the national government.

The national government also provides technical assistance so the cities know better how to plan, how to manage, how to move. There's a lot of activity for instance with the support of the World Bank, Inter-American Development Bank and CAF, the Development Bank of Latin America. All the problems, it's in coordination with them. Now the City of Bogota, it's also planning to build this Metro. They've only seen in Colombia with Metro. The mayor in Bogota is planning. It's a varied transit. A very high cost alternative but it will be a good complement for mobility in my home city. This will also receive support from the national government. The example of Colombia has been used as a model for other countries, for instance Mexico.

Mexico started only three, four years ago with a PROTRAM, which is a national program for mass transit. Set aside 2.4 billion to support cities with 50% of the capital for rail or BRT. The change is being really large. There was no national program before. No finance from the federal government of Mexico and now five cities are already operating their BRT and there's a suburban rail here in the picture that also has been also supported by the federal government. There are 34 cities making line to use this on them. The law requires—the incentive to structure requires private participation.

Another really interesting case is India. I am right now broadcasting from Bangalore in India, which really has a large problem. Some years ago, India didn't have any national support to urban mobility. As part of the National Renewal Mission, they—that is total investment of 20 billion, very sizeable. One portion of that, almost 40% goes to mobility and also with some requirements from improving planning and also the requirements of co-funding from the state and local levels.

These have resulted in implementation and expansion of Metro in six Indian cities and seven cities have a bus rapid transit. Like this picture is the most recent one in the city of Bhopal in Madhya Pradesh. There are other cities that will come soon like the City of Surat in Gujarat. So it's a process that the national government has provided the incentives and the cities are moving forward to make these changes happen. They also encourage private participation. So there are very interesting lessons about these problems.

The last one that I wanted to share in terms of example is the case of China, which has a Transit City Program. It's kind of a pilot program that is really huge for 30 cities and requires co-finance of local provincial governments to advance. It's dedicated to mass transit options to help the cities become transit cities. Actually, the Chinese advancing so fast that

Beijing became the longest Metro network in the world with 442 Km, the second in the world with Shanghai. They go over London that has been working with for more than 150 years in its network. It's very interesting because Beijing some years ago, was a very small metro network and had grown really fast and their plans are for more than 1,000 Km by 2020.

There other 16 Chinese cities expanding Metro. Eighteen cities are with Metro and light rail under construction and twenty cities—22 cities with a construction plan, also 15 cities with bus rapid transit and 11 under construction or planning. China is moving really, really fast it's urban and infrastructure to have the transit options as the main lifeline for their citizens. But they have also been really interesting in progress there being bike sharing with the largest bike sharing systems in the world, cities of Hangzhou and city—it's talking 60,000 bikes. There is another city with 90,000 share bikes so public bikes are also an important option in China. This shows that there is a movement. There's the support of the national government is coming. Maybe other countries are considering this type of programs and model after the successful programs especially in Europe, US and Australia.

The main source of funding for national programs is the fuel tax. It comes from general revenue from government but fuel tax was introduced as one of the main sources of the transport infrastructure and many countries of the world are still subsidizing fuels. So, one way forward and those countries that are going—that are on the left-hand side that have prices per gallon lower than the US. Those countries are considered to be subsidizing their fuel and while subsidizing their fuel, they are doing two bad things.

One, they are encouraging a non-sustainable mobility and in the second one, they are not finding the funding to improve their sustainable mobility. Most countries, middle-income countries are in categories of a medium to high types of taxation and a few countries and all of them and maybe all of them located in Europe have high taxes on fuel. That discourages use on the one hand and also provides really important funding for improving sustainable mobility in these countries. So the main message is that national government can really look into taxation and continue looking to taxation as one way of going for funding sustainable mobility. The problem is that this is unpopular. So this need is follow decisions and government is set and people support to getting, to going this direction that seems they're not popular but could be the right way to go.

At the local level, that's where most of funding is. At the local level, you have the opportunity to raise funding from land development and user and property taxes. Property taxes are the main source of local funding and when mobility improves, usually land values go up. You can capture that land value through direct instruments and transient oriented development. In terms of user and property taxes, the registration fees, there are taxes that are local. For instance, field taxes that are only local, parking management and urban tolls. I am providing here some examples.

I just need to go back to the history of my own city Bogota where indeed what many US cities did in the late 19th century and it was expanding land with Tramz. They associate it with that land expansion. The city expanded the whole network of Tramz associated with land development. It was private initiative and it helped the city more to places that was not possible to be before. Thanks to these land use and transport association.

If you go Bogota and you go to this place called Avenida 72, you will see all this area fully developed but they just started with the Tram and the land use associated with the TRAM. This is the—this example of Bogota this—is the example of many, many cities that have this association between public transport and land development really clear in the beginning of expansion of the cities. But very few cities do that today of really doing a strong association of land and public transport.

Probably the best example around the world is the city of Hong Kong which actually mass rapid transit agency does together the transit and does together their land development. If there are reports of the land, their MRT in Hong Kong raising more than four billion money from the Hong Kong that is equivalent to 500 million US in a single year just to land sales on top of the stations. This example is also happening in other Asian cities namely Hong Kong and in other Asian cities like Singapore which has a really well-developed mass transit with association with land and also in Europe, the new expansion of the city of Copenhagen. Notice that city happened on this concept of transit-oriented development in its transit and land were developed together to provide the finance for transit but also the reinforcing effect of it.

The other area where the local government can get money—I just finished with this example that is happening here in both—it's happening in Bogota, of a really nice expansion of an improvement of an area in the city that is associated with the mass rapid transit towards the millennium. The project is under development. The land has been acquired and they are advancing the plans to move to construction and sales. It's a long process but it's happening in my home city Bogota.

The other areas where the cities can get money is from the user registration. Vehicle registration fees and I apologize for the little type on top of this slide. The vehicle registration fees or quotas in which the cities set a limit on the number of vehicles entering, and put a system of bidding for those licenses. Right now in Singapore means that having a car in Singapore could be more—a higher investment than a home in the US according to this report by Bloomberg. The vehicle registration fees using quota in Singapore started many years ago. It started in 1990. Right now, people that really want to have a car in Singapore go to the auction and pays around 60 to 70 thousand dollars. The fleet is only increased one percent per year. So they just keep it under control. They get around 6,000 new cars and they raise \$400 million per year that could be retained to improving their mass rapid transit and their bus systems.

Another city that has started long ago was the city of Shanghai. It charges around 9,000 per auto after the auction but it receives 96,000 vehicles every year and they raise more than 900 US million dollars also to improve their sustainable urban transport networks. A recent example is the city of Guangzhou. In 2012, they introduced also registration. Other cities in China like Beijing had quota. Unfortunately Beijing, it is not tied to the auction system so it's not raising as the funding as the other cities. This may continue to happen in these Asian cities. It could be a difficult proposition in other parts of the world but it's very rational. If there's not enough space or road for cars, why having much more cars? So limiting the number of cars which sounds harsh, it's actually a—it could be considered a sensible, a sensible approach.

Another approach is parking management and probably one of the best examples around the world is in San Francisco which they launched the SFpark. It's an online system that provides information on availability and prices a parking then a parking spot according to the demand. There is always opportunity to have a parking spot as long as you pay for it. They raised significant funding from their parking facilities in general. It's just that SFpark is—the numbers are before its park implementation. But having \$187 million per year out of parking management is really good. Other cities like Lisbon has also really an advanced management system and other cities around the world are looking into parking as an option not just to manage demand but also to raise the funding they need to improve their sustainable track funds for most.

The other example that is very interesting is congestion pricing popular up in London but is happening in Singapore since the 70's, in my many cities in Sweden now, in Vallarta in the small island of San Marino. It has not been that popular but it's a really important way. And many cities can follow that example of London in imposing this congestion-pricing scheme that not only reduce, avoid the unnecessary use of cars but also raise the funding to improve sustainable transport.

Last, is the opportunity of tackling on the climate and environmental funds. There are many and this series have talked about some of these instruments. I am not really describing them at extent here today and they can come from multilateral or bilateral funds and the new opportunity that is raising of supporting policy through national appropriate mitigation actions. But this is not a lot of money but can make a big, big difference and that's kind of the idea. It's not that this money will solve the problem but will leverage other funding which is more important. So this chain of NGOs like us working in the field make—help make change. We use really not a lot of money but we are trying to help many places around the world.

These climate funds that are in the strength of hundreds of millions of dollars are not—is not just thus be as ODA that manages billions of dollars can push the trillions of dollars of domestic finance from

government and private sector towards sustainable mobility. That's kind of the main message I want to bring in this conversation today is that if we don't combine these sources of funding, we could be missing the boat in terms of getting where we need to be. Where we need to be is by 2050, the reduction of 23% in VKT according to the studies by the International Energy Agency in the latest Energy Technology Perspective. That's what it takes to go from four-degree scenario to a two-degree scenario in terms of climate change. It's about 22.8 reduction in vehicle Kilometers combined with all the improvements in technology that will result in very sizeable savings of 20 trillion. Not requiring as much parking and as much loading space that is required in case we don't make this change.

The good thing is that that thing that is to meant mainly the very needed climate change, the law of emission development strategy, it's also very helpful in other areas. For instance, in a road fatality scene, we reduced 23% VKT. We might be able to have 1.3 million people not killed in traffic because the reduction in exposure. Of course, much more than that needs to be done but just the VKT reduction helps saving 1.3 million lives in 2050. Then you can make the numbers to calculate all the people that may not die prematurely as a result of that.

So with this, I close the conversation and I move to questions and will be able to hear questions from our global audience. Today, I have the opportunity to be talking from Bangalore but I come from Colombia and I have this opportunity to share these thoughts with you and really appreciate this chance provided by the LEADS GP program. Thank you.

Sean Esterly

Thank you, Dario, for the great presentation. I would just like to remind the audience that any questions that they may have can be submitted through the 'Questions' pane in the 'Go To Webinar' window. With that, I'll get to this first question. That question is, is it necessary to have national programs and regulations to shift funds to sustainable transport?

Dr. Dario Hidalgo

Well, it is not necessarily. Cities can make their choices on their own. But actually, cities are very tight in their finance and many times tied in terms of their technical capacities. So having national programs to support cities in their—in sustainable urban mobility and urban development is a great incentive and a great opportunity to move them forward. To say the exam—to go back to the example of Mexico, cities wanted to do things but they were tight in funding. When the national government of Mexico put the PROTRAM program, many cities wanted to go on and do and use those funds and now we have 24 cities lining up for this funding and changing their mobility networks.

Sean Esterly

All right. Thank you, Dario. Could you just expand on the climate finance for transport?

Dr. Dario Hidalgo

Yes. Unfortunately, the transport sector has been one sector in which climate finance have a—have very limited impact. There are a very few

projects from that like a clean development mechanism. Very, very few projects. Very small share of the total funding from the clean development mechanism. In terms of the GEF, the Green Environmental Facility or the CTF, the Clean Technology Fund, the transport projects are a small share of the total. There is a trend coming from the CEF and the CTF to increase that and there is also an opportunity to do that. But transport is not an easy sector in terms of climate change finance because transport networks are open, are not closed. It's not a power plant on wheels. So we need to do an effort to find better ways to improve that.

There's really an interesting initiatives like PMR at the World Bank that is making—PMR means Project Market Readiness that is helping governments like Chile and China to set up mechanisms for climate finance and working in transport there. There's also a program in Mexico. I think that we'll continue growing but the very important thing in climate finance is not just trying to find the funding solution in climate but the support especially in the initial stages of project preparation and project—and the institutional setting to get these projects going.

We could have another good conversation on climate finance but the main message today is we need to leverage that funding not just a thing that is the solution for our funding needs.

Sean Esterly

Okay. Thank you, Dario. The next question is what is your advice in terms of obtaining funding that may cover partially upfront cost needed to start mass transit projects?

Dr. Dario Hidalgo

Yeah. That's a really, really interesting point because one of the best ways to fund mass transit projects is then value capture but it takes time to develop the land around the transit projects. So you need the upfront money and that's where financial mechanisms may help like bonds that are issued and repaid with this land value increases, the support of national government for capital investment. Not for ongoing operation but through capital investment in infrastructure, in vehicles, rolling store.

These things need to happen because the—most of the mass transit projects are intensive in capital just at the beginning and the benefits are over a long period of time. So issuing bonds as an opportunity to fund them and we pay the bonds with land value capture is a valid, valid mechanism.

Sean Esterly

All right. The next question, Dario, is why do you think there are few cities with funding from some of these different methods that you mentioned this from land value capture for sustainable mobility and vehicle quotas or congestion or price parking or parking management.

Dr. Dario Hidalgo

Yeah. Well, I believe that that's a result of the lock-in effect that was explained during the talk. This is not the way that cities normally do business. When you start talking about congestion charging, you have

natural resistance. It's not a—it is not a good proposition in terms of political economy. A mayor that is only a few years in office trying to push for this idea will be very unpopular. So we need to have really a strong leadership to get it done.

The leadership that London have under Ken Livingstone, of the leadership that Singapore under Lee Kuan Yew, this is something where the choices don't follow the popular demand but the choice is followed when it is really needed. So I believe that's the difficulty with most of these things that on the outside they are very unpopular. They are really good for cities. At the end, you are better off but it is difficult to get the approval.

One very interesting case is the case of Copenhagen and the systems of congestion charging in Sweden. They started with that very unpopular. They were very unpopular when they were proposed but they were tried and then they went to a ballot. After the people have seen the benefits and the impacts, the people was happy and they voted quite favorably this congestion charging schemes in Copenhagen that they are now spreading to three or four Swedish cities.

Sean Esterly

Thank you, Dario. The next question from the audience is are there any good examples of a major city investing in sustainable transportation with a heavy focus in technology that has traded a good maintenance program and/or partnership to keep that cost down, that typically expensive investment.

Dr. Dario Hidalgo

Yeah. One of the best cities in the world doing this kind of thing is the city of Singapore. This having developing land and mass transit over since it's initiation as a free country in 1965. But it was very bold in the 70's in creating mechanisms to go from doing expanding its Metro system and the bus network on the surface and tying everything with the land development. But they are really, really focused on technology in terms of having high-tech technology. Not just for the mass rapid transit system. Really good quality buses and very well integrated fare collection and user information systems and the collection of the congestion charges also using electronics and not manual collection. They do have a really strong maintenance and program and they fund—they look at the life cycle.

One of the best examples in the world is the city of Singapore. Singapore is small in terms of population as compared with all of mega cities. But many of the examples of Singapore are now being applied in Shanghai which is a mega city and is doing—is having some similar approaches. And we see very nice changes right now in Rio de Janeiro in preparation for the World Cup and the Summer Olympics in Mexico City. It's so difficult in fact moving forward but I think that the concept the person is asking is how you keep these things going, how you maintain them if it expensive and you said you need external funding for that. And it needs to come hopefully from within the transport system, congestion and parking management

Sean Esterly Thank you, Dario. Next question from Eric in the audience, knows that EMBARQ has recently published a report about cost benefit analysis. To what extent do you think it would be possible to invite investors to finance mass transit projects based on internal rate of return estimates?

Dr. Dario Hidalgo Yes. Well, the report that the person is referring is mainly on the socio-economic impacts, not just the financial which are two separate evaluations you need to do when advancing projects. The financial evaluation is internal to the project. The socio-economic evaluation is for the society at large. The report focuses mainly on the society at large in fact. But we are able to—we know from experience that you are able to get the private sector interested in parts of mass transit. It's not possible to fund the whole mass transit system out of user fares. So it is—the usual practice is to divide the infrastructure that is funded with government funding and the operation including buses for instance in the city of Bogota and financed through the private participation.

This example in Bogota, it would be that to Latin America and now also here in India where I am today in which you created a business plan which is appropriate and the business is able to make reasonable profit out of acquiring and operating the buses on an infrastructure that is provided by government. There are some difficulties with those schemes because the quality usually is not as—there's not enough care with the quality because it's very difficult to provide a high quality service just that out of the user fare. So that's when probably you need some additional support especially for the acquisition of the buses from government funding. But it's always possible to have really good operations in the hands of private sector which manages that, those operations under a strict supervision from government.

Sean Esterly Great. Now, one more question from the audience, Dario. That is, they note that a lot of the discussion has been on developed worlds' transit finance systems. How can those approaches be compatible for undeveloped countries?

Dr. Dario Hidalgo Yes. This is an interesting question. Actually when you talk about on transport demand management, it's being applied much more into developing countries than in the developed world in terms of introducing administrative restrictions or economic instruments, with Singapore, Shanghai, as we show in Guangzhou which is applying quotas right now. The parking management schemes are mainly in developed nations and congestion charging is also mainly currently in developed nations. The reason being is that the need of technology and the need of capital investment up front, it's important.

But it's—if developing cities can look into these and leap off, they don't need to start to have a big congestion and then start applying congestion charging or applying—demand a—parking demand management. It's much better for cities like Bangalore where I am right now, to do it now

when motorization rate is low as compared with all the places than later when it is more difficult.

Sean Esterly Great. Thank you, Dario. That was the last question from the audience that I received. I'd just like to give you the opportunity to make any closing remarks or final statement that you'd like.

Dr. Dario Hidalgo Well, this low emission development is a way that we need to go. But in terms of mobility in the—we are not able to just thinking the low emissions. We need to think even more a wider approach in which other sustainability issues are also in the mix. It would be very difficult to just focus on low carbon. We can't address low carbon but we need to address at the same time congestion and we need to address at the same time a topic fatalities. Those two things are very important at the local level.

So when thinking mobility, it's usually these objectives that need to be taken into account and at the same time reduce carbon. If we only focus on the carbon reduction through technology, we may end and have in a scenario which is not nice with between congestion or low carbon traffic fatalities. We need to reduce congestion and reduce traffic fatalities at the same time. Then we reduce carbon emissions.

Sean Esterly All right. Thank you again, Dr. Hidalgo, for the presentation and for answering those questions.

I do just want to remind the audience. We will be making the presentation, the PDF versions of the PowerPoint and also an audio recording of the webinar so that you can listen and follow on. Those will be made available tomorrow on the Clean Energy Solutions Center training page. I also sent out that link via the chat in the 'Go To' webinar and also the 'Question' pane. So you should be able to copy that link at either of those.

I just want to welcome our attendees to take a very brief survey. It's a three questions survey. Heather, if you could go ahead and display that first question. That question is the webinar content provided me with useful information and insight.

Sean Esterly And the next question, please. The webinar's presenters were effective.

Sean Esterly Then the final question is, overall, the webinar met my expectations.

Sean Esterly All right. Thank you for answering our survey and on behalf of the Clean Energy Solutions Center, I'd just like to extend a hearty thank you to Dr. Dario Hidalgo and to our attendees for participating in today's webinar. We had a great audience and very much appreciate your time. I do want to invite our attendees again to check the Solutions Center webpage over the next day or two if you would like to view the slides and listen to a recording of today's presentations as well as previously held webinars. Additionally, you can find information on upcoming webinars and other

training events. We also invite you to inform your colleagues and those in your networks about Solutions Center Resources and Services including the No-Cost Policy Support. Hope everyone has a great rest of your day and we hope to see you again at future Clear Energy Solutions Center events. This concludes our webinar.

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