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**JOSE PUPPIM DE OLIVEIRA:** Hello, I am Jose Puppim de Oliveira. I am an MIT-UTM business scholar. This video shares some lessons of my research on urban innovation using case of waste management in Penang, Malaysia. Urban innovation means doing things differently in the urban context. Innovation is important for improving urban services in a context where many cities around the world face increasing budgetary constraints.

Interaction among different governmental and non-governmental actors are key to innovation. Interactions can bring new resources and knowledge to solve urban problems more effectively. The waste sector in Malaysia particularly offers an interesting laboratory for urban innovations. The country has tried to improve waste management effectiveness in recent years, making a series of institutional change, such as decentralization of waste management at the federal level.

**DR. MOHD PAUZE BIN MOHAMAD TAHA:** Previously, the waste management and public [INAUDIBLE] is under the purview of each government, and being implemented or being responsible is under the local government. Somehow, they have a difficulty to provide sufficient funds to manage. At the same time do not have expertise or manpower to manage the solid waste as previously. Almost all the waste is sent to the dumping ground.

Local government asking federal government to provide the fund for them. We also want the local government to focus on other areas of services. So that's the reason why the federal things is better. So the responsibility of managing the waste is put on the federal responsibility.

**JOSE PUPPIM DE OLIVEIRA:** Penang Island in Malaysia decided to keep waste management under local control.

**GUEST SPEAKER:** Actually, the urban services department is in charge of solid waste management, and also public cleansing is the core business of the council. The most challenging part in Penang Island is domestic waste. Penang Island [INAUDIBLE] around 550 tons of waste is being disposed.

**DR. LIM MAH HUI:** The city council spends about 40% of its budget just to dispose of waste.

**GUEST SPEAKER:** Our recycling rate at the moment is 27%. With the active role of the recycling agent, the NGOs and the environmental group, in 1998, the domestic waste around 700 tons. Now it's really-- it's around 440 tons per day. So how we manage to reduce it? In Penang, we had a very quite active role of the stakeholders doing recycling.

**JOSE PUPPIM DE OLIVEIRA:** Urban innovations reduce the waste. We are going to see two of those initiatives to understand how urban innovations emerge through different kinds of institutional arrangements.

**BROTHER SIOW EK:** This the Recycling and Education Center. More important is education to spread and actually encouraging more people to do recycling together. And in Malaysia, it's a long time the recycling stopping it's not part of the life [? whole ?] practices yet. So we have to set up the proper infrastructure to teach the residents how recycling should be done, so that when they go back home, they know how to actually save the item into the different category.

So we had about 20 were our volunteers. In average, per man, we are running about 10 tons of material. That cover plastic, papers, metals. All proceeds from the recycling are all channelled towards the dialysis center.

**LEE MEOW HONG:** [INAUDIBLE] Tzu Chi Dialysis Center, actually, we started in 1997. From the first day, it's actually free of charge. Everyone interested to know how we survive for the past 18 years. About 70% comes from donation from the public. Another nearly 30% comes from our recycling.

**BROTHER SIOW EK:** Recycling Education Center is something very new. When they equate recycling center equal to rubbish center. So when we want to set up this center, the resident community say, no, we cannot allow a rubbish center set up. Then we have to explain to them, we are not setting up a rubbish center. We are setting up an education center. No smell. Line is clean.

**JEFFERY HO:** And there is a mosquito-infested area. Tzu Chi was willing to come here to set it up, so we work along with them.

**BROTHER SIOW EK:** We actually work out with the MBPP, the council. They do actually facilitate. They actually rent to us at a very minimum rental cost. Also, they are very supportive of our recycling effort. And at the same time, by doing recycling, we also reduce the amount of rubbish that they had to handle. The whole country goes for solid waste recycling. So we're actually two years ahead. Go green, save lives.

**LEE MEOW HONG:** From the recycling, besides, we are doing environmental protection. We actually can save life.

**MAGESWARI** So in terms of waste management, it is not the right way to just think of disposal. We should  
**SANGARALINGAM:** try to reduce the consumption so that we will also reduce the production of waste. We are trying to promote communities to be involved. From the community, it goes to the local government. At least 45% to 50% is organic waste or food waste. How, in the first place, can you reduce food waste, the kitchen peelings or the green waste which can go into composting.

**JOSE PUPPIM DE OLIVEIRA:** Composting is the second case of urban innovation. You reach the private sector partners with this public sector in civil society.

**SOH YEW AUN:** Most of the problem is that the people expect the government to handle the obvious. Waste is not their problem. It's government's problem. How people look at food waste, because to them, it is a waste. But to the world, it is actually a resource. Most recycling companies don't survive for long, because the cost is too high to do recycling. And the economic return sort of value is too low.

The only way for them to make money is, of course, then to look at government subsidies, looking at government credit mechanisms. We have come up with something that we know that is economically feasible.

[NON-ENGLISH SPEECH]

**CHIN KEE WONG:** Methodist Boys' School, a few years back, we were approached by one of our old boys, who also happened to be a councilor in the city council in Penang. So he came up with the idea of turning the school green. All canteen waste, especially food waste, churned up in the machine and converted into enzymes, which later we converted into fertilizer. And that fertilizer, we brought to our eco-green farm.

**NG CHUN WEI:** We have a daily schedule for Monday to Friday for all these food [INAUDIBLE] to collect the food waste from the canteen just to be processed here.

**WONG CHIEW LEE:** We have the fruit section. We also have the herbal section, kitchen remedies. Over the other side, you will find that we have this rainwater harvesting system. So this is some collaboration

with USM, [NON-ENGLISH].

**SOH YEW AUN:** In Penang Hills, we deal with the end product differently. We ferment the food waste here itself, without taking back to the factories. And then we use the fermented food waste to treat sewage. And the [INAUDIBLE] has got no smell and no oil accumulation, no grease accumulation. If you ask me, I think a lot of things work better on a small scale than on a large scale.

Everybody has to cooperate. You can develop the best machines in the world, but if the people don't cooperate, the machine's not going to run by itself. Food waste doesn't get separated by itself. You need people. Everybody has to chip in some way. And this is where we are going on with the schools, to start teaching the students of the importance of actually separating your food waste and making sure that they're going to the correct places.

**JOSE PUPPIM DE OLIVEIRA:** Three main lessons from the case. First, innovation capabilities were created by involving various stakeholders. Second, broad stakeholder involvement brought resources, like knowledge and finance from various sources. These would not be possible if a stakeholder was working alone. Third, innovations were able to connect waste with other issues, such as health, sewage treatment, and education. Innovation can overcome problems of collective action, where many stakeholders must work together.

**MAGESWARI SANGARALINGAM:** There should be awareness amongst the communities on how to reduce the waste, and also in terms of the industry. And so there are lot of players in the field of waste management which everyone has to take part in.

**JOSE PUPPIM DE OLIVEIRA:** The state and local authorities have helped to scale up such initiatives by providing support to coordinate the different efforts from federal government, civil society, and link them with citizens.

**MUBARAK BIN JUNUS:** We still feel that there is something to be done more. We already come up to the policy in line with the federal policy to come up with the mechanism of collections. We are now going to use the same mechanism as federal, what they are doing. We are going to improvise this according to our own local environment.

**JOSE PUPPIM DE OLIVEIRA:** A combination of top-down efforts from governments to support initiatives of bottom-up urban innovation brings the right combination to nurture broad transformation in urban services delivery.

**MAGESWARI** The way you're disposing it, whether you're landfilling or you're incinerating, or you're just  
**SANGARALINGAM:** dumping, it's all causing problems for the climate, too, because of the greenhouse gas  
emissions.

**ANTHONY CAPON:** How can we make a city suitable for our bodies and our health? We have designed and  
managed cities often in the interest of motorcars, rather than in the interests of people. We  
need to rethink the city in the interest of people.

**MUBARAK BIN** Even though there is some initiative being done, but still the mindset still needs to be  
**JUNUS:** changed.

**DR. YUEH-KWONG** The current concept of development is the more buildings they have, the more industries they  
**LEONG:** have, the more developed you are, the better you will become. But they have not factored in,  
actually, the cost in terms of pollution, in terms of traffic congestion.

**JOSE PUPPIM DE** Creating the capabilities to innovate in governments and civil society is crucial to combating  
**OLIVEIRA:** global problems such as climate change, which requires a higher degree of collective action  
to design and manage the cities of the future. This will require innovation in our thinking about  
how we carry out urban development.

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