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WESAM AL MEDHOUN: Hello, my name is Wesam Al Medhoun, I am a visiting scholar in the MIT-UTM Malaysia Sustainable Cities Program, and assistant professor at the Islamic University of Gaza, Palestine. In this video, I'll be describing ways in which Penang, a city in Malaysia, is trying to reduce vehicle emissions.

Traffic related air pollution has an adverse impact on the environment and human health. Exposure to traffic emissions create health problems such as higher rates of asthma, cardiovascular disease, and bad development in children, pre-term and low birth weight infants, childhood leukemia, and premature death.

Traffic emissions also contain a large amount of carbon dioxide, a primary greenhouse gas that contributes to global warming.

SPEAKER1: People are burning huge amounts of coal, oil, and natural gas to generate electricity. This releases harmful greenhouse gases which trap heat in the atmosphere.

SPEAKER 2: No wonder I have been feeling really warm

SPEAKER 1: As more fossil fuels are burned, the greenhouse gases will trap more heat, causing your temperature to rise.

WESAM AL MEDHOUN: Cities can reduce vehicle emissions by reducing private vehicle ownership, by increasing the cost of owning a vehicle, such as increasing cost of a registration, increasing cost of parking, etc, regularly enforcing emission standards, inspection of all vehicles to eliminate bad cars, improving the efficiency of road networks, and providing safe efficient and affordable public transport, and integrating land use and transportation planning. But not all of these strategies are visible in every context.

I will therefore, focus on the case of Penang, a state within Malaysia, to illustrate how the context affects these strategies. Why Malaysia? The better growth of the Malaysian economy in recent decades has resulted in the deterioration of the environment. Malaysia is ranked as the fourth most polluted of 14 Asian countries. In particular, air pollution and degradation of air quality is a problem. World Health Organization reports show that approximately 1900 Malaysians died due to outdoor air pollution in 2012.

According to the Malaysian Ministry of Health, diseases respiratory system are the second greatest reason for hospitalization and death. Respiratory diseases are responsible for approximately one out of ten hospitalizations, and one out of five deaths. Vehicle emissions are the single largest cause of air pollution in Malaysia, accounting for 82% of total air pollutants. Haze from forest fires further degrades air quality in Malaysia.

Penang is an example of a rapidly developing state in Malaysia, with a problem of air degradation. Private vehicle ownership in Penang is higher than the national average, but they are trying to do something about it. Penang has the third largest economy of Malaysian states, and has a population of 1.6 million. It is on the Northwest coast of peninsular Malaysia, by the Straits of Malacca. It is composed of two parts-- Penang Island, where the seats of the government is, and Seberang Perai, the mainland part.

Penang has a higher number of registered motor vehicles per person than other Malaysian states. There are 2.52 million registered motor vehicles, an average of 1.25 cars per person.

PROFESSOR FARHAN: Penang, in the island, as well as in the mainland, have delayed the main spine for the public transport. So because of that, more and more people go towards private forms of transport, either motorcycle or cars, and that, of course, adds to the congestion problem. And when there's congestion, and there's high volume of cars with low speed, we know that it affects the pollution.

WESAM AL MEDHOUN: Like many places around the world, Penang is trying to improve air quality by taking measures to reduce vehicle emissions. What has been Penang done so far?

Directed traffic law in one or two lanes, based on intensity to reduce congestion on busy streets. Improved traffic management control through adjusting the timing of traffic signals. And by constructing roundabouts to reduce congestion. Providing free shuttle buses from the mainland to the island. These buses are meant to transport of civil servant who are working at the island government compound, and executives who are working at the Bayan Lepas industrial area created a dedicated bike lane for parts of Georgetown, the main city of Penang Island, increased enforcement of emission standards inspection during car registration, and changing of car ownership, and introduced car-free day at certain parts of Georgetown. These strategies have reduced emission levels, and consequently improve the air quality in the state.

The state also plans to reduce private vehicle ownership by providing affordable and efficient public transportation.

MR. MUSTAQIN: But the very poor connectivity in terms of public transport because the public transport there is now-- many old buses. Now we're heading [INAUDIBLE] and also [INAUDIBLE] traffic problem that will impact our air pollution.

WESAM AL MEDHOUN: In 2015, the state of Penang hired an independent consultant to develop a public transportation master plan, but they face major challenges which are-- transportation decisions are made at the federal level. Even a change in the bus line running through the town of Georgetown needs to be approved by the federal government. This makes it very challenging for the state government to make changes.

Limited budget for transportation planning, because revenues powers lies within the federal government, the state government has a very limited budget for making improvements to its transportation network.

PROFESSOR FARHAN: So this all adds out to non- sustainable practices. And I think the state government this trying very hard to solve this. And they have come up with several strategies and they introduced a transport master plan. Part of that transport master plan is an extensive rail network. Unfortunately they are not able to secure any funding from the federal government so they have to be creative, and perhaps this is another challenge for sustainability, financing. And I think Penang is trying an initiative that is self-sustaining through public partnership with the public- private partnership model.

WESAM AL MEDHOUN: Penang authorities plan to finance the transport master plan by selling reclaimed land. But they have yet to do an environmental impact assessment. Therefore, while public transportation is critical to reducing vehicle emissions, reducing negative environmental impacts requires thoughtful finance and implementation mechanisms.

To conclude, Penang decision makers might adopt sustainable transportation policies that have been implemented by five major Asian cities like Hong Kong, Tokyo, Singapore, Seoul, and Shanghai. These include promoting public transportation, integrating land use and transport planning, and instituting travel demand management to bring about sustainable transportation system. Adding to that, more stringent car emissions inspection, and expanding the free-car day can further reduce traffic emissions.

Transport planning and implementation in Penang still faces several challenges that need to be handled wisely in order to be more sustainable. At the same time, positive element of Penang's implemented strategies are a promising example for less developed cities.

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