

## **Summary Notes**

# **Transition to Soot-free Heavy-duty Vehicle and Fuels: Technical Workshop on Electrification of the Heavy- Duty Vehicles**

**April 20<sup>th</sup>, 2022**

**Start Time: 09.00 WIB**

**End Time: 12.15 WIB**



**Delivered by PT. Citra Bahasa Global**

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# **Summary Notes Transition to Soot-free Heavy-duty Vehicle and Fuels: Technical Workshop on Electrification of the Heavy-Duty Vehicles**

Time and Date

Date : Wednesday, April 20<sup>th</sup>, 2022

Time : 09.00 – 12.15 WIB

Location : *Zoom Cloud Meeting*

## **Opening by Aditya Mahalana - ICCT**

- Opening the event
- Explaining today's topic
- This project was started 1 year ago, and already hosted 3 events (workshop)
- Today discussions will have quite diverse presenters and also invited several institutions

## **Opening by Francisco Posada – ASEAN Regional Lead ICCT**

### **CCAC – Technical Workshop on Electrification of the Heavy-Duty Vehicles**

- This event is an opportunity to understand more about transportation & heavy-duty vehicles also transition to zero emission transportation
- Today, we will address several questions, such as:
  - What HDV segments can be electrified first?
  - What is the global level of ambition on electrifying HDVs?
  - What are the policies that would support that transition?
  - How to address the need for charging infrastructure?
  - How to overcome technical barriers?
  - Considerations on financing aspects
  - Where can we find support for the regulators for ASEAN countries?
- So those are the intention for today's meeting, to discuss about them.

## **Introduction by Bert Fabian – ICCT**

- About 70% of oil demand for ASEAN countries are for transportation, and 88% are for load vehicles. This really impacted the air pollution and also climate change in the region.
- With close to 700 million people of ASEAN, we have huge motorization.
- On today's meeting, we don't really have many participants, but there are government representatives, so I hope this could be a great chance to have a good interaction and discussions.

## **Aditya Mahalana - MC**

- Thanking Francisco & Bert for their opening remarks
- Welcoming Mr. Ray Minjares from ICCT to give his presentation

## **Presentation 1 - Technical workshop on electrification of heavy-duty vehicles Ray Minjares – Director of Heavy-Duty Vehicles Program ICCT**

- Why we care so much on zero emission? The answer is because of the public health. That's the primary motivator for the zero emission vehicles. But other than that, it's also more efficient to use zero emission vehicles.
- Paris Agreement aligned CO2 pathway is possible with accelerated global ZEV transition that reduces CO2 emissions 73% by 2050
- Important role of heavy-duty vehicle. HDVs account for half of CO2 mitigation potential and cumulative CO2 reductions of 47.5 billion tons from 2020-2050
- Paris Agreement's well below 2-degree Celsius compatibility achieved under the scenario
- Simply transitioning new vehicle sales to ZEVs
  
- Battery electric and fuel cell electric are the only technologies with potential for near-zero GHG emissions.
- We're not only talk about net zero emissions, but we also talk about zero emissions fuels. So that's the target, actually.
  
- We have to understand the common characteristics of first-mover HDV segments in ZEVTC countries.
- We have identified vehicles types that have criteria, such as: relatively suitable duty cycle, like predictable & low variability; and then return-to-base operations, have depot charging; and dedicated parking, guaranteed charging spots.
  
- Based on those factors, we have identified some vehicles. The first one is
- Urban Buses. As we know, buses account for about 4.7% of total HDV market in ZEVTC members and mature market with widespread commercial availability.

The second one is short-haul tractor-trailers. This vehicle account for 21.9% of total HDV market in ZEVTC members. This kind of vehicles are approaching commercialization in the US and Europe. The third one is Long-hauler tractor trailers. This is the most challenging vehicle in many countries, since it's travelling in the longest distances and carrying the heaviest load.

- As we moved down these vehicles, each one needs better infrastructure.

So, the real question is, how to achieve Net Zero Emissions?

There are several strategies in order to achieve that

1. Adopting zero-emission sales and operations targets
2. Adopting zero-emission performance standards for new vehicles
3. Providing fiscal incentives
4. Establishing infrastructure programs and policies.
5. Expanding fleet purchase requirements
6. Last strategy to achieve zero emission operations through Zero emissions zones

Summary:

- Phase out targets: Adopt targets of 100% zero emission sales of HDVs by 2040, with faster targets for key segments
- Zero emission performances requirements: Adopt ZEV regulations to align with ZEV targets and transportation decarbonization goals.
- Fiscal incentives: Adopt fiscal incentives equal to incremental cost across all vehicle's classes; also adopt in-use fiscal incentives such as road tolls.
- Charging infrastructure: Develop a national zero emission charging and H2 refueling plan to shape public and private investment
- Market demand: Adopt national fleet purchase requirements and expand zero emission areas.

## **Presentation 2 - Zero Emission Bus Rapid-deployment Accelerator (ZEBRA) Partnership in Mexico City**

**Ms. Leticia Pineda - ICCT**

- ZEBRA vision is to shift all new bus procurements in leading Latin American cities to zero-emission technologies
- ZEBRA has several engaged partners with each role, such as:

- As funder and facilitator
  - As lead partners
  - As supporting partners
  - As commercial partners
  - As government partners
- There are 3,600 buses in core and catalytic cities that worth 1.6 billion USD of investment. There's also an increasing market competition and product availability.
  - ZEBRA also monitors real world performance data, secure public commitments from leading investor to send clear market signal, and designs streamlined process for mobilization of project preparation funding.
  - ZEBRA also practices knowledge sharing by hosting annual showcase event, facilitating knowledge transfer across cities, and delivering training to utilities and financiers.
  - Mexico City has a commitment to reach carbon neutrality by the year 2050. Therefore, Mexico City signed C40's "Clean and Healthy Streets Declaration" to reach all new buses to be zero emissions by 2025, and zero emission zone by 2030.
  - Also, to reach implement climate change strategy and program 2021-2050, Mexico City rely on electrification of transport and having commitment of one fully electric BRT line by 2024 (currently there are 2 lines that being electrified)
  - Mexico City also have tax import exemption policy for electric vehicles until 2024.
  - Metrobus is a government-owned fleet and the only BRT system in Mexico City that currently has 7 lines with approx. 780 buses.
  - Mexico City plans to renew 80% of buses in lines 3 &4 in 2022-2023.
  - I want to highlight the real-world and simulation. So, we managed to do the BEB monitoring and also the route operations monitoring, data cleaning & processing, simulation, and energy analysis.
  - Let's take a look at the TCO for diesel against battery. The TCO for battery is lower that for diesel. And also provide the better outcome
  - There are several key findings, for example:
    - 1:1 replacement ratio is possible
    - Larger project time equals better TCO

### **Presentation 3 – Supporting E-Mobility Initiatives in Asia and the Pacific**

**Pamela Chiang – Senior Transport Specialist ADB, Transport Sector Group  
Sustainable Development and Climate Change Department**

- The ADB has 4 main activities on promoting E-Mobility:
  - Capacity Development, i.e.: Training opportunities, regional workshops, etc
  - TA and Project Financing, i.e.: ADB loan, co-financing with other MDBs, grants for TA
  - Technical Assistance, i.e.: Charging infrastructure for 2 & 4 wheelers; E-Bus deployment in Jakarta
  - Project Development, i.e.: E-Smart Bangkok Mass Rapid Transit Electric Ferries Project
- There are several factors to consider:
  1. Environmental Factor: grid factor, existing fuel use, emission regulation, etc
  2. Economic Factor: fuel price, electricity price, incentives
  3. Policy Factor: industry policy, local transport plan
  4. Financing: loan, government budget
  5. Other material considerations: production and supply of new electric vehicles, batteries & charging infrastructure; vehicle manufacturing facilities, material extraction, etc
- ADB's Upcoming support to DMCs in Asia and the Pacific:
  - Establish networks and communities of practice to promote knowledge transfer on E-mobility technology
  - Provide training and capacity building
  - Establish marketplace to convene public and private sector, industry experts, technology providers and financiers to catalyze uptake of E-Mobility in Asia Pacific.
  - Technical support in identification and development of project ideas.

### **Aditya Mahanala – MC**

- Opening the panel discussions, followed by Q & A session.
- Welcoming Bert Fabian to facilitate this session

### **Bert Fabian - Moderator**

- Greetings to all participants
- Explaining about ICCT which is working with ADB for the UNEP's Global Electric Mobility Programme, which is supporting more than 50 low and middle-income countries with more than USD 70 million in grants and over USD 250 million in loans.

- This programme also helps building capacity and creating awareness, establishing roadmaps and strategies, developing national policy frameworks, creating business models and finance schemes, and piloting electric vehicles on the ground.
- Global Thematic Working Groups provides policy advise and bring forwards the global harmonization of e-mobility standards and regulation. It also helps to develop business models and finance schemes ready for adaptation in national projects
- Asking participants and countries representatives to share their experience

### **Sharing knowledge from Faela Sufa – ITDP Indonesia**

- ITDP get funding to assist Trans Jakarta. TDP helped TransJakarta build a roadmap & doing analysis on the policy support
- We also seek funding to help the Ministry of Transport of Indonesia to build transport infrastructure in 4 provinces in Indonesia

### **Question for Leticia**

Can you tell a bit more about the current exp of the electric buses in Mexico and other Latin American countries?

### **Answer from Leticia**

- The experience has been positive. The energy consumption become really low compare to previous. The challenges are still adopting and changing the system, because it takes a different technology to do this. They have to now expanding the system, and replacing with the new one.
- There are so many to learn. The greatest thing about partnership is there's so many to learn and build a good foundation, because you have to have a good foundation to be ready for the upcoming ones. I would say that overall, the performance of the buses has been really good.
- In terms of infrastructure, the city and the upgraders can do a better job thinking of the project as long-term thing.

### **Question for Faela – ITDP Indonesia**

I recall that you have actually run electric bus in TransJakarta. And it also run before and during the pandemic. Can you share what was the experience of its performance on this electric bus, and also maybe like the concerns of the TransJakarta authorities and the passengers?

### **Answer from Etsa Amanda – ITDP Indonesia (on behalf of Faela)**

- TransJakarta is currently running pilot electric buses. We're monitoring & evaluating these buses. Currently running smoothly.
- Unlike several years ago where pilot projects carried dummy passengers, now they're carrying real passengers.
- TransJakarta's pilot e-bus operation:
  - Operates on 1P Route: Terminal Senen-Bundaran Senayan, approximately 25 km (round trip), 60-90 minutes  
4 BYD K9 buses, 2 in operation and 2 for backup
  - Initial finding: 1 kwh/km energy consumption, and consumes 7.8% battery capacity per round trip

### **Question for Mr. Nara – Cambodia Representatives**

I know you're doing quite excellent work of implementation the electrification of transportation, Mr. Nara. Can you share a bit about it?

### **Answer from Mr. Nara – Cambodia Representatives**

- Cambodia is willing to promote the use of EV, but no policy yet. Earlier this year, the Ministry of Public Work and Transportation was initiating last knock of EV policy in Cambodia.
- To prepare the policy, the Ministry of Public Work and Transportation have a meeting with the automobile importer led by the Cambodian Automotive Industry Federation, and the meeting focus on the need of the national policy to support and promote EV in Cambodia with the aim of decarbonization.
- The Ministry of Public Work and Transportation is preparing draft of policy to promote the use of EV to reduce carbon emission.
- There's also plan to install charging station at prime locations, including the Capital of Cambodia.
- The charging station we be built with the cooperation with UNDP and the private sector.

### **Question for Mr. Nara – Cambodia Representatives**

- Do you have any effort on electric buses to also bring this to Cambodia?

### **Answer from Mr. Nara – Cambodia Representatives**

- I'm not sure about this.

### **Question for Mr. Nara – Cambodia Representatives**

You mentioned about UNDP helps you with the charging stations, right?

### **Answer from Mr. Nara – Cambodia Representatives**

Yes, UNDP also support it.

### **Suggestion for Mr. Nara – Cambodia Representatives**

Maybe you can also discuss with them about getting greater support about the electrification programme that I mentioned. UN agencies like UNDP can assist on developing these national projects. So, if there's already history of working together with UNDP, maybe this could be an opportunity.

### **Question for Xaysomnuk Souvannafong – Lao DPR Representatives**

- The Global Green Route has been supporting many developing countries, including Lao in terms of electrification. So, to Laos Representatives, can you share with us about electrification?

### **Answer from Xaysomnuk Souvannafong – Lao DPR Representatives**

- We're now in preparation of the policy to support electrification in Laos. Also, we have drafting the policy about electric vehicle, including the light vehicle.
- Actually, since I'm moving from one area to other area, I don't have much information on electric vehicle right now, so that's as far as I'm concern, the recent updates on the electrification in Laos.
- Laos also have prototypes and a number of electric cars

### **Question for Ms. Alma Segui - Department of Environment and Natural Resources of the Philippines**

- Can you share your insight or comments on this electrification of buses?

**Answer from Ms. Alma Segui - Department of Environment and Natural Resources of the Philippines**

- Explaining about city development and market development in the Philippines (inaudible for almost all part of the speech)

**Response from Bert Fabian**

UNIDO, another partner agency, in the global mobility program, working with sometimes the Ministry of Transport, sometimes the Ministry of Environment, or the Department of Energy. Of course, in the Philippines, we need coordination with the Department of Transport and also Department of Environment and Natural Resources. So maybe in the next few months, we can get some more information on this project.

**Question for Chutinthorn Mankhong – Thailand Representatives**

- Can you share your insight?

**Answer from Chutinthorn Mankhong – Thailand Representatives**

- Updated information about public transportation in Thailand that is now under the Ministry of Transport
- We have strategy plan on public transport, include the pre-activity. First one is the bus. Buses is included 2 agencies, Bangkok Mass Transit Authority which responsible for the intercity Bangkok Buses operation, for about 2,500 buses.
- The other agency is the Transport Company Ltd. that responsible for the intercity bus operation
- There are also transport company that have plan to replace the conventional buses to electric buses. But for the transport company, they are more focus on short and middle distance, with no more than 200 km.
- So now, the Ministry of Transport focus on the electric buses first

**Question for Chutinthorn Mankhong – Thailand Representatives**

So, you already have electric buses that are running?

### **Answer from Chutinthorn Mankhong – Thailand Representatives**

Yes, we have

### **Question for Chutinthorn Mankhong – Thailand Representatives**

You got supported from GIZ too, right?

### **Answer from Chutinthorn Mankhong – Thailand Representatives**

Yes, that's right. They supported the financial aspect for electric buses and motorcycle as well.

### **Insight from Asrul – Brunei Darussalam Representatives**

- For these electric buses, we have this task force from the Ministry of Communication and Transport also the Ministry of Energy. We have target 60% sales for the vehicle in 2025.
- In the task force, we have also discussed about electric buses, but we're still new in this area.
- We already have electric vehicle in Brunei Darussalam, and there's a joint task force as part of the task force, but focus more on national climate change to have cleaner energy in Brunei.
- One of the joint task force agenda is about the electric bus. We still learn a lot from today's meeting, so I think it's a good way to learn and get more information about electric buses.

### **Question for Asrul – Brunei Darussalam Representatives**

- Brunei has one of the highest motorization rates in Southeast Asia. Do you have any effort for the Public Transport too in the Capital?

### **Answer from Asrul – Brunei Darussalam Representatives**

- Yes, we also have the effort for Public Transport in the capital. Other location is quite small. So public transport is still not quite that much, even taxis. I can even count taxis, probably less than 50 taxis in Brunei.
- However, due to the importance of Public Transport in Brunei Darussalam and our effort to have cleaner energy and net zero emission public transport, we have plan to do the study about this.
- Brunei wants to try to shift the economics and government incentives to have clean energy & technology, such as green building, green transportation in Brunei Darussalam.

#### **Aditya Mahanala – MC**

- Potential next meeting on July 10<sup>th</sup> and will be the last of the meeting
- Inviting Francisco to summary and also introduce last part of the meeting

#### **Francisco Posada – ICCT**

- From today's discussions, we can see the difference each government on approaching the electrification topic, transition from conventional vehicle to electric vehicle
- There are significance plans in terms of transitioning from buses, the delivery ones, trucks, so we have to have policy that must be address to support this process.
- We already learned the experience from the Mexico City.
- It's very good to see how countries have concrete plans
- In terms of the next meeting, the topic is to be divine. We still don't have that now.

#### **Bert Fabian - ICCT**

- We hope we can prepare something for the ASEAN countries and come up with the good guide to these countries.
- Thanking every participant.

#### **Aditya Mahanala – MC**

- Hoping this meeting can provide new information