

Summary Minutes

Transition to Soot-free Heavy-duty Vehicles and Fuels Workshop: Accelerating Adoption of Euro VI and Electric Vehicles Technology in the Heavy-duty Transport Sector

August 23rd, 2022

Start Time: 09.00 WIB

End Time: 11.52 WIB



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Summary Notes Transition to Soot-free Heavy-duty Vehicles and Fuels Workshop: Accelerating Adoption of Euro VI and Electric Vehicles Technology in the Heavy-duty Transport Sector

Time and Date

Date : Tuesday, August 23rd, 2022

Time : 09.00 – 12.00 WIB

Location : Zoom Meeting

Opening – Aditya Mahalana (ICCT)

- Greetings for everyone attending the workshop
- Bahasa Global is explaining the house rules for today's activity
- This workshop is organized by UNEP in collaboration with the ICCT
- Today's agenda is going to have 4 presentations and then discussions among presenters and participants.

Introduction – Dr. Francisco Posada (ICCT)

- Greetings to everyone, especially for Members of ASEAN, Academia, and Colleagues.
- This workshop was started exactly 1 year ago in 2021, and today's workshop is the 4th within 1 year.
- We brought stakeholders to discuss about the Euro standards, and fuel quality, representatives from the region, also international experts to talk best practices on how to do the transition.
- Transition from Euro IV to Euro VI is very huge deal
- Today we want to review our funding facilities
- At the end, we will also have a conversation with the government officials to discuss the gap knowledge that is still remaining, and discuss in terms of technical aspects.

Presentation 1 – Ms. Sandra Cavaliery (CCAC)

Climate and Clean Air Coalition (CCAC) works in different region and funding opportunities

Opportunities to Scale Up Adoption of Euro VI and Electric Vehicle Technology in the Heavy-Duty Transport Sector

- CCAC heavy duty diesel vehicles and engines hub engagement strategy, long-term goal: by 2050, zero tailpipe emissions and 100% elimination of fossil-based fuels for heavy-duty transport. So, by 2025, the goal is to have 30% of new heavy-duty vehicles have zero tailpipe emissions. Also, all countries adopt a part of 30% renewable fuel content as blend in the fossil fuel available on the market
- Goals by 2030 is all countries adopt ultra-low sulfur diesel and minimum Euro 6 emission standards by 2030, also global soot-free vehicle standards for international trade (no dumping of dirty used vehicles).
- So, all these goals have been agreed by all the countries and organizations.
- The question is, what kind activities that will be supported?
 - a. Advocacy and raising high-level political ambition
 - Secure commitments from governments to transition to soot-free transport and international trade of used vehicles; global high-level leadership to bring private sector and governments together to agree. For example, by 2035, all buses should be zero emissions.
 - Engage regional groups such as the ASEAN, SICA, ECOWAS, EAC, SADC to promote the transition to ultra-low sulfur diesel fuel and minimum Euro 6 emission standards in respective member countries, promoting a harmonized regional approach to regulation and policy
 - b. Targeted technical and policy support
 - Development of electrification roadmaps, policies and/or programs for the HDV sector, focusing on public transit, government fleets, and commercial vehicles (delivery trucks), ensuring this electricity is from renewable sources.
- We have 2 types of funding:
 - National Level
 - a. Express of Interest (EOI) process is for ODA-eligible CCAC countries to request support for national planning on SLCPs and for sector-based projects to advance national action
 - b. Our timeline for this, 2023 EOI forms will be circulated to CCAC Partner focal points
 - Regional and Global Level
 - a. Aim is to advance SLCP mitigation through breakthrough, transformative action, which is not incremental or linear, but rather represents a clear jump or leapfrog to a new status quo.

- b. Timeline: 2022/2023 call for proposals is expected to be announced in September, with expected deadline in October 2022

Q & A session

Question from Dr. Francisco: Do you have any idea of which one of ASEAN member countries are ready or which one to join the membership of CCAC?

Answer from Sandra: So, I was thinking about that and I was going to list all the ASEAN countries, because I was not sure who is going to be joining today. So, I am sorry but I cannot name any. But I can put the list in the chat box.

And I just want to say do not have to be a partner to receive funding. It is just that if you are not a partner, you won't see the EOI form.

Question from Dr. Francisco: And right now, CCAC is funding a project in Cambodia?

Answer from Sandra: Yes, it is just getting started. So, there is a project on going in Cambodia to develop a roadmap for Euro 6. So, I am going to put a link where you can see the presentation from Cambodia.

Question from Dr. Francisco: For the next round of meeting, any contact point to organize?

Answer from Sandra: Yes, that is how it designed. So, if you are a country like Vietnam, which is member of CCAC, and you don't know your focal point, then you can contact me to know your focal point and put you in touch. So, feel free to contact me for any information.

Question from Dr. Francisco: I think the biggest country that yet have joined is Indonesia?

Answer from Sandra: Yes, and I think sometimes it could be political reason why some countries decide not to join. So, actually everyone is welcome to participate. There is no approval process to join our Hub.

Presentation 2 – Prof. Savitri Garivait (KMUTT Thailand)

Current profile of emission standards, fuel quality, and electric vehicle technology in ASEAN

- Need of Transport Electrification in ASEAN countries: Achieve the Carbon neutrality and Net Zero GHGs Emission Targets
- We noted that the advanced in electrification could be obtain by Thailand, Vietnam, Indonesia, Malaysia, and Philippines.
- Climate Policy and GHG Emission Reduction Commitments in ASEAN Countries, for example in Thailand, around 20-25% of GH Emission mitigation by 2030. Emission mitigation measures include an environmentally sustainable transport system plan which promotes an electrification of transport and technical support for battery charging technologies
- In Vietnam, the overall range are quite the same. There's also specific measure in transport sector introduces a shifting from conventional fuels to biofuel, natural gas and electricity
- For Indonesia, 29-41% of GHG emission mitigation by the 2030, Mitigation measure in transport sector is to support implementation of biofuel (B20 and B30) and compressed natural gas.
- For Philippines and Malaysia no mention of mitigation measures in the transport sector.
- Policies contributing to Transport Electrification in ASEAN Countries:
 - For Thailand, 30% of domestic production to be zero emission vehicle by 2030 formulated by the NEVPC
 - For Thailand, action plan of climate change adaptation and green growth strategy promoted the use of renewable and clean energy in transport. Action program for transition to green energy and mitigation of carbon emissions and methane emission from transportation
 - For Indonesia, Roadmap on Low Carbon Emission Vehicle
 - For Philippines: Electric Vehicle Roadmap, EV manufacturing roadmap, PUV Modernization Program Supporting Laws and Regulations Incentives on Manufacturing, Charging Infrastructure Development, A ZERO-TARIFF policy for electric vehicle (EV) imports.
 - For Malaysia: National Automotive Policy (NAP); National Green Technology Master Plan; NKEA Electrical and Electronics.
- Current EV Production and Use Targets in ASEAN Countries
 - For Thailand, by 2025, 30% of vehicle use and 10% of vehicle production; by 2030, 50% of vehicle use and 30% of vehicle production; by 2035, 100% of vehicle use and 50% of vehicle production
 - For Vietnam, in 2022-2030 will be focusing on promoting the production, assembly, import of EV
 - For Indonesia, by the year 2025, 20% vehicle production to be EV or hybrid
 - For the Philippines, the roadmap targets to achieve in the country by 2030 with focus on public transportation, and 50% by 2040.
- Barriers/Challenges to the Transport Electrification is ASEAN Countries:
 - Thailand: Lack of material, high competition from China, expensive compare to ICE vehicle price

- Vietnam: Lack of supportive policies, lack of public awareness on EV benefits
- Indonesia: High tax imposed on EV
- Philippines: Lack of enabling national laws
- Malaysia: Lack of knowledge on EV maintenance, service center, and workshop

Presentation 3 - Dr. Horizon Gitano (Universiti Sains Malaysia) & Mr. Nick Tan. (Environmental Protection Policy Department Singapore)

Presentation on the adoption of Euro 6/VI standards or roadmap to Euro 6/VI in selected ASEAN countries

Dr. Horizon Gitano

- In Malaysia, Petrol is actually quite cheap. So, there's just no economical incentive to convert to electric based on fuel process
- The government incentive, such as some encouragement of local manufacturing, charging stations built at government facilities and also tax incentives; conversion of government fleets to EV (20% by 2025)
- Consumer incentives, such as 100% excise & import tax exemption for first 10,000 units; 50% tax reduction after that.
- So, there are other challenges, for example Volvo. The conventional version is 1000 km, but the EV version is only 300 km. So, giving the current price in Malaysia, it is not very attractive to do the conversion.
- We are actually very involved in performing EV conversions and working together with several partners, such as Invantera, Eclimo, NTT, in performing EV Conversion and builds classic sport cars, 3-15-ton delivery trucks, and Post Malaysia.
- We also involved and develop EV VTA standards several partners: SIRIM, Standards Malaysia, UNEP, De La Salle University, including testing of EV's at our Malaysian Test Center
- On EV Test Equipment, we do a lot of tests. We supply EV test equipment to a wide range of customers worldwide, such as TORC, Naponi, Pricol (India), Ampersand, University of Philippines, CSU, University of Kuala Lumpur
- I'm personally very optimistic about the long-term prospects for EV truck. But the problem here in Malaysia is the fuel price is pretty cheap, so there's no "rush need" to convert to electric vehicle.
- It's possible that smaller vehicles will transition to EV first
- Many or perhaps even most vehicle will be made from a wide range of internationally sourced components.

Mr. Nick Tan

Overview of Singapore's Vehicle Emissions Policies for Heavy Goods Vehicles

- So, there are 3 strategies on how we control our vehicles in Singapore:
 - New Vehicles
 - In-Use Vehicles
 - Deregistration of Vehicles
- New emissions standards for HGVs
 - Since 1 Jan 2018, all diesel HGVs and buses are required to comply with Euro VI emission standard
- Considerations on Euro VI Implementation Timeline
 - Fuel quality
 - a. Minimum quality for Euro VI vehicles is Euro V fuel
 - b. Need to ensure availability of appropriate fuel (Euro V fuel), which was tightened by Jan 2017 in Singapore
 - c. Industry highlighted the importance of fuel quality to comply with the Euro VI emission standards, which prevents more frequent maintenance and engine damage
 - EU implementation date for Euro emission standards
 - a. EU implemented Euro VI since 1 September 2015
 - b. Industry gave feedback that they required a minimum of 2 years grace period after EU implementation date for local motor traders to supply vehicles complying with the particular EU emission standards
- Singapore has implemented the Euro V fuel quality standards for diesel vehicles since 1 Jan 2017
- All in-use diesel HGVs and buses are required to undergo mandatory inspections and pass a smoke emissions test
- Since 1 January 2014, the in-use exhaust emission standard is a smoke opacity limit of 40 Hartridge Smoke Units (HSU)
- In terms of incentives, we have Early Turnover Scheme (ETS).
 - ETS encourages owners of older diesel commercial vehicles and buses (including HGCs) to replace them with cleaner new vehicles that complies with the prevailing emission standards.
 - Owners enjoy ETS incentive as a discount off replacement vehicle's Certificate of Entitlement (COE) price. ETS incentives are higher if owner's turnover the vehicle earlier ahead of its statutory lifespan of 20 years, and the replacement vehicle has zero tailpipe emissions, such as EV
 - In addition to Euro II and III vehicles, ETS was extended to the turnover of Euro IV vehicles from 1 April 2021.

Q & A

Question from Pak Vannly: Can you share with us about the technical guideline for fuel quality check and also inspection emission?

Answer from Mr. Nick Tan: Yes, I can share our technical guidelines for fuel quality check and inspection emission. Each is depending on the vehicle, whether it is older or newer.

Question from Pak Vannly: Thank you. I thought Singapore already in Euro VI, but you actually in Euro 5, right?

Answer from Mr. Nick Tan: Yes, I did mention that Euro 5 is the latest new standard. So, there is no better standard than Euro 5.

Question from Dr. Savitri: What was the main barriers to the implementation of Euro V and VI fuel quality?

Answer from Mr. Nick Tan: Negotiating with the oil company. I think we started a negotiation with them in 2017.

Question from Dr. Savitri: In Thailand, we also have this issue from the refineries. The main reason is fuel quality. Is Singapore also focus on the other component of the fuel to meet the fuel quality?

Answer from Mr. Nick Tan: Of course, the fuel quality is important, and we keep the quality to be compatible with Euro 6

Question from Dr. Savitri: One thing that is still problematic in Thailand is the transport of this fuel quality, to assure that the fuel from refinery to the gas station is the same quality. What about Singapore?

Answer from Mr. Nick Tan: We have officers who go down to take the sample of the fuel to keep the fuel quality.

Question from Dr. Savitri: How does Singapore deal with the deployment of AdBlue?

Answer from Mr. Nick Tan: We do not enforce actively, but we leave it to the owners of the vehicle

Question from Dr. Savitri: In Thailand, we do not actually have the deployment of AdBlue. Is there any commercialization of AdBlue in Singapore? Can you find it at the gas station?

Answer from Mr. Nick Tan: Gas/Petrol Station actually don't sell AdBlue like the sell gas or diesel, but you can buy it inside the Petrol Station.

Presentation 4 – Francisco Posada (ICCT)

Opportunities to leapfrog to Euro VI and electric vehicles

- Transport GHG emissions are expected to increase in ASEAN region by 2050
- Global transport CO₂e emissions will grow significantly until 2050 and is driven largely by emerging economies, such as the Southeast Asian region.
- In 2020, ASEAN is the 4th largest GHG contributor
- In 2050: ASEAN GHG emissions would be second in China
- ASEAN cities are struggling with high levels of air pollution

- So, how do we reach that? World class policies that drive soot-free and zero emission technologies:
 - Tailpipe emission standards
 - Clean, low sulfur fuels
 - Vehicle electrification policies
 - Complementary programs

- What is soot-free and zero emission vehicle technologies?
 - Electric drive engines, such as battery electric, fuel cell, trolley electric
 - Euro VI gas engines
 - Euro VI Diesel engines and 10 ppm S diesel

- NO_x and PM emission standards for diesel engines used in heavy-duty vehicles
- Soot free standards like Euro VI require ultra-low sulfur diesel
- Zero transmission transport is the final goal. This transition has started with e-buses.
- Zero emission bus market in Latin America is growing, around 2500 zero emission buses in total in 2021.
- In Bogota, there are 1060 e-buses, and in Chile there are 806 e-buses.
- E-buses deployment in ASEAN countries are starting, such as in Hanoi and Jakarta.

- Policy actions to accelerate ZEV transition;
 - Phase-out targets: Setting a vision and market signal
 - Binding regulations: Ensuring model availability and supply
 - Financial incentives: Making ZEVs cost-effective today
 - Charging infrastructure: Maximizing ZEVs convenience
 - Consumer awareness: Building understanding of ZEVs benefits

- Challenges and opportunities on sooth-free adoption in ASEAN:
 - Fuel quality availability
 - a. Develop a roadmap for a transition to S10 diesel
 - b. Justify refinery upgrades with cost and benefits analysis – hidden cost of delays
 - c. Fuel importing countries can easily update fuel quality import requirements and plan for a short-term transition. More than 82% of the market of refined diesel is S10 ppm
 - HDV Emission standards
 - a. Develop a roadmap for a transition to Euro VI
 - b. Ensure industry participation and set reasonable lead-times (2-4 years depending on local conditions)
 - c. Leapfrogging to Euro VI is recommended
 - d. More than 85% of HDV production today meets Euro VI Standards
 - e. Countries that import used HDVs: adopt age and Euro standard limits

- How can ASEAN support this process?
 - Fostering harmonization for Euro 6 standards in vehicles
 - Support harmonization for fuel quality imports for road transport in the region
 - Support harmonization of EV technical specifications, for example in charging equipment
 - Favoring special tariffs for cleaner vehicles and fuels during trade policy discussions
 - Favor EV vehicles and their components policy incentives during trade discussions in the region

Q&A and discussions on the way forward for Euro VI and electric vehicles in the ASEAN region

Moderator: Yeonju Jeong (UNEP)

(From the chat box)

Question for Dr. Horizon: What kind of battery technology is used in the conversions?

Answer from Dr. Horizon: Batteries: All of these projects are Li-Ion. The smaller vehicles are packs of the 18650 cells.

Ms. Jeong

- I think there is a very interesting development in regions. Some countries are in the process in upgrading their standards and some other countries that have begun their implementation of Euro VI standards.
- Question for Indonesia and Cambodia representatives: What is your thought about the main challenges on these processes?

Mr. Nara - Cambodia representatives

- We plan to implement Euro VI in 2028. Right now, Cambodia is supported by CCAC to implement the roadmap to Euro 6. This project started in April.

Ms. Jeong

- Thank you. Francisco, do you want to add anything to Mr. Nara's intervention?

Dr. Francisco

- I will follow up with him about the fuel quality and the emission standard update.

Dr. Savitri

- I do not fully understand the timeline for Cambodia. You said that Euro V would be adapted in 2024 and Euro 6 in 2028. Is that for fuel or for emission standards?

Mr. Nara - Cambodia Representatives

- Cambodia adapts the policy for the fuel quality in 2021. We adapt Euro 3 in 2020, and Euro 4 in 2021, and Euro 5 in 2024.
- And right now, we plan to implement the fuel policy in Euro VI in 2028. For emissions, we adapt Euro 4 in 2022, and Euro 5 in 2027. And we plan to adapt initial standards for Euro 6 by 2030.

Dr. Savitri

- And for all segments mean for light duty vehicles as well as heavy duty vehicles? Because in Thailand for example, we are at Euro 4 at the moment, but Euro 4

actually applied for light duty vehicles. And for heavy duty vehicles, we are still at Euro 3.

Mr. Nara - Cambodia Representatives

- Right now, Cambodia adapts only for light duty vehicles. For the heavy-duty vehicles and light duty vehicle is for the adapt of Euro 5 and Euro 6.

Dr. Savitri

- As for Thailand, when we put Euro 5 in 2024, this would be for both, light duty vehicles and heavy-duty vehicles. Then we would go for Euro 6 a year after, it means in 2025.
- Question for ICCT: What do you think of the proposal to the government to leapfrog directly to Euro 6? Because in terms of cost, it is a burden, especially in heavy-duty vehicles. Or do you think at this stage we can leap Euro 5 and for other do transition directly to electric vehicles?

Dr. Fransisco

- That is an interesting question. I would say that yes, the challenge is with the fuel quality.
- And the point of segment, I think that that should be discussed, should the government make a huge investment for transition to EV.

Dr. Savitri

- I raise this question because in countries like Thailand, Malaysia, or Vietnam, as we can see from presentation of Dr. Horizon, there is no a leapfrog development in EV conversion.
- Actually, when we look at the cost, anything related to the EV becomes an interesting price.
- For example, in Thailand, currently, if we want to convert a truck or even the bus to Euro 5, it is very difficult.

Dr. Fransisco

- Yes, I think there is a correlation between those two.

Dr. Savitri

- There is a mention in your slide, about the Phase-out. Actually, what happened in Thailand that maybe also the case in other ASEAN countries, is that the phase-out policy has never been really implemented.

Dr. Fransisco

- Yes, I think there's challenges. We have seen in other countries too.

Ms. Jeong:

- We have managed to work with West Asian community and we work on what should be done in sub-region level, and what kind of support can institutions like UNEP or ICCT do, or ASEAN Secretariat can be provided.

Summary:

Ms. Jeong

- Absolutely. And actually UNEP, has hosted a Global Meeting. A dozen of country's reps coming and it went well.

Dr. Fransisco

- It is a one of my goals next year to have in person meeting, because when it held online, sometime it feels like it only focuses on few people. I hope in the future we can discuss in a more detail. I hope next year we can meet in person. Thank you

Dr. Savitri

- I want to add to the topic. Because we are...one of our challenges is to reduce GHG emissions. So, what would be really EOI would be the coal benefit between the GHG emissions reduction. But also, reduction of air improvement, of the air quality.
- We need to put the local culture dimension to this approach. The white paper would help in the technology. But the local context can be brought. And in this region, the main culture is face-to-face.

Mr. Aditya

- Are you ready to host the physical meeting in Thailand, Dr. Savitri?

Dr. Savitri

- UNEP or the ICCT should be working closely with the ASEAN Secretariat. But yes of course, Thailand is ready.

Ms. Jeong

- Thank you, Dr. Savitri, for your input, I took notes of them.
- And also, I want to share another information that UNEP is creating a global working group, and now we're working on a global working group on EV. So, we will invite you to join this working group as technical expert in the next of couple of months.
