



## SUMMARY REPORT

# 2<sup>nd</sup> Forum of the ASEAN Fuel Economy Platform

28 March 2017

Bangkok, Thailand



Implemented by:  
**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH



## The project context

The project 'Energy Efficiency and Climate Change Mitigation in the Land Transport Sector in the ASEAN region' (Transport and Climate Change (TCC) [www.TransportandClimateChange.org](http://www.TransportandClimateChange.org)) aims in turn to develop strategies and action plans for more sustainable transport.

The project is funded by the German Federal Ministry for Economic Cooperation and Development and implemented by GIZ in cooperation with the ASEAN secretariat.

TCC's regional activities are in the area of fuel efficiency, green freight and logistics, as well as data, indicators, and MRV. At the national level the project supports relevant transport and environment government bodies in Indonesia, Malaysia, the Philippines, Thailand, and Vietnam for the development of national action plans on sustainable transport. TCC also offers capacity building through different training courses.

**Author:** Anders Imboden

**Editor:** Friedel Sehlleier

**Contact:** ASEAN – German Technical Cooperation  
Transport and Climate Change  
c/o Office of Transport and Traffic Policy and Planning  
35 Petchaburi Road  
Thung Phaya Thai  
Ratchathewi  
Bangkok 10400 Thailand  
[www.transportandclimatechange.org](http://www.transportandclimatechange.org)

**Project Director:** Tali Trigg



## Table of Contents

<b>Table of Contents</b> .....	<b>3</b>
<b>Abbreviations</b> .....	<b>4</b>
<b>1 Background</b> .....	<b>1</b>
<b>2 Summary of Forum</b> .....	<b>1</b>
2.1 Welcome and Opening Remarks.....	1
2.2 Workshop Proceedings .....	3
2.2.1 ‘Identification of the State of the Art’ (Bert Fabian).....	3
2.2.2 ‘Roadmap Outline and Development Steps’ (Alex Körner) .....	5
2.2.3 ‘Fine-Tuning the Roadmap Vision’ (Alex Körner) .....	7
2.2.4 ‘Roadmap Goals and Milestones’ (Alex Körner & Friedel Sehleier).....	8
2.2.5 ‘AMS Case Study: Thailand’ (Dr. Nuwong Chollacoop) .....	9
2.2.6 ‘Identification of Knowledge Gaps and Other Barriers’ (Alex Körner) .....	10
2.2.7 ‘Stakeholder Engagement’ (Stefan Bakker and Alex Körner).....	12
<b>3 Closing</b> .....	<b>13</b>
<b>4 Annexes</b> .....	<b>15</b>
<b>Annex 1: Forum Agenda</b> .....	<b>16</b>
<b>Annex 2: List of Participants</b> .....	<b>17</b>



## Abbreviations

BMZ	<i>Deutsches Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Federal Ministry for Economic Cooperation and Development)</i>
EGSLT	Expert Group on Sustainable Land Transport
EV	Electric Vehicle
FE	Fuel Economy
GFEI	Global Fuel Economy Initiative
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German International Cooperation Agency)
HDV	Heavy Duty Vehicle
KLTSP	Kuala Lumpur Transport Strategic Plan
LDV	Light Duty Vehicle
Lge	Litres per Gasoline Equivalent
LTWG	Land Transport Working Group
NEDC	New European Driving Cycle
OTP	Office of Transport and Traffic Policy and Planning (Thailand)
TCC	Transport and Climate Change Project
WLTP	World Harmonised Light Vehicles Test Procedure



## 1 Background

In accordance with ASEAN's Kuala Lumpur Transport Strategic Plan (KLTSPP) 2016-2025 (KLTSPP Goal ST 1.3.1), a platform to discuss matters related to fuel economy (FE) for the transport sector in the ASEAN region has been established. In this context, FE refers to the efficiency relationship between the distance travelled and the amount of fuel consumed by a vehicle, while fuel consumption (FC) denotes the amount of fuel used to travel a certain distance (100km). The key task of the FE platform is to draft a regional Roadmap on FE with policy guidelines for member states (KLTSPP Goal ST 1.3.2). The platform works through biannual forums, with the first held in November 2016 in Kuala Lumpur, Malaysia.

Discussion highlights of the 1<sup>st</sup> Forum of the ASEAN FE Platform included:

- Policies to improve FE of light duty vehicles (LDVs) have proven around the world to have a great potential to reduce fuel use, greenhouse gases (GHGs), and fuel expenditures.
- FE policies need country-specific tailoring, but ideally build on common metrics and methodologies across the region. Baseline data is an essential ingredient for any policy.
- Momentum to advance FE policies in the region has continued throughout 2016, however, there is diversity in the status and progress of these policies among ASEAN member states (AMS).
- A regional FE Roadmap is considered vital for accelerating progress in the development of policies and for facilitating a coherent approach among countries.

To progress on the development of the regional Roadmap, the 2<sup>nd</sup> Forum of the ASEAN FE Platform was held on Tuesday, 28 March 2017 in Bangkok, Thailand. The objectives of the 2<sup>nd</sup> Forum were to:

- Clarify the structure and outline of the ASEAN FE Roadmap.
- Identify the FE status quo, and gaps and barriers as well as ways to overcome them.
- Advance the vision and goal development of the regional FE Roadmap.
- Knowledge exchange and planning ahead.

The event included government representatives from AMS, as well as experts from NGOs, industry, universities and international organisations. A complete list of participants is included in Annex 2. All presentations are available from <http://transportandclimatechange.org/-resources/presentations/>

## 2 Summary of Forum

### 2.1 Welcome and Opening Remarks

Mr. Friedel Sehleier (GIZ), the day's facilitator, began the workshop by welcoming all participants and thanking them for their attendance. He introduced Dr. Chayatan Phromsorn, Deputy Director General of the Office of Transport and Traffic Policy and Planning (OTP) under Thailand's Ministry of Transport, and invited Dr. Chayatan to provide introductory remarks.



Dr. Chayatan welcomed the representatives from AMS governments, the ASEAN Secretariat, the ASEAN Centre for Energy and GIZ, and said it was an honour to co-organise the week's activities. There are many challenges associated with economic development and the growing automobile ownership rates across the ASEAN region, he noted. Furthermore, the transport sector is a major user of energy, representing approx. 27% of ASEAN-wide energy demand. This is the backdrop for the KLTSPP, which calls for development and implementation of FE policies and standards, including through a regional Roadmap (ST-1.3) and the development of a monitoring framework and harmonised approach for indicators on energy and greenhouse gas (GHG) emissions in the transport sector (ST-2.3). Pointing to examples like the feebate system in Singapore, eco-sticker programme in Vietnam and Thailand's own eco-sticker and emissions-based vehicle taxation, Dr. Chayatan said he was happy to see that AMS are already taking action to improve FE and make the transport sector more efficient. On the issue of sustainable transport indicators, he acknowledged that improvements and support are still needed in terms of defining indicators and building up the requisite data. Turning back to the FE Platform Forum, Dr. Chayatan said the day's goal is to continue work towards a regional Roadmap that can benefit all AMS. Concluding his remarks, Dr. Chayatan wished for a successful outcome from the workshop.



**Dr. Chayatan Phromsorn provides opening remarks**

Mr. Tali Trigg (GIZ), TCC Project Director, thanked Dr. Chayatan for his remarks and participants for their attendance. He overviewed the week's activities – namely, the 2<sup>nd</sup> Forum of the FE Platform; the 3<sup>rd</sup> Regional Workshop on Sustainable Transport Indicators on 29 March; and the closed-door 2<sup>nd</sup> Meeting of the Expert Group on Sustainable Land Transport (EGSLT) on 30-31 March. Besides creating a platform for knowledge exchange, Mr. Trigg reiterated that the purpose of the day's work is to support the creation of a FE Roadmap for the ASEAN region. Outlining the day's agenda, he observed that the Forum is an opportunity for dialogue across nations, ministries, academia and the public and private sectors. Mr. Trigg also emphasised that the FE Roadmap process is taking place in the context of broader initiatives to address FE in land transport both in the region and globally – and that TCC is happy to help push that work forward. Lastly, he reminded participants that while the outcomes from the Forum act as inputs into the Roadmap, it is still possible to bring up new topics or to raise awareness of other activities on FE in order to avoid duplication and ensure the usefulness of the FE Roadmap and the Forum itself.

Finally, Mr. Sehleier provided a summary of the FE Roadmap process (expanded upon during session 2.2.2) and the various participants in attendance at the Forum.



## 2.2 Workshop Proceedings

### 2.2.1 'Identification of the State of the Art' (Bert Fabian)

Mr. Bert Fabian, from the Transport Unit of the United Nations Environment Programme, put the day into context with a presentation on the current 'state of the art' of LDV FE in the ASEAN region. UN Environment promotes sustainable, low emission transport, using the 'Avoid—Shift—Improve' approach that calls for avoiding motorised travel altogether through more efficient communities and transport demand management, shifting to more environmentally friendly modes of transport, and improving technologies to make vehicles cleaner and more efficient.

There are over a billion motor vehicles across the world today, with that number expected to grow to over 2.5 billion by 2050, almost entirely (90%+) as a result of motorisation in developing and emerging economies. Of this, there could be an estimated 515 million vehicles across the ASEAN region in 2050. This has huge implications, particularly for GHG emissions and energy demand. All AMS have signed the Paris Agreement aimed at keeping global temperature rise from anthropogenic climate change to below 2 degrees Celsius above pre-industrial levels and to strive to limit it to 1.5 degrees Celsius. Yet, similar to other parts of the world, the ASEAN region's transport emissions are poised to rise unless more decisive action is taken.

Mr. Fabian then detailed some of the efforts already being made to contain transport emissions via improvements to FE. The Global Fuel Economy Initiative (GFEI), established in 2009, has a goal of doubling the efficiency of the global car fleet by 2050, by halving fuel consumption from a 2005 global baseline of 8.8 litres per gasoline equivalent per 100 km (8.8 Lge/100km) to about 4.4 Lge/100km by 2050. The GFEI target to double *vehicle stock* fuel efficiency by 2050 implies the doubling of *newly registered vehicle* fuel efficiency by 2030. The trends over the past decade have been encouraging, with FE improvements in both OECD/EU and non-OECD countries (averaging 7.3 Lge/100km and 7.9 Lge/100km in 2015, respectively) – however, we are still a long way from meeting the global target, and non-OECD countries including AMS still have a lot of work to do. UNEP estimates that average FE in the ASEAN region is lagging behind the improvements seen in other large economies (both OECD and non-OECD), based on GFEI data for some of the larger ASEAN countries. The data also indicates that the FE of LDVs in different AMS is relatively similar, which could be a good starting point for working out joint policy approaches in the region.

Mr. Fabian noted that FE is chiefly affected by the size of a vehicle and its engine. Average fuel consumption in new cars across the ASEAN region is relatively high, but this is not the case for medium and large LDVs like pickup trucks, which make up a large share of the new vehicle market in many AMS. This is why policies aimed at consumers and manufacturers are so important, including monetary instruments (e.g. excise taxes), consumer information (e.g. labelling) and regulatory tools (e.g. FE or CO<sub>2</sub>/GHG emission standards).

FE policies can and do work in developing countries with different factor endowments and stages of development. Mr. Fabian presented a handful of case studies to demonstrate this point. In Sri Lanka, the government placed a 253% and 345% excise tax on petrol and diesel vehicles, respectively, while dropping the tax to 58% on hybrid-petrol and 25% on fully electric vehicles. Before 2011, there were almost no hybrid-petrol or electric vehicles (EVs) being



registered with Sri Lankan authorities – by 2014, they made up 56% of the entire LDV fleet. In Kenya, the National Treasury presented a new FE policy in its budget proposal to parliament in June 2015, raising taxes on imported second-hand vehicles and reducing them on vehicles younger than three years old, while also providing tax breaks for smaller and more efficient vehicles (and banning the import of used vehicles more than eight years old). In Mauritius, a feebate scheme started in 2011 based on emissions of CO<sub>2</sub> (from fees of \$55-137 for cars with 158-290 g/km CO<sub>2</sub> and rebates of \$27-82 for lower-emission vehicles). This has coincided with a reduction of average fuel consumption from 7 Lge/100km in 2005 to 5.8 Lge/100km in 2014 and an increase in the rate of new hybrid vehicle sales.

Mr. Fabian also shared some examples of how AMS are already enacting FE and related policies. The feebate scheme in Singapore has been expanded to include local air pollutants in addition to CO<sub>2</sub> emissions. Vietnam is phasing in an energy rating label for passenger vehicles, going from voluntary to mandatory standards across the LDV fleet (including two-wheelers) over the coming three years. Thailand has introduced a mandatory eco-sticker and changed its vehicle excise tax regime from engine-displacement to a CO<sub>2</sub>-basis.

Mr. Fabian concluded by pointing out that vehicle sales will continue to grow, making FE a critical part of supporting the Paris Agreement, reducing fossil fuel consumption and expenditures, and improving air quality. A regional Roadmap can provide harmonised policies across the ASEAN region, where there are already some leaders who are putting policies into place. As a final thought, Mr. Fabian shared an old African proverb: ‘Dogs do not actually prefer bones; it’s just that one ever gives them meat’.

Following Mr. Fabian’s presentation, participants discussed some related topics. It was pointed out that Malaysia’s FE success so far may have to do with its strong domestic auto manufacturing industry and the general prevalence of smaller cars there, in part due to fiscal policies favouring smaller engines. Participants also discussed the need for a common definition of LDVs in ASEAN; the strong influence of congestion and therefore infrastructure,



Participants offered their insights throughout the day

planning and transport demand management on vehicle FE; and the gaps between laboratory and real-world FE figures. On the topic of drive cycles for FE testing, it was noted that while the newer World Harmonised Light Vehicles Test Procedure (WLTP) should produce closer-to-reality FE numbers, the prevalence of the New European Driving Cycle (NEDC) in the ASEAN region means this standard may be considered to be covered in the Roadmap (but may also include conversion tables in an

Annex)



## 2.2.2 ‘Roadmap Outline and Development Steps’ (Alex Körner)

Mr. Alex Körner, a consultant to GIZ, began his presentation by outlining the objectives of the Roadmap in the context of the challenges and trends discussed by Mr. Fabian. The main objective of the Roadmap is to improve the FE of new vehicles in the ASEAN region. This can be achieved by highlighting the many benefits of FE improvements (e.g. reduced energy use, emissions, costs and fatalities); providing illustrative guidance and a policy tool box for leaders; creating a common understanding, measures and indicators on FE; bringing together relevant stakeholders; and emphasising the importance of regional cooperation. Ultimately, the aim is to help taking policy decisions towards enhancing FE.

Mr. Körner offered a ‘FE roadmap progress report’ of what has been done to date. This has included the development of a work plan and methodological approach; definition of the Roadmap’s scope; drafting of a detailed outline and vision for the Roadmap; formulation of preliminary proposals for a 2025 ASEAN FE target for LDVs; and compilation of a summary of required inputs from AMS. Some milestones remain ahead, including the presentation of the Roadmap outline at the 2<sup>nd</sup> Expert Group on Sustainable Land Transport (EGSLT) Meeting (30-31 March 2017 in Bangkok); preparation of an intermediary draft for the Land Transport Working Group (LTWG) at its August 2017 meeting; presentation of the first full draft at the 3<sup>rd</sup> EGSLT Meeting in November 2017 meeting and integration of feedback into a first complete draft of the Roadmap before the end of the year.

Before discussing the draft Roadmap outline, Mr. Körner asked participants to consider two key questions:

1. Did we miss anything?
2. Do you agree/disagree with the proposed elements?

The Roadmap shall ultimately be about 50-60 pages. Mr. Körner distributed a draft table of contents. The Roadmap’s main sections shall be a preface; introduction; overview of the ‘state of the art’ of LDV FE in the ASEAN region; brief introduction to LDV FE technology; vision to 2025; gaps and barriers; a FE policy toolbox; key recommendations and actions; a visualisation of the timeline and priorities; and a list of references.

The goal of the **preface** (Section 1) is to provide a vision for the use of the Roadmap and a call for collaborative action. This is followed by a more detailed **introduction** (Section 2). The introduction begins with a definition of scope: i.e. the aim to address FE in LDVs including passenger cars and light commercial vehicles<sup>1</sup> up to 3.5 tonnes by the year 2025 with 2020 as a key milestone – and to provide both regional and national guidance targeted at government, industry, academia and civil society. The introduction provides additional background information on FE issues and an overview of FE policies around the world.

Section 3 will focus on for the ‘**State of the Art**’ of LDV FE in the ASEAN region, overviewing historic data on average FE of new LDVs in AMS and reference countries, as well as existing and planned LDV FE policies. Section 4 complements this technical background with a brief

---

<sup>1</sup> The document will include callout boxes discussing FE in two-wheelers and heavy duty vehicles (HDVs), but this will be outside the primary scope.



introduction to **vehicle efficiency technologies** and associated improvement potential and costs.

At this point, Mr. Körner reminded participants that the **vision** (Section 5) and **gaps and barriers** (Section 6) would be covered later in the day in separate agenda items.

Moving on to the **policy toolbox** (Section 7), Mr. Körner said that this will not just provide FE policies, but also their functional principles as well as the data and other inputs needed for their successful formulation and rollout. The toolbox also differentiates between policies most appropriate for the national and regional levels. Mr. Körner provided specific examples of national- and regional-level policies from the toolbox and asked participants to think about what, if anything, might be missing from the list.

The key **recommendations and actions** (Section 8) shall address both the national and regional levels. This section does not include country-specific policy recommendations, but does aim to provide measures according to country 'groups' that could be established based on metrics like GDP per capita, level of motorisation, or market structures. Regional recommendations could include measures to achieve concrete regulatory targets and the regional target for FE.

Mr. Körner concluded with an example of the type of **visualisation** (Section 9) that will be used to communicate key recommendations and actions as well as goals and milestones along a timeline. This will be a separate fold-out. A list of **references** (Section 2) would conclude the document.

A constructive discussion on the proposed Roadmap outline followed, touching on a range of topics and providing multiple suggestions:

- Make more explicit in the document why LDVs are the focus of the Roadmap, and define LDVs or clarify the term's multiple definitions around the region (the title could also include LDVs explicitly).
- Touch on HDVs, two-wheelers and indigenous vehicles in a detailed callout box or similar format.
- Another suggestion was to address end-of-life and scrappage programmes for older, less efficient vehicles, the phase-out of which may be expedited by FE policies.
- Country-specific FE baseline data should be in its own section or made similarly clear.
- Consider using the policy toolbox to discuss global experiences using various FE policies and instruments.
- Consider to involve the regional and global auto industry into the Roadmap process.
- Emphasise how the FE Roadmap can support achievement of other ASEAN goals on regional integration, energy intensity, etc. and build on other parallel studies and policy development processes.
- Address costs and benefits of FE policies and technologies, especially given the large role of transport in economies.
- The line between a commercial and personal vehicle can be blurred. For example, pickup trucks may often be purchased and registered for personal use but then are also used for commercial purposes.



A final point of clarification surrounded the intent of the FE Roadmap: specifically, whether it aims to raise awareness on how to improve FE, or to provide guidance to government officials and policy makers to develop and implement policies. Ultimately it will need to be clear who specifically is expected to be taking decisions based on the FE Roadmap, as this will clarify the scope and appropriate stakeholders. Mr. Sehlleier pointed out that the answer to these questions depends on the preferences of AMS themselves, but that the hope is that policy makers will be using this Roadmap to advance policies to improve FE.

The participants were informed that EGSLT meetings will be used to deliberate in details on the formulation of the Roadmap and how the Roadmap can be most effective for AMS and for ASEAN. The participants were further informed that while the Fuel Economy Platform Forums can be used to brainstorm inputs from related stakeholders, decisions will be made by EGSLT on the content of the Roadmap. Furthermore, it was also informed that KLSTP milestone 1.3.2 states the mandate to formulate a fuel economy roadmap for transport sector in ASEAN including policy guidelines.

### **2.2.3 ‘Fine-Tuning the Roadmap Vision’ (Alex Körner)**

Mr. Sehlleier opened the session with a quote from the former German Chancellor Helmut Schmidt, who wryly noted a person ‘who has a vision should go and visit a doctor’. After sharing a few slightly more inspirational quotes, Mr. Sehlleier explained that the starting point for the Roadmap Vision was the input received at the 1st EGSLT Meeting, held in Kuala Lumpur, Malaysia, in November 2016. Participants voted for a number of elements and options to be included in the Roadmap Vision. With this background established, Mr. Körner outlined the proposed vision and opened the floor for feedback.

A large number of comments focused on the length of the vision, with a number of participants feeling that the proposed draft actually included many visions. Consensus emerged that the vision should be shorter and more precise, with supporting information provided separately after the main vision statement in order to articulate the basis for the vision and the process used to develop it.

Other comments included:

- Quantify the effects of the ASEAN LDV market’s current and proposed FE level on future total LDV energy use and emissions and relate FE improvement based fuel use and emission reductions to climate targets in the region
- Consider complementing the vision with a mission, goals, guiding principles, etc.
- Ensure the vision is achievable and implementable, especially specific targets and milestones.
- Look at parallel but related efforts on fuel quality, drivetrain technology, etc.

Mr. Körner and Mr. Sehlleier thanked the many commenters for their input and assured them that this feedback would be used to revise the vision in time to present to the EGSLT meeting later in the week.



#### **2.2.4 ‘Roadmap Goals and Milestones’ (Alex Körner & Friedel Sehleier)**

Mr. Körner began by presenting two proposed goals, highlighting their preliminary nature, the need to shape them during coming months, and the possibility to add further or alternative goals and milestones.

Goal 1: The Fuel Economy Roadmap suggests the aspirational goal of reducing new LDV fuel consumption by 40% between 2015 and 2025 in the entire region, leading to a target fuel economy of around 4.4 Lge/100km for new LDVs by 2025, from about 7.3 Lge/100km in 2015.

Goal 2: The roadmap envisages a timely agreement on uniform methodologies and terminologies for measuring and analysing transportation related fuel economy metrics, in order to bring forward the necessary policies as soon as possible.

Mr. Körner provided an explanation for the methodology used in setting FE targets and the rationale for the proposed target, which corresponds to a 40% improvement in new LDV FE in the ASEAN region by 2025, and a 5% annual improvement rate between 2015 and 2025. Achieving this target would mean that by 2020, AMS would already be closing in on global FE leaders.

Other methodological alternatives include:

- The baseline of 7.3 Lge/100km in 2015 is based on calculation from some - but not all - ASEAN Member States.
- Basing the target on an absolute new GFEI global target (4.2 Lge/100km in 2030) and working backwards to create a milestone target of 6.0 Lge/100km by 2020, or 5.0 Lge/100km by 2025. This is equivalent to a 3.7% annual FE improvement rate. In 2020, the regional average would still be considerably worse than many peers.
- Choose a 4.2% annual FE improvement rate, roughly on par with the United States’ targets both annually and for 2025 (4.8 Lge/100km). In 2020, FE would still be comparatively poor.
- Take the average of 2020 FE standards in a number of global counterparts – 5.3 Lge/100km. This is highly ambitious as it means a 6.1% annual improvement rate between 2015 and 2020, and a 2025 target of 3.9 Lge/100km (the improvement rate must level off after 2020 in order to make the 2025 target even somewhat realistic).

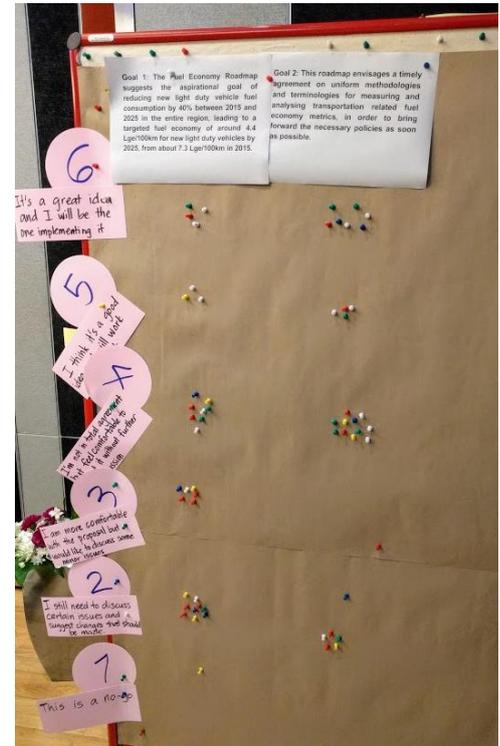
Mr. Körner briefly outlined the methodology for setting a FE baseline. In essence, national vehicle registration data with sales by vehicle make, model, production year, engine displacement, engine power and fuel type is paired with the missing FE information to calculate sales-weighted average new LDV tested FE. Much of this work is done by the IEA for GFEI, and they in turn purchase sales data from private firms that collect and sell it.

On Goal 2, some discussion took place regarding a need to agree on measures and units. Mr. Körner suggested using the following:

- Fuel economy/consumption: Lge/100km
- CO<sub>2</sub> emissions: g CO<sub>2</sub>/km
- Drive cycle: NEDC and WLTP
- Aligned energy densities by fuel
- Aligned emission factors by fuel

Mr. Körner and Mr. Sehleier asked participants to discuss the goals in small groups with their neighbours and to consider a few guiding questions: How do you feel about the two goals? Are they realistic and achievable? Are they sufficient to realise the vision? Which additional goals could the FE Roadmap include?

Participants were also tasked with giving each goal a 'rating' on scale from 1 to 6, with 1 being 'This is a no go' and 6 being 'It's a great idea and I will be the one implementing it'. They then put pins on a board to anonymously show their response for each goal (see picture at right). The range of responses shows a comfort with the goals in general, but a need for some continued refinement based on individual concerns.



Results of goals exercise

An open-floor discussion produced a number of comments, including:

- CO<sub>2</sub> emissions reduction targets of AMS might be used to inform decisions about the regional FE target, since the commitments made in each country's NDC already reflect the regional context and existing data. Quantifying FE targets' impact on CO<sub>2</sub> emissions would be very useful for connecting the FE Roadmap to existing climate and energy intensity goals as well as potential regional emissions reduction targets in the transport sector.
- Both FE and broader emissions reduction efforts will be difficult if systemic problems like congestion or inadequate infrastructure are not also addressed.
- Existing technology can get us to the targets (e.g. a few car models already meet the GFEI target for 2030). It is primarily a matter of nudging consumers make decisions that support the regional target.
- It may be worthwhile to recalculate FE baselines in countries which have them already, both to verify the figures and as a capacity-building exercise that will support ministries who will need to collect and report this information as part of monitoring and evaluation once policies are put in place.

### 2.2.5 'AMS Case Study: Thailand' (Dr. Nuwong Chollacoop)

Dr. Nuwong Chollacoop, consultant to GIZ and Head of the Renewable Energy Laboratory at Thailand's National Metal and Materials Technology Center, presented the experience of Thailand in developing and implementing an eco-sticker and a CO<sub>2</sub> emissions-based excise tax on vehicles. Dr. Nuwong began by overviewing some key trends including data on new



vehicle registrations over the past decades as well as the current on-road national fleet. Diesel features prominently in the Thai LDV fleet, in large part due to the prevalence of pickup trucks. Thailand's estimated FE average at the moment is 7 Lge/100km, close to the regional average. The tax structure for LDVs used to be based on engine displacement but has now shifted to CO<sub>2</sub> emissions, which has led to a slight decrease in the proportion of large vehicle sales. FE of those large vehicles has also improved. These positive trends have occurred gradually over the 2013-2016 period, during which the tax policy changes were phased in. In developing an eco-label and carrying out the excise tax restructuring, the Government of Thailand worked extensively with a large number of stakeholders. Dr. Nuwong concluded by observing that the evidence so far is promising for FE in Thailand, and sharing the news that the current cabinet is discussing further changes including a possible reduction in the excise tax for new EVs from 10% to 2%.

A brief discussion followed, with participants noting the usefulness of stakeholder mapping in addressing the complexity of cross-sectoral or cross-ministerial issues like FE, and the challenges of understanding how larger LDVs like pickup trucks are being used in reality (and how this, in turn, affects the development of excise tax regimes).

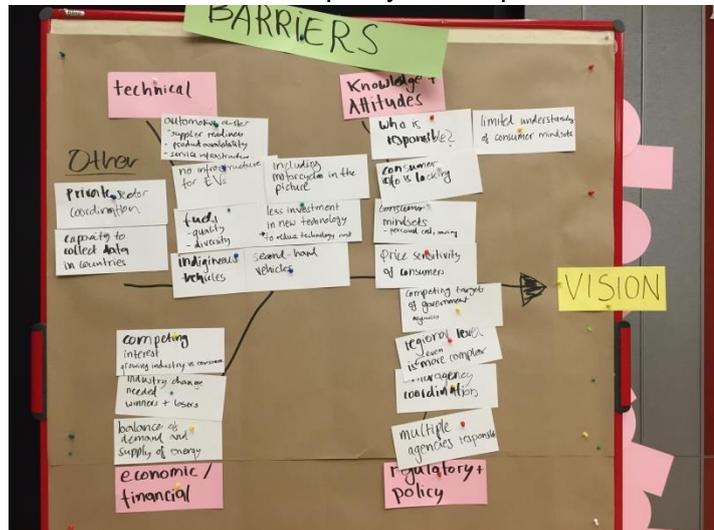
### **2.2.6 'Identification of Knowledge Gaps and Other Barriers' (Alex Körner)**

Mr. Körner launched this session by describing the existing data on LDV FE baselines across the AMS, and asking Brunei Darussalam, Cambodia, Lao PDR, Myanmar, Singapore and Vietnam for their assistance in filling in the knowledge gaps on new vehicle FE baselines and LDV market structures. However, with data already available for the larger vehicle markets of the region, it can be expected that baseline data from further countries would neither be very different nor change the regional average significantly. An overview of planned and existing national FE policies is not yet finished and will be completed by information provided by May of this year.

Mr. Körner agreed with the sentiment expressed earlier in the day that there is a need to conduct at least preparatory work for a cost-benefit analysis of FE policies. The Roadmap may not provide such cost-benefit analysis, but can lay out a methodology and necessary input data. The tricky part might be on the costs side, especially for manufacturers and the private sector. How comprehensive should a cost-benefit analysis be? The difficulty associated with some of the data collection suggests that it may be best to look at region-specific vehicle technology costs, particularly in the context of case studies about cost-benefits of FE policies in other countries. Studies in the US and Europe provide some examples of the larger structure

of costs and benefits, and contextualising those findings to the ASEAN region could be a useful exercise.

At this point, Mr. Körner asked for additional barriers for FE policy development from the audience, which the roadmap should help to overcome. Possible categories include administrative, financial, behavioural, and conflict of interest (i.e. the role of the auto industry) barriers. Based on table discussions, the final set of barriers identified by participants were clustered into four similar but slightly different groups, namely technical; economic and financial; knowledge and attitude; and regulatory and policy barriers. A synthesis of the barriers is provided in Table 1.



Synthesised results of barriers exercise

Table 1. Synthesised results of barriers exercise

Technical	Economic/Financial	Knowledge/Attitudes	Regulatory/Policy
<ul style="list-style-type: none"> <li>Automotive cluster: supplier readiness, product availability, service infrastructure</li> <li>No EV infrastructure</li> <li>Fuel quality and diversity</li> <li>Indigenous vehicles</li> <li>Inclusion of motorcycles</li> <li>Less investment in new technology to reduce technology cost</li> <li>Second-hand vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Competing interests (e.g. growing industry vs. protecting environment)</li> <li>Industry change needed, leading to winners and losers</li> <li>Balance of demand and supply of energy</li> </ul>	<ul style="list-style-type: none"> <li>Who is responsible?</li> <li>Consumer information is lacking</li> <li>Consumer mind-sets on perceived costs, savings</li> <li>Price sensitivity of consumers</li> <li>Limited consumer understanding</li> </ul>	<ul style="list-style-type: none"> <li>Competing targets of government agencies</li> <li>Regional level even more complex</li> <li>Interagency coordination</li> <li>Multiple agencies responsible</li> </ul>
	<p><b>Other</b></p> <ul style="list-style-type: none"> <li>Private sector coordination</li> <li>Capacity to collect data</li> </ul>		



### 2.2.7 ‘Stakeholder Engagement’ (Stefan Bakker and Alex Körner)

Forum participants split into two large groups to discuss stakeholder engagement in the FE Roadmap process.

One group, facilitated by Mr. Stefan Bakker (consultant to GIZ), was asked to identify precedents and experiences with cross-sectoral cooperation at the ASEAN regional level; lessons learned from working across ministries on FE at the national level; and how and when the FE Roadmap process can involve other government agencies. The other group, facilitated by Mr. Körner, discussed private sector engagement, including how the private sector is engaged in the discussion of regional strategies in other fields; lessons learned and mechanisms to involve the private sector in FE discussions at the national level; and how and when to involve the private sector in the FE Roadmap process.

The first group reported back the following key points from their conversation:

- ASEAN sectoral bodies work with mandates. Currently, there are four transport working groups with mandates given by the ASEAN transport ministers. Cross-sectoral cooperation requires clear mandates from ASEAN high-level committee given to particular ASEAN sectoral bodies. On cross-sectoral issues, there should be a lead sectoral body to coordinate with the other ASEAN bodies in different sectors.
- Climate change policy is becoming a driving force across the region, though perhaps more due to the individual ASEAN Member State’s commitment – but it offers an opportunity for justification for ASEAN Member States to engage on cross-sectoral actions related to climate change mitigation in the region.
- At the national level, every AMS has an NDC; these address transport to differing degrees and involving different internal structures in terms of who is responsible for monitoring, implementation of related activities, etc., but they may be an ‘entry point’ for FE. A similar example (but concerning air quality) is from Singapore, where a small group of officials from the Land Transport Authority and National Environment Agency worked on crosscutting issues together and came up with proposals to higher level officials on how to move forward on vehicle-related issues. Specific examples from Brunei Darussalam, Malaysia, the Philippines and Thailand also elaborated on individual national circumstances on how unique structures exist for coordinating between ministries, illustrating the need for nationally-specific structures. A key theme is to look at ministerial performance indicators and especially at benefits to the people as a basis for action.
- There are some options to engage different sectors in ASEAN on the issue of FE. One is to seek for mandate from ASEAN high-level committee, e.g. in Energy, Environment or Transport. However, this process could take time and require close coordination among the different ministries/agencies in the ASEAN Member States. Another approach is to look a little more bottom-up – specifically, for each ASEAN Member State to conduct internal consultation at the national level, e.g. EGSLT members to consult their counterpart in the relevant ministries (e.g. Energy, Environment, etc) on the issue of FE. At the ASEAN level, a hybrid approach is for ASEAN Member States holding the chairmanship of particular ASEAN sectoral body, e.g. Thailand as the Chair of the Energy Efficiency and Conservation Subsector Network (EE&C SSN) and Singapore as the chairs of LTWG and ASEAN Working



Group on Climate Change (AWGCC), to bring the issue on the FE at the meeting as their capacity of the chairs.

- More discussion amongst AMS at the EGSLT and other meetings would be necessary to deliberate the most appropriate approach.

The second group reported back on their discussions about private sector involvement:

- Participants did not come up with many regional examples of similar initiatives. The conversation focused on the ASEAN Fuel Quality Roadmap, in which oil companies were involved at a very early stage to provide their viewpoint on fuel quality improvements, their feasibility, etc.
- A key theme from the discussion of national mechanisms and lessons learned was the benefits of consulting the private sector early on in FE discussions. Some specific examples included in the Philippines, where private sector involvement took place through technical committees (e.g. on fuel quality standards). In Thailand, there was a similar takeaway with the Joint Committee of Commerce, Industry, and Banking, who are engaged early in the process when proposing new policies. This raised the question of whether it is best to work with associations or individual firms; there are pros and cons to both, and therefore some trade-offs depending in large part on companies' own interests, such as auto manufacturers' fleet portfolios. It may be best to collect a heterogeneous set of views by inviting and working with many manufacturers. Specific examples from Indonesia, Thailand, and Vietnam further illustrated the need for early engagement with firms in such processes.
- Next steps should include creating a list of who to be involved into this process – what specific counterparts should be contacted from the auto industry to maximise their contribution.
- The participants were informed that a questionnaire will be circulated by GIZ to the existing group (not yet including the private sector) and solicit input based on the proposals outlined today, with GIZ playing the role of clearing house for feedback and new ideas, including on private sector engagement. Engagement with private sectors will be further discussed once feedback is received on the proposals for FE Roadmap.

### **3 Closing**

Mr. Trigg thanked all attendees for their active participation and outlined some of his takeaways of the day, including:

- Examples from Bert Fabian (UN Environment) of relevant and decidedly 'not scary' policy interventions in Sri Lanka, Mauritius and other countries that have already improved FE of the new LDV market.
- Constructive feedback from Brunei Darussalam and other AMS representatives about aligning policies in a highly complex policy environment; the case study of Thailand, outlined by Dr. Nuwong but touched on in a number of the day's sessions, illustrated some of the policy tools such as CO<sub>2</sub>-based excise taxes already being applied within the ASEAN region. It is not only the outcome that matters, but the process used and lessons learned in getting there.



- Mr. Körner's various presentations reiterated the importance of clear and transparent definitions, targets and methodologies in developing the FE Roadmap.
- The conversations on interagency and cross-sectoral cooperation also highlighted the very useful point that civil society could be more involved in this process.

Mr. Trigg thanked everyone for their suggestions on next steps, and emphasised that all of today's inputs will inform the future development of the FE Roadmap, the EGSLT meetings this week and the preparations for the next FE Platform Forum meeting this fall. Any additional feedback on other activities relevant to this topic is always welcome. Mr. Trigg shared that the 3rd Regional Workshop on Sustainable Transport Indicators would meet the next day and also that TCC will be at the Eastern Asia Society for Transportation Studies Conference in Ho Chi Minh City this September.

Mr. Trigg remarked that what happened today started long ago and will continue into the future. In closing, he thanked Thailand and OTP for being gracious hosts, and expressed his gratitude to the team and participants who worked so hard to make the day possible, and ultimately, a success.

## 4 Annexes

- Annex 1 [Forum Agenda](#)
- Annex 2 [List of Participants](#)
- Annex 3 [‘Improving Fuel Economy in Southeast Asia’](#) (Bert Fabian)
- Annex 4 [‘Roadmap Outline and Development Steps’](#) (Alex Körner)
- Annex 5 [‘Fine-Tuning the Roadmap Vision’](#) (Alex Körner)
- Annex 6 [‘Roadmap Goals and Milestones’](#) (Alex Körner & Friedel Sehleier)
- Annex 7 [‘AMS Case Study: Thailand’](#) (Dr. Nuwong Chollacoop)
- Annex 8 [‘Identification of Knowledge Gaps and Other Barriers’](#) (Alex Körner & Friedel Sehleier)



## Annex 1: Forum Agenda

Time	Activity	Responsible/Speaker
8:45	<b>Registration</b>	
9:00	<b>Welcome &amp; introduction</b>	Dr. Chayatan Phromsorn, OTP Tali Trigg, GIZ
9:30	<b>Identification of the state of the art</b> Where are we now regarding LDV FE in the ASEAN Region?	Bert Fabian, UNEP
10:15	<b>Roadmap outline and development steps</b> Presentation + Q&A	Alex Körner, Consultant
10:45	<b>Coffee &amp; tea</b>	
11:15	<b>Fine-tuning of the Roadmap vision</b> Editing the roadmap vision based on the items collected during the 1 <sup>st</sup> FE Platform forum	Alex Körner
12:00	<b>Lunch</b>	
13:00	<b>Roadmap goals and milestones</b>	Alex Körner Friedel Sehleier
14:00	<b>ASEAN member state case study</b> e.g. presentation of Thai Eco Label experience	Dr. Nuwong, Consultant
14:30	<b>Coffee &amp; tea</b>	
15:00	<b>Identification of knowledge gaps and other barriers</b> Interactive discussion	Alex Körner Friedel Sehleier
16:00	<b>Stakeholder engagement</b> Involving the automotive industry and other government stakeholders in the roadmap process	Stefan Bakker, Consultant Alex Körner
16:30	<b>Summary of discussions by GIZ and next steps</b>	Tali Trigg
17:00	<b>Closing</b>	Tali Trigg

**Annex 2: List of Participants**

<b>No.</b>	<b>Salutation</b>	<b>Name</b>	<b>Affiliation</b>
1	Mr.	Beny Irzanto	ASEAN Secretariat
2	Mr.	Edwin Arief	ASEAN Secretariat
3	Mr.	Haji Rozaly Haji Saidon	Brunei Darussalam
4	Mr.	Hasbul Wafi Salleh	Brunei Darussalam
5	Ms.	Chhim Bopta	Cambodia
6	Mr.	Kukuh Kumara	Indonesia
7	Mr.	Ahmad Safrudin	Indonesia
8	Mr.	Torang Hutabarat	Indonesia
9	Mr.	Rizki Wijaya	Indonesia
10	Ms.	Xaysomnuk Souvannavong	Lao PDR
11	Mr.	Ahmad Zuhairi Muzakir	Malaysia
12	Mr.	Mohd Sharulnizam Sarip	Malaysia
13	Ms.	Noor Aishah Kamarzaman	Malaysia
14	Ms.	Pa Pa Lin	Myanmar
15	Mr.	Mark Richmund de Leon	Philippines
16	Mr.	Yjares Doroteo Jose	Philippines
17	Dr.	Karl Vergel	Philippines
18	Dr.	Jose Bienvenido Manuel Biona	Philippines
19	Dr.	Atit Tipichai	Regional
20	Mr.	Bert Fabian	Regional
21	Dr.	Horizon Gitano	Regional
22	Mr	Alvin Mejia	Regional
23	Ms.	Kathleen Dematera	Regional
24	Mr.	Wong Chun Kit Henry	Singapore
25	Mr.	EU Jin Toh	Singapore
26	Ms.	Shuyan Lin	Singapore
27	Ms.	Chutinthorn Mankhong	Thailand
28	Ms.	Thanyathorn Sawatdiwong	Thailand
29	Ms.	Wipada Unlumert	Thailand
30	Mr.	Watcharin Boonyarit	Thailand
31	Dr.	Jakapong Pongthanasawan	Thailand
32	Dr.	Chayatan Phromsorn	Thailand
33	Mr.	Tien Nguyen Huu	Vietnam
34	Mr.	Luu Vu Hai	Vietnam
35	Dr.	Tuan Le Anh	Vietnam
36	Dr.	Nuwong Chollacoop	Consultant
37	Mr.	Alex Körner	Consultant
38	Mr.	Stefan Bakker	Consultant
39	Mr.	Sudhir Gota	Consultant
40	Mr	Anders Imboden	Consultant
41	Mr.	Aditya Mahalana	GIZ
42	Dr.	Danielle Guillen	GIZ



No.	Salutation	Name	Affiliation
43	Ms.	Cristina Villaraza	GIZ
44	Mr.	Tali Trigg	GIZ
45	Mr.	Friedel Sehleier	GIZ
46	Ms.	Julia Nagel	GIZ
47	Mr.	Papondhanai Nanthachatchavankul	GIZ