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Goals and Milestones

Brainstorming of Possible LDV FE Goals and Methodologies for Target Setting

Alex Körner

alex_Koerner@gmx.de

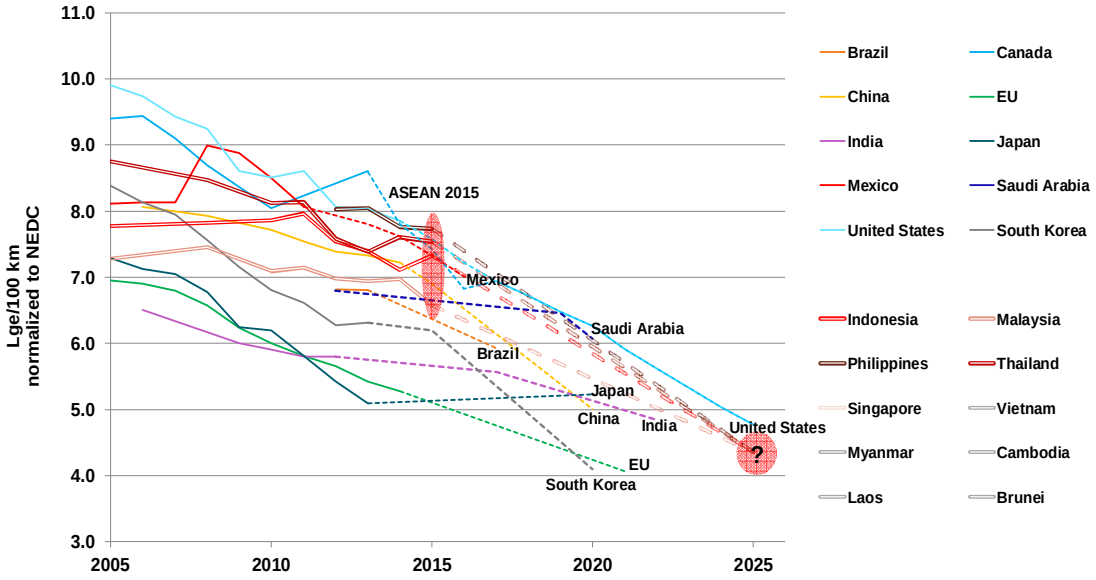
ASEAN-German Technical Cooperation Project
"Energy Efficiency and Climate Change Mitigation in the Land Transport Sector"

Content

1. Roadmap outline and development steps
   - A. Objectives, deliverables & timeline, progress report
   - B. Discussion of the Roadmap outline by section
2. Fine-tuning of the Roadmap Vision
3. Identification of knowledge gaps and other barriers
4. Roadmap goals and milestones

Goals I

- **The Fuel Economy Roadmap suggests the aspirational goal of reducing new light duty vehicle fuel consumption by 40% between 2015 and 2025 in the entire region, leading to a targeted fuel economy of around 4.4 Lge/100km for new light duty vehicles by 2025, from about 7.3 Lge/100km in 2015.**



Source: ICCT 2017, GFEI 2016 and GFEI 2016a

Milestone I

- **Reaching a region wide new vehicle light duty vehicle fuel economy of 5.6 Lge/100km by 2020 is proposed to be an important milestone on the way towards reaching the goal of reducing specific fuel consumption by 40% until 2025, and should form the basis for an ASEAN wide fuel economy standard for new light duty vehicles for the year 2020.**
- **This 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.**

Discussion of methodology for FE target setting

Attempt 1: Absolute new LDV GFEI target of 4.2 Lge/100km by 2030

	Base year	Target year	Base year FE Lge/100km	Target year FE Lge/100km	Years	Total reduction	Annual reduction	2020 FE Lge/100km	2025 FE Lge/100km	2030 FE Lge/100km	Reduction base year to 2030
ASEAN	2015	2025	7.3	5.0	10	-31%	-3.7%	6.0	5.0	4.2	-43%
EU	2014	2021	5.3	4.1	7	-23%	-3.7%	4.2	3.5	2.9	-45%
USA	2015	2025	7.6	4.8	10	-37%	-4.5%	6.0	4.8	3.8	-50%
Canada	2015	2025	7.4	4.8	10	-36%	-4.3%	6.0	4.8	3.8	-48%
China	2015	2020	6.9	5.0	5	-28%	-6.2%	5.0	3.6	2.6	-62%
South Korea	2015	2020	6.2	4.1	5	-34%	-7.9%	4.1	2.7	1.8	-71%
India	2017	2022	5.6	4.8	5	-13%	-2.7%	5.1	4.5	3.9	-30%
Mexico	2013	2016	7.8	7.0	3	-10%	-3.5%	6.1	5.1	4.3	-45%
Brazil	2013	2017	6.8	5.9	4	-13%	-3.4%	5.3	4.5	3.8	-44%
Saudi Arabia	2012	2020	6.8	6.1	8	-11%	-1.4%	6.1	5.6	5.3	-23%
Average							**-4.2%**	**5.3**	**4.3**	**3.6**	**-47%**

- Results in 3.7% annual FE improvement rate
- In 2020 ASEAN FE still considerably worse than in most other countries with FE standard

Discussion of methodology for FE target setting

Attempt 2: ASEAN FE improvement rate equals average rate of -4.2%

	Base year	Target year	Base year FE Lge/100km	Target year FE Lge/100km	Years	Total reduction	Annual reduction	2020 FE Lge/100km	2025 FE Lge/100km	2030 FE Lge/100km	Reduction base year to 2030
ASEAN	2015	2025	7.3	4.8	10	-35%	-4.2%	5.9	4.8	3.8	-47%
EU	2014	2021	5.3	4.1	7	-23%	-3.7%	4.2	3.5	2.9	-45%
USA	2015	2025	7.6	4.8	10	-37%	-4.5%	6.0	4.8	3.8	-50%
Canada	2015	2025	7.4	4.8	10	-36%	-4.3%	6.0	4.8	3.8	-48%
China	2015	2020	6.9	5.0	5	-28%	-6.2%	5.0	3.6	2.6	-62%
South Korea	2015	2020	6.2	4.1	5	-34%	-7.9%	4.1	2.7	1.8	-71%
India	2017	2022	5.6	4.8	5	-13%	-2.7%	5.1	4.5	3.9	-30%
Mexico	2013	2016	7.8	7.0	3	-10%	-3.5%	6.1	5.1	4.3	-45%
Brazil	2013	2017	6.8	5.9	4	-13%	-3.4%	5.3	4.5	3.8	-44%
Saudi Arabia	2012	2020	6.8	6.1	8	-11%	-1.4%	6.1	5.6	5.3	-23%
Average							**-4.2%**	**5.3**	**4.3**	**3.6**	**-47%**

- Results in a 2025 target FE of 4.8 Lge/100km, which similar to the CAFE target in the US
- In 2020 ASEAN FE still considerably higher FE than the average of countries with FE targets

Discussion of methodology for FE target setting

Attempt 3: ASEAN absolute FE equals average new LDV in 2020

	Base year	Target year	Base year FE Lge/100km	Target year FE Lge/100km	Years	Total reduction	Annual reduction	2020 FE Lge/100km	2025 FE Lge/100km	2030 FE Lge/100km	Reduction base year to 2030
ASEAN	2015	2025	7.3	3.9	10	-47%	-6.1%	5.3	3.9	2.8	-61%
EU	2014	2021	5.3	4.1	7	-23%	-3.7%	4.2	3.5	2.9	-45%
USA	2015	2025	7.6	4.8	10	-37%	-4.5%	6.0	4.8	3.8	-50%
Canada	2015	2025	7.4	4.8	10	-36%	-4.3%	6.0	4.8	3.8	-48%
China	2015	2020	6.9	5.0	5	-28%	-6.2%	5.0	3.6	2.6	-62%
South Korea	2015	2020	6.2	4.1	5	-34%	-7.9%	4.1	2.7	1.8	-71%
India	2017	2022	5.6	4.8	5	-13%	-2.7%	5.1	4.5	3.9	-30%
Mexico	2013	2016	7.8	7.0	3	-10%	-3.5%	6.1	5.1	4.3	-45%
Brazil	2013	2017	6.8	5.9	4	-13%	-3.4%	5.3	4.5	3.8	-44%
Saudi Arabia	2012	2020	6.8	6.1	8	-11%	-1.4%	6.1	5.6	5.3	-23%
Average							**-4.2%**	**5.3**	**4.3**	**3.6**	**-47%**

- Results in a high 6.1% improvement rate between 2015 and 2020
- After 2020, improvement rate needs to be decreased, otherwise the 2025 target FE gets very low

Discussion of methodology for FE target setting

Proposed target: Improve ASEAN new LDV FE by 40% until 2025

	Base year	Target year	Base year FE Lge/100km	Target year FE Lge/100km	Years	Total reduction	Annual reduction	2020 FE Lge/100km	2025 FE Lge/100km	2030 FE Lge/100km	Reduction base year to 2030
ASEAN	2015	2025	7.3	4.4	10	-40%	-5.0%	5.7	4.4	3.4	-54%
EU	2014	2021	5.3	4.1	7	-23%	-3.7%	4.2	3.5	2.9	-45%
USA	2015	2025	7.6	4.8	10	-37%	-4.5%	6.0	4.8	3.8	-50%
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China	2015	2020	6.9	5.0	5	-28%	-6.2%	5.0	3.6	2.6	-62%
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Saudi Arabia	2012	2020	6.8	6.1	8	-11%	-1.4%	6.1	5.6	5.3	-23%
Average							**-4.2%**	**5.3**	**4.3**	**3.6**	**-47%**

- Results in an ambitious but feasible 5.0% improvement rate between 2015 and 2025
- By 2020, ASEAN new LDV FE is getting somewhat close to the efficiency vanguards

Goals II

- **This 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.**
- **Proposed measures & units:**
  - **Fuel economy/fuel consumption – Lge/100km**
  - **CO_2 emissions – gCO_2/km**
  - **Drive cycle – NEDC vs. WLTP**
  - **Aligned energy densities by fuel**
  - **Aligned emission factors by fuel**

Methodology for Fuel Economy Baseline Setting

National vehicle registration data with sales by…

- Vehicle make (e.g. Toyota)
- Vehicle model (e.g. Corolla)
- Model production year - important for used imports (e.g. 2007)
- Engine displacement (e.g. 1,800 ccm or 1.8 l)
- Engine power (e.g. 80 kW)
- Fuel type (e.g. gasoline, diesel, LPG, CNG, electricity)

…needs to be paired with the missing fuel economy information to calculate sales-weighted average new LDV tested fuel economy according to:

$$\frac{\sum_i^n \boldsymbol{Reg_i} \times \boldsymbol{FE_i}}{\sum_i^n \boldsymbol{Reg_i}}$$

With:

$$\boldsymbol{FE} = weighted\ average\ fuel\ economy$$

$$\boldsymbol{Reg_i} = number\ of\ newly\ registered\ vehicles\ of\ type\ i$$

$$\boldsymbol{FE_i} = fuel\ economy\ of\ vehicle\ of\ type\ i$$

Brainstorming Further Options to Formulate Goals and Milestones:

1. …
2. …
3. …

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Thank you!