Decarbonisation of Heavy-Duty Vehicles in Brazil

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HDV in Brazil: overview
**Strong dependence on road transport:** in Brazil, 65% of goods are transported by highways.

GHG emissions from diesel in trucks were 57% higher than the total emissions from electricity generation in the country.

Source: [http://www.epl.go.br/perfil-de-embarcadores-e-servicos-demandados](http://www.epl.go.br/perfil-de-embarcadores-e-servicos-demandados)  
Road mode GHG: 92% of the emissions from the transportation sector

Source: Plataforma.seeg.eco.br/sectors/energia
GHG emissions from the transport sector in Brazil

- Most of the transport sector’s emissions are due to the consumption of petroleum products (mineral diesel and automotive gasoline)
- Freight and passenger emissions are similar

Source: SEEG

2014 data
Actions towards decarbonisation
Some actions towards the decarbonization of heavy vehicles in Brazil

- Implementation of phase P-8 (Euro VI) in 2022/2023
- São Paulo Climate Law: gradual emission reduction targets for buses in 10 and 20 years
- Fuels: sulfur content and biofuels
Implementation of P-8 (Euro VI)
Res. Conama 490/2018: regulates the Proconve P-8 (Euro VI)

For HDVs, Proconve phases have been following the European regulations for emission standards and certification test cycles. Resolution Conama 490/2018 establishes P-8 (Euro VI):

- In 2022 (new type approvals)
- in 2023 (all sales and registration)

*early approval of Euro VI is permitted*
Manufacturers have been seeking to delay Proconve for 3 years due to Covid-19

Indústria quer adiar por 3 anos caminhões Euro 6 no Brasil
Por causa da crise provocada pela pandemia, fabricantes pedem ao governo postergação para atender limites de emissões do Proconve P8, agendado para 2023

Anfavea quer adiar investimentos de R$ 12 bilhões para reduzir emissões
Associação confirma pedido de adiamento por 2 a 3 anos para atender novas fases do Proconve L7 e P8, alega falta de tempo e recursos

Caminhões pesados sustentam alta nas vendas do segmento
Demanda por modelos da categoria cresceu 14% com participação de mais 50% no total de emplacamentos de julho
Mobilization of civil society to avoid Proconve delay

- 19 organizations have created a campaign named “Invisible Enemy”.

MPF recomenda não ampliar prazo para montadoras se adequarem a regras de emissão

Jun 30, 2020
São Paulo Climate Law: transition to Zero Emissions bus
São Paulo has the largest municipal public transport system in Brazil

Bus fleet

- Biarticulado: 97 (198 pax)
- Articulado: 2,262 (128 a 174 pax)
- Tróelebus: 201 (82 a 110 pax)
- Padrão: 3,883 (82 a 110 pax)
- Básico: 2,353 (74 pax)
- Midiônibus: 2,749 (54 a 68 pax)
- Miniônibus: 2,479 (35 pax)

9.4 million passengers / business day
81.6 million km / month

Source: SPTrans (2020)
São Paulo has set ambitious goals to reduce pollutant emissions from its transit bus fleet (Law No. 16,802 / 2018)

What does the law state?
To promote the progressive reduction of emissions of CO2* of fossil origin, and of air toxic pollutants emitted in the operation of their respective fleets

How?
Through the gradual use of cleaner and more sustainable fuels and technologies

Who must promote this reduction?
Operators of public bus transportation services
Companies that provide services for the collection of Urban Solid Waste

*The CO2 reductions of fossil origin refer exclusively to emissions in the end use of energy inputs.
http://documentacao.camara.sp.gov.br/iah/fulltext/leis/L16802.pdf
Emissions reduction targets for 10 and 20 years: CO2, PM and NOx
Business as Usual scenario: changes already established on the fleet

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Emissions for the Business as Usual scenario: CO2 reduction in particular requires technological or fuel changes.

BAU scenario
In 10 years, no goal would be achieved. In 20 years, the CO2 target would remain distant.
Euro VI engines reduce air pollutant emissions by > 90% relative to engines certified to current Brazilian national emission standards, PROCONVE P-7

Bus fleet renewal plan in São Paulo: accelerated electrification of the fleet
The reduction in emissions resulting from the plan presented is greater than that required.
Next steps

- The plans were presented by the operators, and consolidated by SPTrans, the municipal transport authority;
- As it is an ambitious plan, with significant volumes of electric buses entering the fleet year by year, it is necessary to verify its technical, infrastructure and economic viability.
Fuels: Sulfur content Biofuels
Diesel

- Currently 3 types: S-1800, S-500 and S-10;
- Since 2014, S-1800 is prohibited on road transportation;
- The S-10 is offered according to demand (P-7 / Euro V vehicles). The price is slightly higher than diesel S 500 (4% on average).
Biodiesel

- In 2004, Brazil implemented the National Biodiesel Production and Use Program (PNPB), aiming at increasing the share of biodiesel in the country.
Although the market for renewable fuels is relatively developed in Brazil, most of the consumption of road fuel is of fossil origin.

80% of fuel used in road transport was not renewed in 2017 and is expected to remain dominant until 2026.
RENOVABIO: National Biofuels Policy

Established by Law No. 13,576 / 2017, with the following objectives:

◦ Provide a **contribution** to the fulfillment of the commitments determined by Brazil under the **Paris Agreement**;

◦ **Promote** the adequate **expansion of biofuels** in the energy matrix, with an emphasis on regular fuel supply; and

◦ **Ensure predictability for the fuel market**, inducing gains in energy efficiency and reduction of greenhouse gas emissions in the production, commercialization and use of biofuels
How does Renovabio operate?

1) **Decarbonization goals** establishment of annual national decarbonization targets for the fuel sector

2) 2) **Certification of Biofuel Production**; and

3) 3) Decarbonization Credit (CBIO).
Renovabio and biodiesel

- Almost 70% of the biodiesel produced in Brazil uses soy as raw material;
- It is difficult to trace the origin of the soy used: this is an obstacle to the Cbios certification and generation process;
- Most of the CBios generated so far are from ethanol production.
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