POLICY UPDATE

FEBRUARY 2013

BRAZIL'S INOVAR-AUTO INCENTIVE PROGRAM

ICCT **POLICY UPDATES** SUMMARIZE REGULATORY AND OTHER DEVELOPMENTS RELATED TO CLEAN TRANSPORTATION WORLDWIDE.

In October/2012, the Brazilian government approved by decree a new program to encourage vehicle technology innovation.[1] Inovar-Auto fosters industry competitiveness by encouraging automakers to produce more efficient, safer, and technology-advanced vehicles while investing in the national automotive industry.

Inovar-Auto provides these incentives in two ways. It first increases a tax on industrialized products (IPI) by 30% for all light-duty vehicles (LDVs) and light commercial vehicles. Second, it imposes a series of requirements for automakers to qualify for up to 30% discount in the IPI.[2] In other words, IPI taxes will remain unchanged for those manufacturers that meet the requirements, thus incentivizing investments in vehicle efficiency, national production, R&D, and automotive technology. The program is limited to vehicles manufactured between 2013 and 2017, after which IPI rates return to pre-2013 levels unless modifications to the decree are made.

IPI DEFINITION

The IPI (Imposto sobre Produtos Industrializados) is a tax on industrialized products either manufactured or imported to Brazil. In the case of products manufactured in Brazil, taxes are imposed on the product sales price, while in the case of imported products, the tax base is the sales price plus import taxes and other required fees (e.g., shipping, insurance). IPI rates for LDVs depend on engine displacement and fuel type, illustrating Brazil's long-term incentive towards smaller engines (Table 1).

Table 1. IPI Rates (National Production)

Engine Displacement (L)	IPI Before 2012	New IPI
Less than 1L	7%	37%
1-2L Flex/Ethanol	11%	41%
1-2L Gasoline	13%	43%
Above 2L	25%	55%

POLICY EFFECTS ON VEHICLE EFFICIENCY

Because automakers must meet a minimum corporate average vehicle efficiency target to qualify for the 30% discount on IPI taxes, Inovar-Auto will likely result in efficiency improvements of new LDVs of at least 12% between 2012 and 2017, assuming that the program is well implemented, enforcement and compliance is effective (i.e., penalties for non-compliance are high enough to encourage automakers to meet efficiency targets), and there are no loopholes. Automakers can also qualify for an additional 2% discount on IPI taxes by meeting

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more aggressive efficiency targets (up to 19% improvement over 2012 levels). Figure 1 illustrates the expected effects of Inovar-Auto on Brazil's GHG emissions from LDVs, assuming a moderate case (12% improvement) and an aggressive case (19% improvement). In 2030, Inovar-Auto could reduce GHG emissions from LDVs in Brazil by 10-15% if well implemented. This analysis considers well-to-wheel CO_2e emissions, including not only fuel combustion, but also fuel refining (including land use and harvest in the case of ethanol) and distribution. Ethanol share of total fuel consumption remains constant at 2010 levels to isolate the effects of vehicle efficiency improvements.

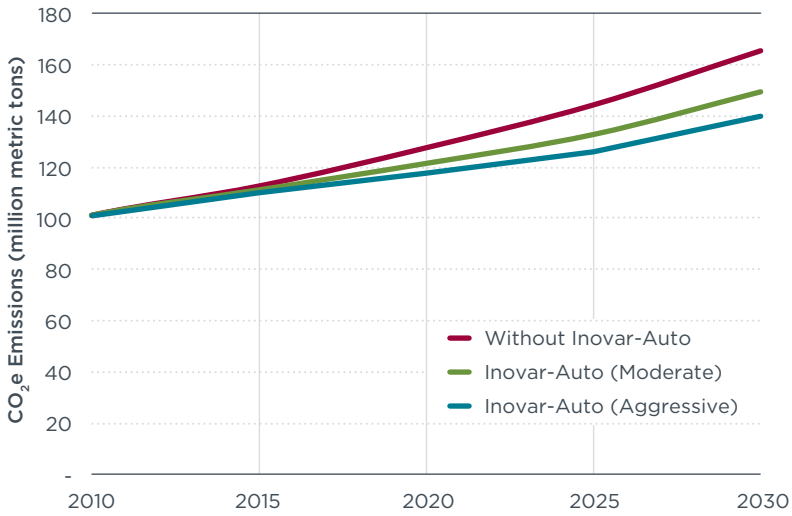

Figure 1. CO_2e emissions from LDVs in Brazil

PROGRAM REQUIREMENTS

Under the new program, automakers will need to meet a corporate average vehicle efficiency target to qualify for up to 30% discount in the IPI. In addition, automakers will need to conduct a certain number of manufacturing processes in Brazil, and to choose at least 2 out of 3 pre-requisites to qualify for the program – (1) investment in R&D, (2) investment in engineering, industrial technology, and supplier capacitation, and (3) participation in the Vehicle Labeling Scheme. Automakers can qualify for an additional 1-2% discount in the IPI by meeting more stringent corporate average vehicle efficiency targets.

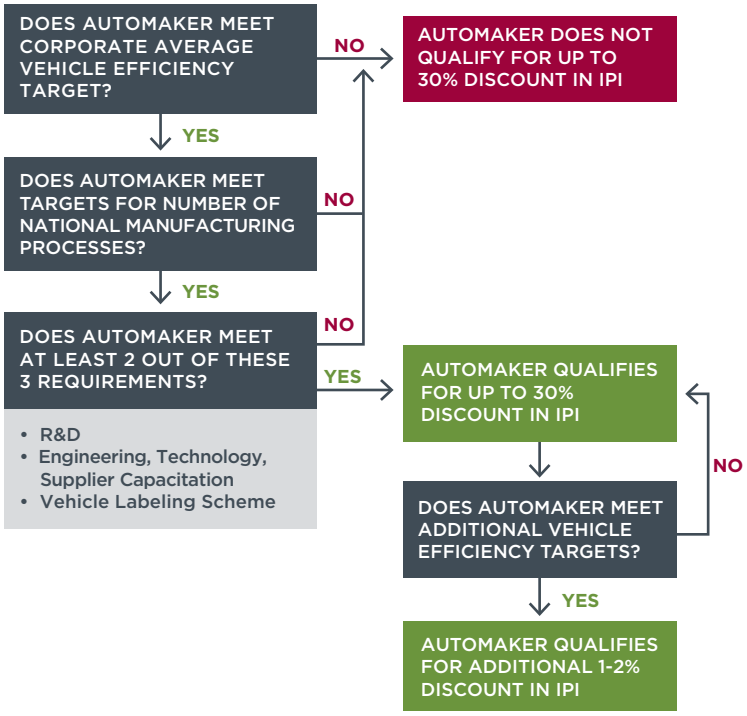

Figure 2: Inovar-Auto's Program Requirements

VEHICLE EFFICIENCY

Automakers need to improve their corporate average vehicle efficiency for new LDVs by about 12% from 2012 levels by October/2017 to

qualify for the Inovar-Auto program. This target was based on Europe's 2015 target for new LDVs of 130 gCO_2/km, and adapted to Brazil based on differences in driving cycle, vehicle, fuel, and road specifications. Average vehicle efficiency, in megajoules/kilometers (MJ/km) and measured on the combined (urban/highway) CAFE cycle[3], needs to be calculated by Equation 1. To qualify for an additional IPI reduction of 1% and 2%, automakers need to meet average vehicle efficiency calculated by Equations 2 and 3 by October/2016, which would result in average improvements in new vehicle efficiency of about 16% and 19%, respectively. The expected improvements from these three target levels are summarized in Table 2.

(1) VE = 1.155 + 0.000593 x M

(2) VE = 1.111 + 0.000570 x M

(3) VE = 1.067 + 0.000547 x M

VE: corporate average vehicle efficiency (MJ/km)

M: average mass in kilograms (curb weight)[4] for all vehicles commercialized in Brazil, and weighted by vehicle sales in the 12 months preceding the calculation.

Table 2. Vehicle Efficiency Improvements

Equation	IPI Reduction	Average New LDV Efficiency (MJ/km)	Vehicle Efficiency Improvement
-	-	2.07 (2012)	-
1	Up to 30% depending on compliance with other pre-requisites (see page 3)	1.82	12.1%
2	+1%	1.75	15.5%
3	+2%	1.68	18.8%

NATIONAL ACTIVITIES

Automakers need to conduct a minimum number of manufacturing and engineering infrastructure activities for at least 80% of produced light-duty and light commercial vehicles in Brazil, according to the scheduled provided in Table 3. The activities considered are the following:

- Stamping
- Welding
- Anticorrosion treatment and painting
- Plastic injection
- Motor manufacturing
- Gearbox and transmission manufacturing
- Steering and suspension systems assembly
- Electrical systems assembly
- Axle and brake systems assembly
- Monoblock manufacturing or chassis assembly
- Assembly, final review and testing
- Own laboratory infrastructure for product development and testing

R&D INVESTMENT

Automakers need to invest in research & development in Brazil, corresponding to the minimum percentages indicated in Table 3, and applied over the gross revenue of products and services, excluding taxes and contributions over sales.

INVESTMENT IN ENGINEERING, INDUSTRIAL TECHNOLOGY, AND SUPPLIER CAPACITATION

Automakers need to invest in engineering, industrial technology, and supplier capacitation in Brazil, corresponding to the minimum percentages indicated in Table 3, and applied over the gross revenue of products and services, excluding taxes and contributions over sales.

VEHICLE LABELING SCHEME

Automakers must comply with Brazil's Vehicle Labeling Scheme (PBEV – Programa Brasileiro de Etiquetagem Veicular), with the minimum percentages of vehicle sales indicated in Table 3.

Table 3. Inovar-Auto Requirements

Year	Minimum Number of National Manufacturing Processes	Minimum R&D Investment	Minimum Engineering Investment	Minimum Participation in PBEV
2013	6	0.15%	0.50%	36%
2014	7	0.30%	0.75%	49%
2015	7	0.50%	1.00%	64%
2016	8	0.50%	1.00%	81%
2017	8	0.50%	1.00%	100%

ENDNOTES

1 Brazilian Ministry of Development Industry and Commerce (MDIC 2012). Decreto nº 7.819/2012 – Programa de Incentivo à Inovação Tecnológica e Adensamento da Cadeia Produtiva de Veículos Automotores – Inovar-Auto. Available online at http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/Decreto/D7819.htm

2 The program assumes that all automakers comply with the requirements unless they are not able to demonstrate compliance. In that case, they need to return the gained credits to the government.

3 Based on norm ABNT NBR 7024: 2010.

4 Based on norm ABNT NBR ISO 1176: 2006. Curb weight is the total weight of a vehicle with standard equipment, all necessary operating consumables (e.g., motor oil and coolant), a full tank of fuel, but not loaded with passengers or cargo.