4th International Conference on Biofuels Standards
Current Issues, Future Trends

Applications and Regulatory Issues: Surface Transport

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Gaithersburg, 15th November, 2012

Outline

- Brazilian Energy System
- ANP´s Regulation
  - Biodiesel
  - Ethanol
  - New Fuels
- Conclusions
- Final Remark

Brazilian Energy System

Policy Making

PRESIDENCY OF THE REPUBLIC

National Energy Policy Council – CNPE

Ministry of Mines and Energy - MME

Regulation and Policy Implementation

ANEEL
AGÊNCIA NACIONAL DE ENERGIA ELÉTRICA

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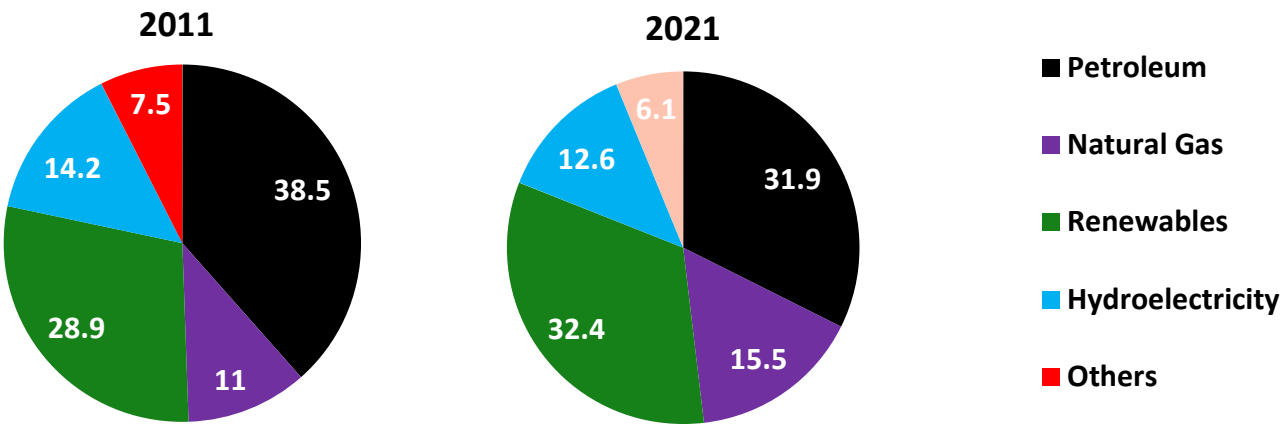
Oil, Natural Gas and Biofuels regulated under the same institutional environment: ANP

Brazilian Energy Matrix



✓Share of renewable energy of the energy matrix tends to grow (43% to 46%).

Source: The Ten Year Energy developed by the Empresa de Pesquisa Energética (Brazilian Company of Energy Research) - PDE 2021/EPE

Brazilian Transport Fuels Demand

Fuel	Volume, million m^3				(%)
	2008	2009	2010	2011	2011/ 2008
Diesel	44,76	44,30	49,24	51,78	16%
Biodiesel	1,17	1,61	2,39	2,67	128%
Gasoline C	25,17	25,41	29,84	35,45	41%
Gasoline A	20,14	19,06	22,38	27,07	34%
Hydrated	5,03	6,35	7,46	8,38	67%
Anhydrous	13,29	16,47	15,07	10,72	-19%
Ethanol	18,33	22,82	22,54	19,10	4%
Jet Fuel	5,23	5,43	6,25	6,96	33%
Aviation Gas	0,06	0,06	0,07	0,07	17%

Source: Oil Natural Gas and Biofuel Statistical Yearbook - ANP (2012)

SURFACE TRANSPORT BIOFUELS

(mandatory nationwide)

- ethanol: anhydrous (E20+gasoline); hydrated (E100) for flex and ethanol fleet;

- biodiesel: B5 (to diesel fuel).

ANP's Regulation Focusing on Biofuels and New Fuels

- Participation with the Brazilian government in Working Groups (IBF, GBEP, MERCOSUR) to reduce technical barriers and in international forums;
- Ethanol and biodiesel: regulation and supervision of the production and distribution chain; establishment of specifications, joint actions to mitigate problems;
- Standardization: follow-up actions under the technical Committees of ABNT, INMETRO, ASTM, ISO (quality and sustainability).

MERCOSUL

Biofuels Specification Harmonization

Brazil / USA / EU: **"White Paper" for biofuels (ethanol and biodiesel): identification of possible properties and limits to be harmonized: short, mid and long term.**

MERCOSUR: **Report for biofuels technical standards task force activities.**

INTERNATIONAL EFFORT FOR HARMONIZING METHODS:

Brazilian standardized test methods (ABNT) considered for building ISO´s standards;

Creation of the SC 7 (Liquid Biofuels) within the TC 28 (Technical Committee on Petroleum Products and Lubricants) of ISO:

- **ethanol: conductivity and acidity - WG4**
- **biodiesel: ester content and glycerides - WG5**

Ethanol Specification Resolution ANP 7/2011

Major advances:

- Update testing methods (ABNT) and align unity and limits;
- Introduction of water content by Karl Fischer: 0.4% vol. max;
- Revision the quality control of entire chain;
- Creation of new type of ethanol- hydrated premium - less water compared to ethanol hydrated and can decrease fuel consumption.

Property	Anhydrous Ethanol	Hydrated Ethanol	Ethanol Premium
Density at 20ºC (kg/m³)	791.5 max	807.6 to 811.0	798.8 to 805.0
Alcoholic Content at 20°C (% volume)	99.6 max	95.1 to 96.0	96.1 to 97.5

Biodiesel Specification

- **Distributors and Retailers (2010): indicated fuel problems (B3 to B5);**
- **ANP coordinated a task force for subjects: Transport, Storage and Quality Control.**
- **Gathering of relevant points: evaluate biodiesel characteristics considering hygroscopicity performance during storage.**

Outcomes

Seminars; Guide of Best Practices for Biodiesel Quality Control; Final Report; ABNT ´s standards and biodiesel spec.

Biodiesel Specification Resolution ANP 14/2012

Major Advances:

Stringent Water content: 500 ppm (2011), 380 ppm (2012), 350 ppm (2013), 200 ppm (2014);

- **Upper limits of mono-, di- and triacylglycerols set:** 0.8, 0.2 and 0.2 wt %;
- **Cold Filter Plugging Point (CFPP):** new regional limits similar to diesel fuel;
- **Revisit 9 properties indicated in White Paper** as category B (significant difference) and C (fundamental difference);
- **Updating test methods and adapting quality control to current biodiesel trade**;

Other Relevant Actions:

- **Audit lab for fuel certification,** 43 methods accredited by ISO 17025;
- **Promotion of 7 interlaboratory programs and one proficiency program with INMETRO using Certified Reference Material:** 48 labs as participants.

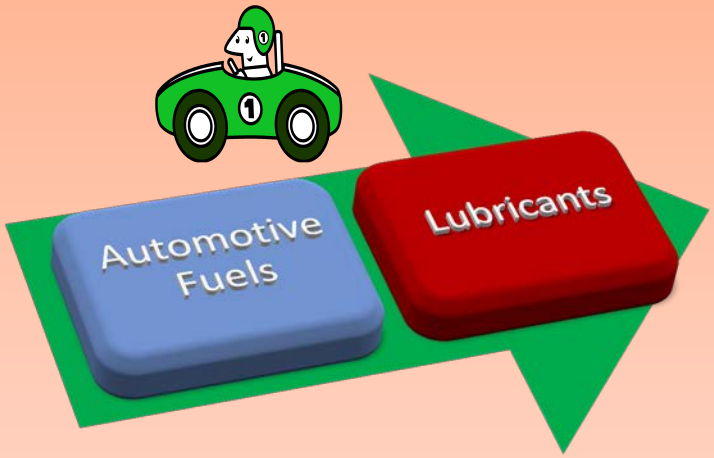
Program of Monitoring for Fuel Quality

GOALS

- To evaluate systematically the quality of fuels marketed in the country: gasoline, ethanol fuel and Diesel B5;
- To outline problems of non conformities in order to guide ANP´s supervision and also the institutions with which ANP maintains cooperative convenium;
- To develop human technical capability;
- To increase technical capacity for fuels analysis and scientific production.

Present culture: ANP is present and diagnoses the fuel quality to inhibit fraud.

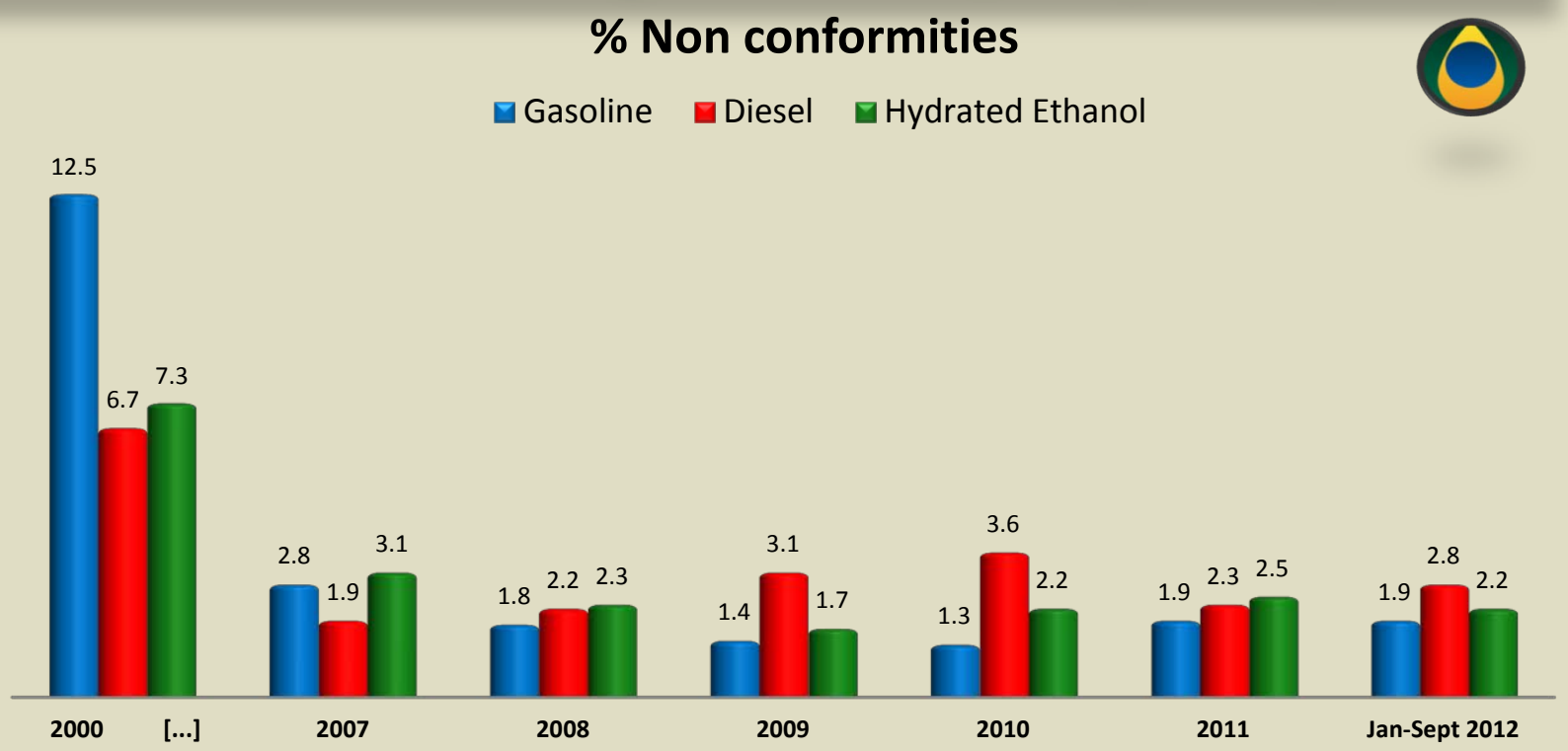
Program of Monitoring for Fuel Quality



20 universities and research centers
240,000 samples / year
34,314 inspected service stations

Program of Monitoring for Fuel Quality

Results of Monitoring for Fuels Quality 2000/2012



B2 in 2006 B3 in 2008 B5 in 2010

New Biofuels and Regulation

Scope: Regulation to authorize biofuels tests by ANP for evaluation of non specified blends or new fuels to be used by captive fleet or in industrial process.

 # B6 to B20: Resolution ANP 2/2011;

 # New fuels: Resolution ANP 23/2012

Outcome: Report of test results based on consumption, emissions and performance aspects.

Perspective: To build a solid overview of the new fuel and its compatibility with the current scenario, indicating the pros and cons in order to subsidize the government to evaluate the biofuels policy.

New Biofuels and Regulation

Authorizations for experimental and specific uses 2010-2012

Authorization	Blend	Vol./Year Biofuels (L)
1	B10	10,560,000
5	B20	214,790,960
2	B25	28,800,000
2	B100	4,423,679
4	B5 + 10% Diesel from Sugarcane	1,987,000
3	Ethanol + ignition improver	8,160,000
1	B5 + 30% Diesel from Sugarcane	1,596,000
16		270,317,639

New Biofuels and Regulation

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Second generation ethanol : signaling based on data from PAISS (BNDES/Finep)

SCOPE

Selection of business plans and projects that include development, production and commercialization of new technologies for industrial processing of biomass from sugarcane.

Three thematic guidelines were made available :

- ❑ Second-generation bioethanol;
- ❑ News products from sugarcane;
- ❑ Gasification, technology, equipment, process and catalyst.

- ➢ **Estimate of potential investment in R&D and industrialization (2011 to 2014): R$ 3,1billions.**
- ➢ **Result : approval of 35 business plans from 25 different companies.**

Conclusions

ANP considered the report of the White Paper to review existing Brazilian standards for biofuels, when consistent with our domestic market in order to facilitate global trade and has nourished the development of laboratory infrastructure and experts for biofuels analysis.

Biofuels for transport domestic ground are consolidated, but for export rely on sustainability criteria nonconsensual, especially biodiesel.

Challenges and opportunities

Support regulatory impact analysis for biofuels.

Bolster the introduction of new fuels on the market with good results for fit for purpose and emissions tests compared to fossil fuels.

Uphold the improvement of fuel economy that can be dramatically improved in the light- and heavy-duty sectors through the advancement and application of present and new technology.

FINAL REMARK

ANP strongly supports the international effort cooperation towards international standards for biofuels as well as the implementation of the biofuel policy by conducting new regulations and improvements to consolidate the share of biofuels in our energy mix.

Thank you for your attention!

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