



## SUSTAINABLE MOBILITY: ETHANOL TALKS – THAILAND CONCEPT NOTE

### BACKGROUND

Sugarcane ethanol and bioelectricity are renewable energy solutions that can significantly reduce greenhouse gas (GHG) emissions when compared to fossil fuels. Adopting an ethanol program will help countries to reduce their GHG emissions and local pollution, while increasing energy security and improving rural jobs.

According to estimations from international energy institutions of great reputation, including the International Energy Agency (IEA), a body of the Organization for Economic Cooperation and Development (OECD), biofuels should increase by 19 percent their share in the worldwide use of energy in the transport sector by 2023.

According to IEA Sustainable Development scenarios, recognized by the Biofuture Platform, a multilateral initiative where Brazil is a member, worldwide use of modern bioenergy should double until 2030, and triple in the transport sector, where ethanol is the most widely available biofuel, in order to meet the objective of limiting global warming to a maximum of 2 degrees.

These targets foresee that the global output of biofuels must rise from the current level of 130 billion liters to 500 billion liters by 2030, and to 1,120 billion liters per year by 2050, to most cost-effectively contribute to the achievement of the Paris Agreement's goals. This is why there is a sense of urgency in spreading and adopting policies to increase the production and use of sustainable low carbon biofuels such as ethanol.

According to the IEA, developing countries represent the greatest potential for expansion in the consumption of renewable energy, but several lack the technology, policy experience, and expertise to adequately expand production, blending, and distribution rapidly enough to reap significant benefits.

This is where Brazil's 45-year experience in producing and using ethanol as fuel in the transport sector can play a crucial role in speeding up implementation of biofuel use in a number of countries, in order to reduce carbon emissions.

In 2018, sugarcane accounted for 17.0% of Brazil's total primary energy generation, second only to petroleum and its derivatives with 36.4%, and ahead of hydropower with 12.0%. A continuous supportive policy for the mandatory blend allowed Brazil to become the world's second largest

### Key facts – realized environmental benefits of ethanol in practice:

- For every liter of ethanol consumed in a flex-fuel engine that runs on either gasoline or ethanol, or any mix of both, an average 1.7 kg of carbon dioxide (CO<sub>2</sub>) is saved.
- 535 million tons of avoided CO<sub>2</sub> emissions since 2003, equivalent with planting 4 billion trees.
- Without sugarcane ethanol and bioelectricity, Brazilian GHG emissions from the transportation and power sectors would be 43% higher in 2020.
- Ethanol also lowers the cost of controlling global warming. Based on US EPA assumptions, each liter of ethanol used would save US\$ 0.20 that would otherwise have to be spent on measures to mitigate GHG emissions.
- Ethanol used as fuel in Brazil has considerably lowered emissions of particulate matter (MP<sub>2.5</sub>), carbon monoxide, formaldehydes, reactive hydrocarbons and other volatile organic compounds precursory to photochemical smog and ozone formation, greatly contributing to urban air quality.



producer and exporter of ethanol, and proportionally the largest consumer of ethanol in its transport matrix.

While many countries have officially adopted mandatory or facultative blends of ethanol in gasoline, there are opportunities to transfer technical know-how and expertise accumulated in Brazil over time in order to answer possible questions or obstacles that may still exist in the path towards of increased ethanol production and use.

These include issues related to the production of ethanol from sugarcane juice or other feedstocks, the compatibility of vehicles and materials with higher ethanol blends in gasoline, physical distribution, environmental and health benefits, implementation issues, as well as the impact of mandates and other regulatory measures, among others.

In sharing its experience with clean, sustainable energy production from biomass, Brazil reinforces its commitment with the aspirational targets set collectively by the 20-country members of the Biofuture Platform, which include a significant increase in the contribution of sustainable modern bioenergy to final energy demand and in its share in the transport sector.

As no country is the same, and every experience has to be adapted, transformed, and modified to fit every reality, a rich, deep, substantive dialogue between experts, policy makers, regulators and industry representatives from Thailand and Brazil is the best way for both countries to learn from each other's successes and mistakes, and come across the best ways to scale up sustainable mobility.

From the Thai side, several stakeholders are key to bring about the necessary changes, and therefore are crucial members of these proposed Sustainable Mobility: Ethanol Talks. These include Thai Sugar Millers Corporation Limited and key local government and private sector agencies which have accepted to participate as a result of the preparatory visit.

From the Brazilian side, UNICA (Brazilian Sugarcane Industry Association), APLA (Brazil Ethanol Cluster), Brazil's Ministry of External Relations/Division for Energy Progress (MRE/DEN) and Apex-Brasil (Brazilian Trade and Investment Promotion Agency) propose to identify possible knowledge gaps, and offer cooperation transferring the Brazilian experience on ethanol, working with counterparts from Thailand to identify where and how this experience would be applicable to Thailand, and how it could be adapted when necessary. DATAGRO consultancy provides the technical support for the Talks.

#### **OBJECTIVES:**

The Seminar will provide an opportunity for cooperation and dialogue between experts, policy makers, regulators and industry representatives from Thailand and Brazil on how to scale up ethanol production and use in

#### **Key facts – realized social and economic benefits of ethanol in practice:**

- In Brazil, diverting sugar production to ethanol enables the substitution of 45.8% of total gasoline demand, including by mandatory blending and use of pure ethanol in flex fuel vehicles.
- Since 1976, Brazil has saved over 3 billion barrels of gasoline by using ethanol, reducing dependence on fossil energy. The value of non-consumed gasoline since 1976 is over 506 billion US dollars, considering the foregone cost of avoided foreign debt.
- Ethanol can be used in other more energy efficient motorizations, as currently seen with the introduction of hybrid vehicles capable of using ethanol and, in the future, with fuel cells powered with ethanol.
- Diversification towards ethanol has provided labor stability in Brazil in over 770,000 direct jobs, and 2.5 million indirect jobs.
- Ethanol production can significantly reduce energy dependence in other sugar producing countries in various parts of the globe, improving the long-term social, economic and environmental sustainability of sugar production.



Thailand for sustainable mobility under the light of the Brazilian experience with ethanol in the transport sector, including discussions on ethanol's economic, social and environmental benefits for sustainable mobility (see side box), as well as some of the most important issues of implementation (see below).

#### **PROPOSED TOPICS**

- Thailand's security and energy planning.
- Thailand's ethanol blending policy: status and implementation.
- Ethanol use and Thailand's auto industry.
- Ethanol as an agent for the reduction of carbon emissions and local air pollutants.
- Integration with the Thai oil sector.

**AUDIENCE:** 150-300 participants (estimated)

#### **TARGETED STAKEHOLDERS**

International experts in the sugar and ethanol fields, including government officials, business leaders, scientists and engineers and legislators will participate of the cooperation and meet with counterparts in Thailand including the following:

- Government officials from the Ministries of Energy, Industry, Transport and the Environment, as well as related agencies and think-tanks.
- Business: producers, fuel distributors, automotive sector, equipment suppliers.
- Academia, Research Institutes.
- Press, influencers.

#### **FORMAT**

In Bangkok, the Talks will be held in 2 days, as follows:

- First day: A one-day main event to address all the topics identified. The first half will be dedicated to presentations and the second will be reserved to parallel sessions with experts to discuss the five topics proposed above.
- Second day: Post-event meetings for further in-depth discussion and to work on follow up actions for cooperation. This could take the form of bilateral meetings with government agencies, private associations and other interested parties.



The proposition is that the event should be jointly organized by Thai Sugar Millers Corporation Limited as one of the main stakeholders, and the following Brazilian stakeholders: UNICA (Brazilian Sugarcane Industry Association), APLA (Brazil Ethanol Cluster), Brazil's Ministry of External Relations/Division for Energy Progress (MRE/DEN) and Apex-Brasil (Brazilian Trade and Investment Promotion Agency).

**DATES:** March 02 and 03, 2020.

**EXPECTED DELIVERABLES**

- A report with the comments and feedback received during the workshops.
- Ideas for further actions between specific stakeholders to advance in the scaling up of production and adoption of ethanol.