THE DEVELOPMENT OF BRAZIL'S GAS RESOURCES & THE IMPACT ON EXTERNAL GAS SUPPLIES

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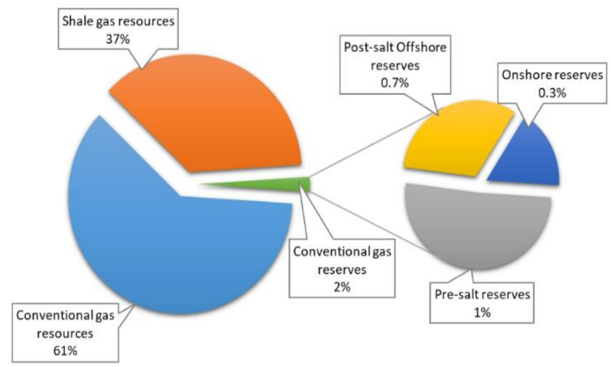
Brazil is a leading natural gas consuming country in Latin America and has been an essential gas market for GECF Member Countries, with GECF dominating the gas supplies by pipeline and in LNG form, with 100% and 57% respectively, as of 2017.

Over the past few years, GECF Member Countries have played a significant role in the supply of natural gas to the Brazilian market in the form of pipeline gas and LNG, from Bolivia, Algeria, Egypt, Equatorial Guinea, Nigeria, Norway, Qatar, Trinidad and Tobago and the United Arab Emirates.

On the other hand, Brazil which holds around 378 Bcm of proven natural gas reserves as of the end of 2017, sits on the top three largest natural gas reserves in the Latin American region. However, on a global level, Brazil's proven gas reserves represent a meagre 0.3% share of the global gas reserves.

As shown in Figure 1, more than half of the gas reserves is located in Brazil's pre-salt reservoirs followed by post-salt offshore and onshore respectively. The country is estimated to hold ~19 Tcm of gas reserves and resources with conventional gas and shale gas resources accounting for more than 60% and 30% of the total respectively.

Figure 1: Share of Brazil's natural gas resources by type and location as of end 2017



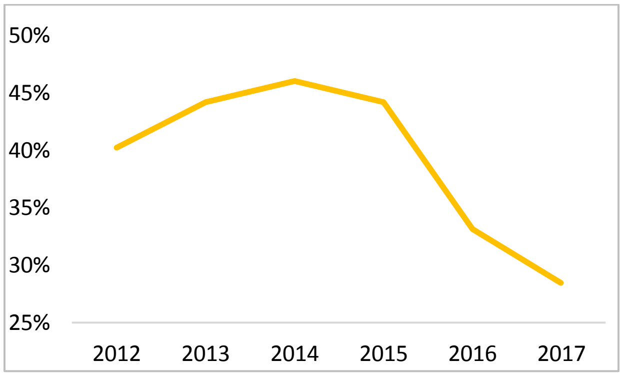
Sources of Data: Enerdata, ANP Brazil, GECF Secretariat

This high potential of gas resources of the country, opened the appetite of the government to boost the activity in the upstream oil and gas sector, particularly the pre-salt hydrocarbon resources. The characteristics of the pre-salt reservoirs have made the extraction of hydrocarbon resources technically and economically challenging, however, there have been great strides in the development, driven by technological advancement.

Brazil is geared towards reducing its dependency on natural gas imports with a goal of becoming self-sufficient. While attaining self-sufficiency in natural gas supply is a great achievement for any country, GECF's gas supplies to this country continue to be significant.

Figure 2 below illustrates the gas imports' dependency of Brazil over the last five years. It shows that since 2015, the country experienced a descending trend in its dependency on gas and LNG imports. Such trend could be attributed to a gain in indigenous gas production and decreasing gas consumption due to a continuous contribution of the renewable energy in the country's energy mix.

Figure 2: Trend in Brazil's Natural Gas Imports Dependency



Source of Data: Enerdata, ICIS LNG EDGE, GECF Secretariat

For the aim of becoming self-sufficient, the government has embarked on an intense upstream programme to unlock its oil and gas resources and attract global oil and gas players to invest and develop the country's pre-salt and other conventional oil and gas resources. Moreover, GECF Member Countries have marked their significant contribution to the upstream activities of the country, through the winning of the bid rounds for exploration, development and production of the blocks opened for the bidding. Qatar and Norway, two GECF Countries have been present in these activities, which expresses a long-term partnership of GECF Member Countries, not only as suppliers of competitive pipeline gas and LNG produced indigenously in GECF Member Countries, but also as partners and stakeholders for the development of the resources in Brazil.

Such development plan of the country's gas resources would contribute to the growth of the domestic production, however, this growth is expected to be minimal, notably in the period between 2018 and 2022, as gas production will come mainly from proven reserves. Since the new blocks awarded in the recent bid rounds are currently in the exploration phase, gas production from any contingent and undiscovered resources is not anticipated before 2022.

Additionally, during the period 2016 to 2026, Brazil's natural gas demand is forecasted to grow at an annual rate of ~3% driven mainly by the industrial, petrochemical and power sectors. It should be noted that the forecasted gas demand, is expected to be higher since it does not include the gas demand from some isolated regions in Brazil, which are not connected to the integrated grid. This could result in a prolonged dependency of Brazil on gas imports.

The dynamics observed in Latin American market offers greater opportunities to GECF Member Countries for a wider expansion regionally but also globally.

For example, Bolivia, has a huge potential to play an important role in the region by supplying gas not only to its current partners, but also to embark in LNG business through its planned LNG plant in Peru, under the deal between the two countries to build a port 10 miles from the Ilo port in Peru, for which active actions are taken among GECF Member Countries, such as the agreement between Algeria and Bolivia for the feasibility study of such LNG facility, reflecting the cooperation which is a core value of the Forum.