WORLD LNG OUTLOOK

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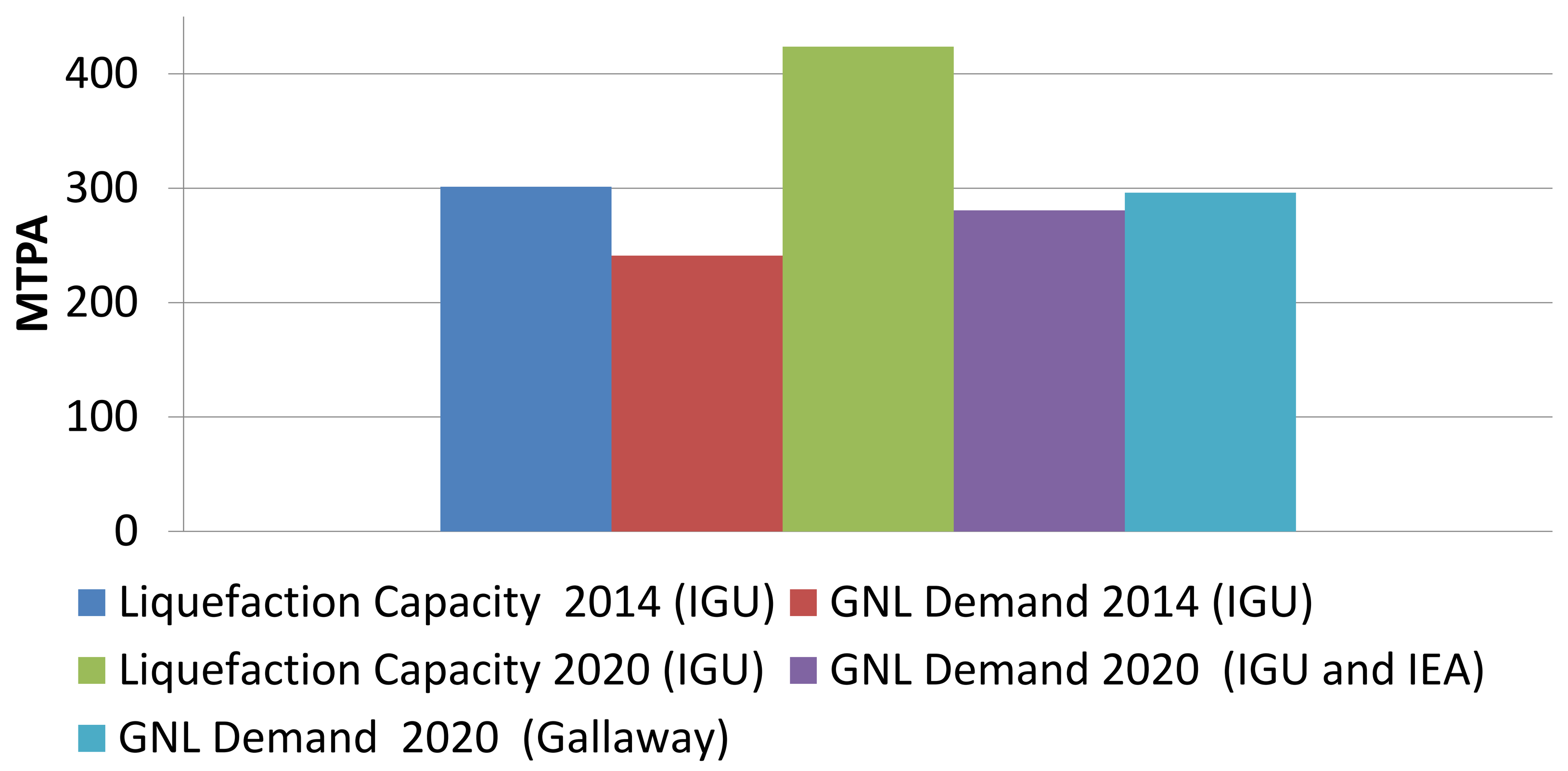
OVERVIEW

There was a high growth in recent years in the world market for liquefied natural gas (LNG). The LNG sales volume increased from 100 MTPA (million tonnes per year) in 2000 to 241.1 MTPA in 2014, representing a growth of 7% per year (IGU, 2015).

Investments in the natural gas liquefaction capacity increased after the Fukushima nuclear accident, which resulted in the shutdown of the Japanese nuclear reactors and abandonment of the nuclear programs in other countries (such as Germany), and the optimistic predictions about Chinese growth.

Figure 1 - Supply and Demand Balance: 2014 and 2020 (IGU, AIE and GalwayGroup).



Source: IGU, AIE e GalwayGroup

Despite the strong expansion of LNG market between 2000 and 2012, the market dynamics changed in 2013. This change began with a drop in European demand, and accelerated with the recent fall in demand from major Asian consumers, generating uncertainty about the ability of demand to keep up with the growth of supply in the coming years. Thereby, from the above problem, it is essential to know the behavior of future demand for LNG and check if the return of Japanese nuclear reactors will influence the LNG market. Therefore, this research estimate the world LNG demand in order to forecast the demand for LNG by 2030

METHODS

The methodology used to estimate the LNG world demand is the time series model, called Vector Error Correction (VEC). The cointegration vector estimation was Performed by the Johansen (1988) and Johansen and Juselius (1990) method. The parameters of the world demand function ($Dgnl_t$) was estimated from the following relationship:

$$Dgnl_t = \beta_0 + \beta_1 Cenel_t + \beta_2 Nucl_t + \beta_3 DF + \mu_t$$

where $Cenel$ is the world consumption of electric power in the period t, which ranges from 1994 to 2013, $Nucl$ is the world's production of nuclear energy in year t, μ is the error term. The dummy variable (DF) was added to the model in order to capture a possible structural change in the LNG demand due to the nuclear accident Fukushina and Japan's decision to shut down its nuclear reactors.

Additionally, the contribution of renewable in the world electric power consumption will be discounted, since the share of renewable sources causes the displacement of gas plants, which reduces the necessity of LNG importation to generate electricity

RESULTS

The LNG demand appeared more sensitive to variations in electricity consumption than to changes in nuclear energy production, which seems quite reasonable. The dummy DF is not significant and did not capture the expected signal, thereby the shutdown of Japanese nuclear power plants did not represent a significant impact on variations in global demand for LNG.

The forecasts were based on two nuclear scenarios, nuclear high and low, the Table 1 shows the scenarios

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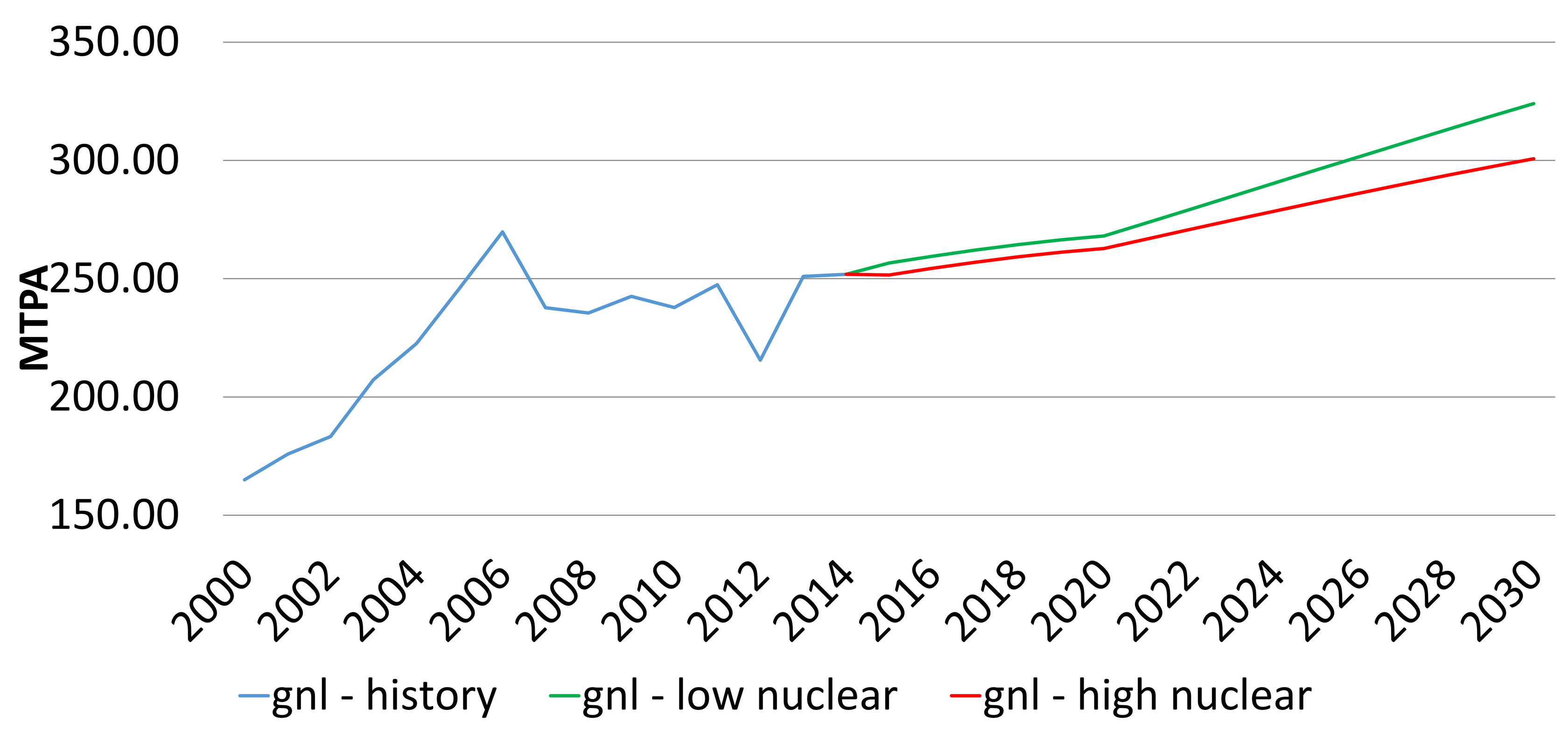
Table 1 - Hypothesis

World (%)	Forecast	
	2013 - 2020	2020 - 2030
High nuclear	7.17	3.01
Low nuclear	1.23	1.40

Source: Elaborated based on data from the WEC/WES (2013), SHELL (2013), IEA (2015) e IAEA/RDS-1.

Considering the low nuclear scenario, the total demand for LNG in 2020 may reach 268.03 MTPA and 324.05 MTPA in 2030. The forecast LNG demand in high nuclear scenario can achieve 262.76 MTPA in 2020 and 300.69 MTPA in 2030, as can be seen in Figure 1.

Figure 2 - LNG World Demand Forecast



CONCLUSIONS

A small inter-relationship is observed between nuclear power and LNG markets due to a low sensitivity established in the model, 0.35. Therefore, both scenarios, high and low nuclear, have a small variation in expected LNG demand. The variation of the LNG world demand between scenarios (high and low nuclear) in 2020 is 2% and in 2030 is 7%.

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