**2012 – 2015 Triennium Work Report**

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**Programme Committee D3: SMALL SCALE LNG**

**Players in the value chain**

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# Overview of the value chain

In this section we describe the players and their role in the Small Scale LNG Value Chain. The value chain is shown in Figure 1 which depicts an array of different routes for small scale LNG flows. One can note that this is a supply chain network rather than a single linear supply chain.

The lower part of the value chain encompasses a full small scale value chain starting with a small scale liquefaction facility, followed by transportation via small scale transportation means (small LNG carriers, trucks, railcars) to small scale import or distribution terminals.

The upper part of the chain shows a large scale liquefaction facility which is capable to load LNG either to conventional LNG carriers, small scale carriers (up to 30.000 m3) or trucks/rail cars with end users or distributors as destination. Once loaded in a conventional LNG Carrier, the LNG is “break bulked” in a big scale LNG import facility and loaded into small scale carriers (up to 30.000 m3) or trucks/rail cars with end users or distributors as destination.

Some players have a role that is restricted to one part of the value chain, like a terminal owner/operator. Others are active in more than one part of the value chain up to all of the value chain. Some players do not own assets, for example traders or integrated players.

Besides commercial players, governments and regulatory bodies also play a role in the value chain and have influence on costs.

The use of LNG as fuel is covered by the report of “LNG as fuel (PGCD - SG2)” and will therefore not be addressed in this report.



# Players, role and interactions in the value chain

| Player | Role in the LNG Value Chain | Interactions with other value chain players | Examples |
| --- | --- | --- | --- |
| Gas Supplier | Companies/entities which feed natural gas into the LNG plant within the following categories:1. Gas producers
2. Gas field developers
3. Gas aggregators
4. Pipeline companies (unbundled supplies)
 | Supply options:1. Gas suppliers sell gas under long /medium term supply agreements to LNG producers or consumers
2. Gas supplier is the same entity producing LNG (integrated LNG project)
3. LNG tolling model where the supplier or consumer pays a liquefaction fee to the plant owner/operator
4. Hub gas sales to LNG plant in liquid markets
 | **Gas producers**: Gazprom, Petronas, Petrochina, Petro Ecuador, ANTAM, Pertamina, PTT**Gas Aggregator**s: Shell, YPF**Pipeline Companies:** Transportadora Brasileira de Gas,Gasunie |
| LNG producer/supplier/marketer | Companies or entities which produce and supply LNG as a portfolio player or resell and market LNG downstream the LNG terminal.LNG producers may also own and/or operate small LNG plants (integrated LNG projects) | LNG producers buy gas from gas suppliers or charge a toll fee to process gas into LNGLNG suppliers own or lease LNG ships and deliver DES,CIF or FOB to aggregators or end-users.LNG suppliers interact with LNG shipping companies to charter transportation to the delivery point.  | **LNG producers**: Pacific Rubiales, Machala LNG (Ecuador), China ( Petrochina, Guanghui, Hanas), Gemini (Petrobras/White Martins JV)**LNG portfolio players**: ENI, BG, AGA Gas, GNF, GDF Suez**LNG marketers**: IOC, AES Dominican Republic, PTT |
| LNG shipping  | Main players in LNG shipping are:*Ship owners* – own LNG carriers that are used to transport LNG from the terminal to the next phase in the value chain.*Ship operators:* can be either a ship owner or companies which provide transportation services.*Ship brokers:* companies which arrange for transportation services on behalf of suppliers or consumers, matching the supply and demand for the LNG Carriers | There are several possibilities of interaction between LNG suppliers, end-users and shipping companies, depending on the business model, for example: 1. Ship owners lease the ships to LNG buyers or sellers who operate or charter the ship.
2. Ship owners provide the transportation services to LNG buyers or sellers.
3. Ship owners hire a shipping operator to execute the transportation of LNG for buyers and/or sellers.
 | **Ship owners**: Nakilat, Greek armateurs, Norgas **Ship operators**: STASCO, OSG, PRONAV, Anthony Veder**Shipbrokers**:Clarkson, Gibson, Poten & Partners |
| LNG terminal/regas & break bulk facility owners | LNG regas terminals are terminals that unload LNG and regasify LNG and send-out gas into the gas grid or directly to large consumers (e.g. power plants or refineries). Sometimes LNG is also reloaded into trucks, small scale LNG carriers or rail cars. This is known as “break bulk “ activities, creating smaller LNG parcels fit for transportation to small scale LNG facilities. These facilities require large investments and often require the approval of governments and regulatory bodies. Usually the capacity in such terminals is sold to owners of gas molecules via mid or long term ‘take or pay” contracts, in order to secure finance for the project.Some of the terminals are state-owned and are part of the regular gas infrastructure. Others are in private hands and apply an “open access” regime, offering the terminal services to all relevant market parties such as gas distributors, traders, etc. These terminals are often subject to a regulated regime (especially when connected to a national gas grid).Some of these terminals also have a “security of supply” function for the country. | *Terminal operators* are engaged by *Terminal owners* (sometimes the same party) to operate the terminal in a secure and safe way while optimising the utilisation of the assets. The terminal operator is usually also responsible for contracting with capacity holders for the use of the infrastructure. Sometimes governments require that use of terminals to guarantee “security of supply”. *Capacity holders:* Capacity holders contract part of the whole capacity in an LNG terminal with a terminal operator. The allocation of capacity is usually conducted via an “open season” process or by a “first come/first served” process. Often the contracts are based on long term “take or pay” principles with some margins for more or less usage. The capacity holders usually deliver to end-users or to traders that transport the LNG further downstream (e.g. to a small scale LNG facility) | Enagás, Vopak/Gasunie, Fluxys, Linde, Energy Develop. Ltd (Australia), Pertadayagas (Indonesia), Japex, Hokkaido Gas, Mizushima LNG, Krobkrua Khonsong (2002) Company Limited (Thailand) Repsol, Gas Natural, Centrica, Dong, ENI, Oil Majors, .... |
|  |  |  |  |
| Capacity holders/small scale marketer/integrated players | Capacity holders in small scale LNG facilities usually get LNG from big scale facilities (“break bulk”) or from small scale liquefaction plants. They sell LNG to downstream parties in the region where the small scale LNG facility is located. Wholesale gas marketers are companies that procure LNG from small LNG plants and resell to downstream consumers (end-users, gas distri-butors, etc.). A key issue for these participants is guaranteeing the necessary logistics to move NG/LNG. Capacity at LNG terminals is an important logistic requirement. Capacity holders can use their contracts for their own operations or can resell their capacity to other players. | Capacity holders in big scale terminals interact with small scale marketers, by reselling their contracted LNG to downstream customers by using their capacity at the terminal/break bulk facilities.End-users are usually supplied by small scale marketers via short or mid-term supply agreements. | EON, ENI, Indian Oil, Petronas, oil majors, etc.Traders, NOC, IOC’s, etc. |
| Distributors: aggregators or bunker parties | Companies transporting LNG/NG through pipeline, truck or bunker vessel to end users. This players provide gas to the retail market being relevant | Distributors/aggregators interact with end-users and retail parties (e.g. bunker parties) | *Aggregators,* taking capacity in a small scale terminal and sell to smaller off takers.*Large industries, Power plants, data centers with high energy usage and no access to gas* *grids* that buy LNG directly or via aggregators. *LNG distributors* offering LNG as fuel to shipping companies or to companies in heavy transport (mining vehicles, heavy trucks, etc.)  |
| End-users:  | Parties that actually use the LNG as fuel, like the heavy industry or Power plants with no grid connection (currently using oil products or LPG) or the shipping industry.These parties invest in their installations or engines in order to becoming able to burn LNG instead of other fuels.These parties require Security of Supply from the marketer and a competitive final price in order to finance or recover their investments.Local gas grids, supplied with LNG for residential/ commercial use.  | Industries contract LNG supplies from small scale marketers and the product is delivered by truck, rail or ship. | LNG supply stations; Scandinavian, Chilean, Brazilian industries; Local Gas Distribution Companies (LDCs) |
| Structuring companies/traders | Structuring companies supply LNG to end-users (mainly industries which have switched from fuel to LNG) by structuring the whole chain (supply/shipping/capacity holder) without having any asset. | These companies sell the commodity to the end-users and sometimes invest in end-users infrastructure to enable them to use LNG as fuel and recover these investments by a surcharge on the commodity price. | Vitol, Citibank, JP Morgan, Gunvor, Glencore, Trafigura |
| Government/regulators | In Europe Small Scale LNG terminals that are not connected to the grid don’t need regulatory/governmental approval. However if those are connected they will need approval. |  | European Commission (DG-Energy), OFGEM (UK), FERC (US), ANP (Brazil), national regulatory bodies. Etc. |

* *All players that interfere with those players (developers of gas fields in case of gas supplier or EPC contractors in case of terminals)*
* *Technical players – refer to technical chapter*

# Example of interactions in the value chain

* *Interaction of the players in the SS chains including examples (through regions) incl. particularities for different business models*

#### **Appendix (to be discussed, in case we decide to show the players on a matrix diagram)**



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