

# Small Scale LNG

Experiencia internacional y la viabilidad en América Latina y el Caribe



Octubre 2015

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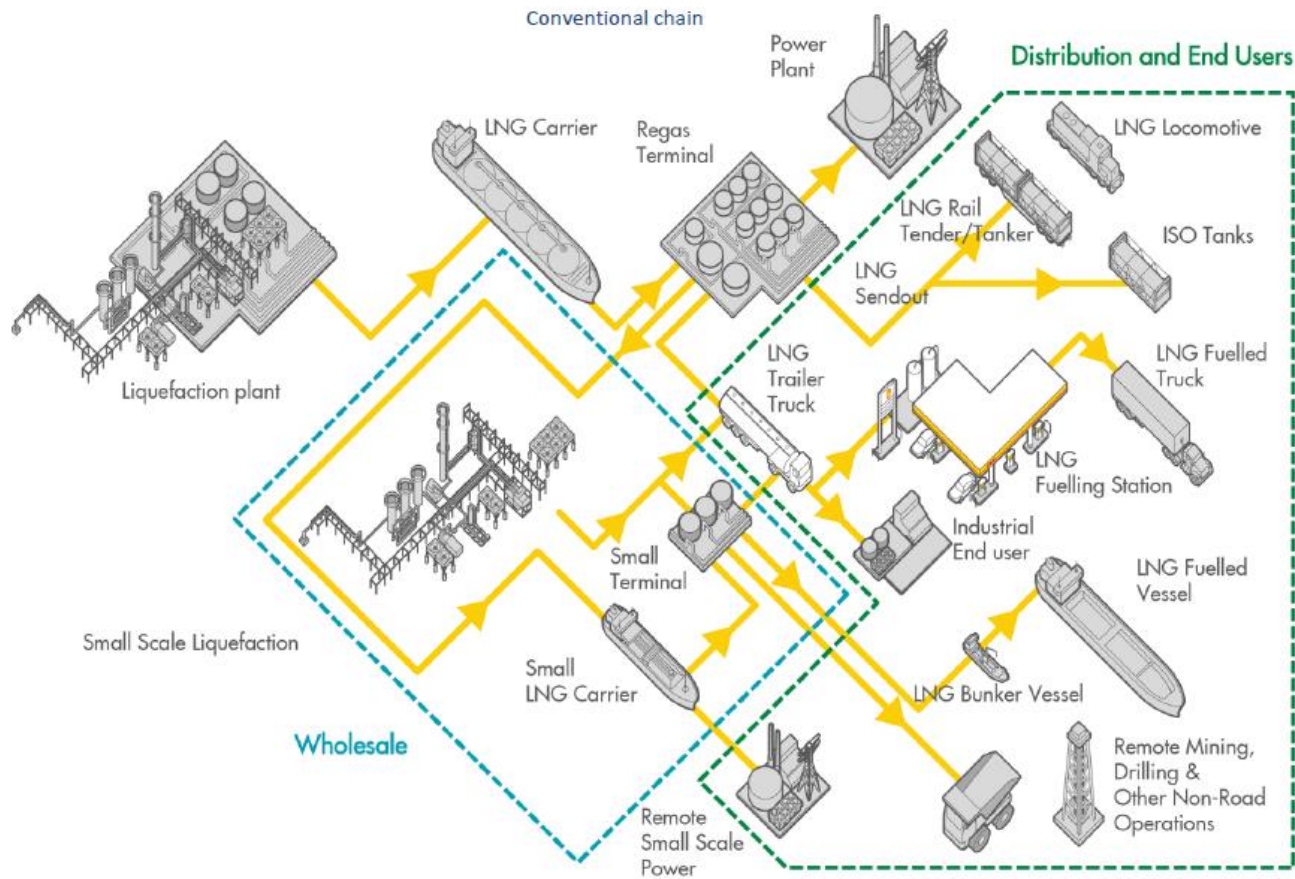
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# SSLNG: Características y aplicaciones



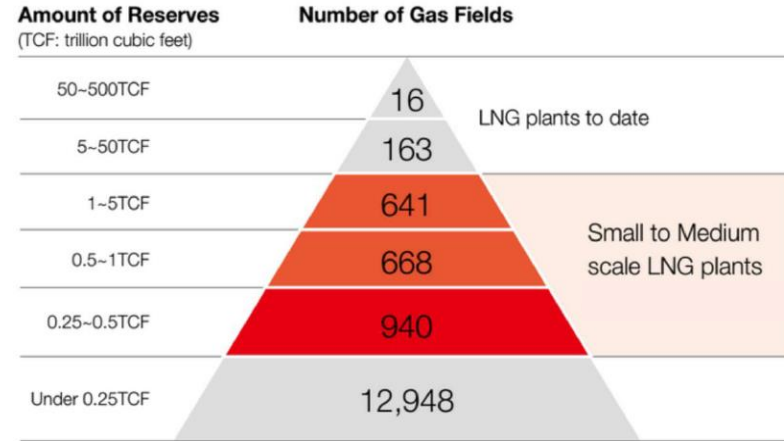
Monetización de reservas a través de SSLNG

Distribución de pequeña escala: gasoductos virtuales (Barco, Tren o Camión), bunkering, fuel para Camiones, peak shaving,

# SSLNG: Monetización de reservas

Existe un gran número de campos con reservas pequeñas que, a partir del desarrollo de tecnologías de pequeña escala, pasan a tener una alternativa de monetización.

Adicionalmente, esta tecnología permite el desarrollo de campos de crudo con gas asociado



## Noruega

**Tjeldbergodden (Statoil – AGA)** – to be shut down in 2012  
Established 1998  
Capacity approximately 12 000 T/y

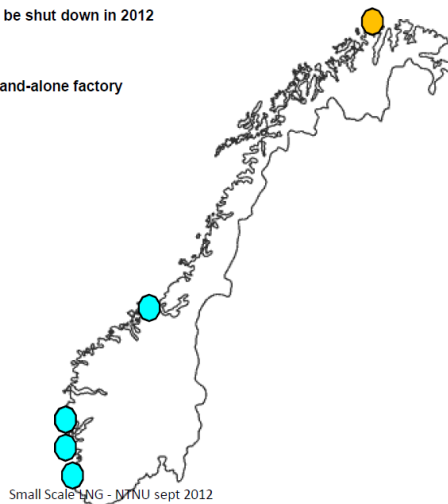
**Snurrevarden (Gasnor)** – the first stand-alone factory  
Established 2003  
Capacity 20 000 T/y

**Kollsnes 1 (Gasnor)**  
Established 2003  
Capacity 40 000 T/y

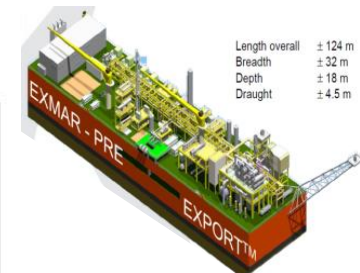
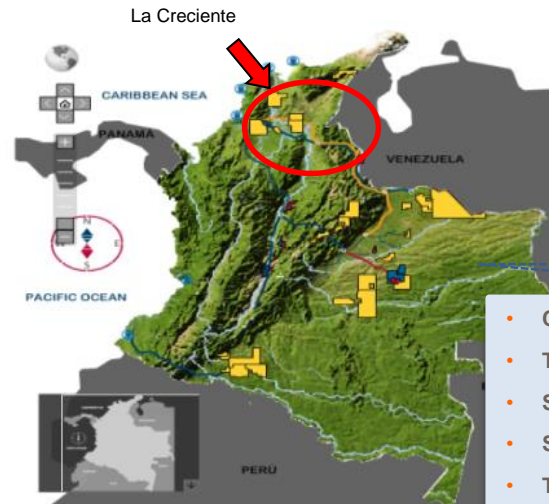
**Kollsnes 2 (Gasnor)**  
Established 2007  
Capacity 80 000 T/y

**Melkoya (Statoil, Total Etc.)**  
Established 2008 – 2010  
Capacity 4 200 000 T/y

**Risavika (Lyse)**  
Established 2011  
Capacity 300 000 T/y



## Colombia

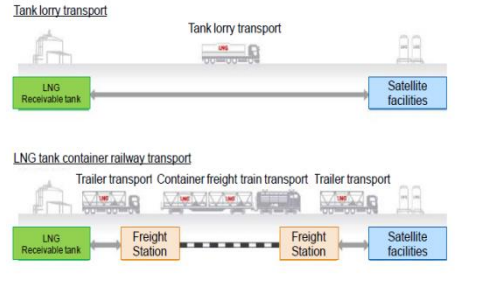
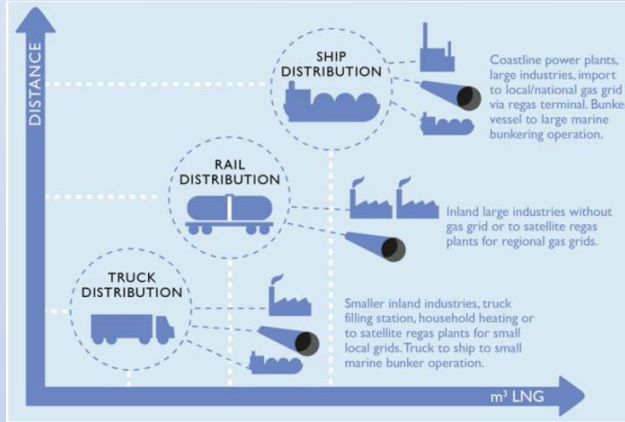


- Capacity: 72 mmscfd
- Technology: Black & Veatch Prico.
- Scheme: Single Mixed Refrigerant.
- Storage: 16.000 m3.
- Tanks: IMO Type C.

# SSLNG: Distribución de pequeña escala

Diferentes usos

## Gasoductos Virtuales

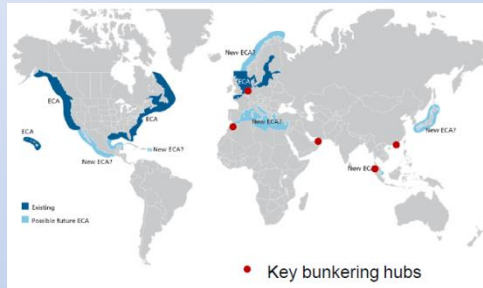


## Peak Shaving



## Fuel para transporte

### Marino



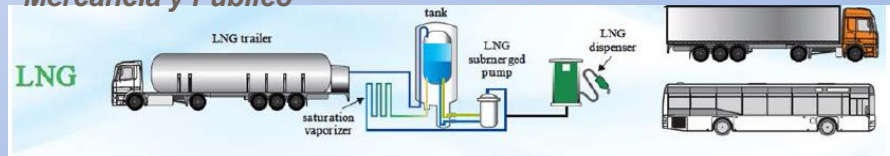
### Ferroviario



### Minería



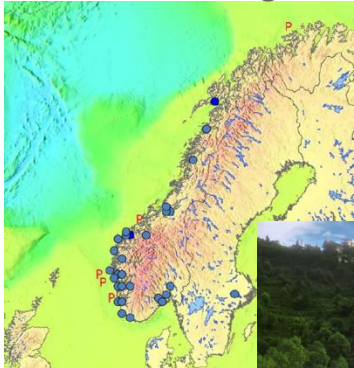
### Mercancia y Público





# SSLNG: Distribución de pequeña escala

Noruega



Turquia

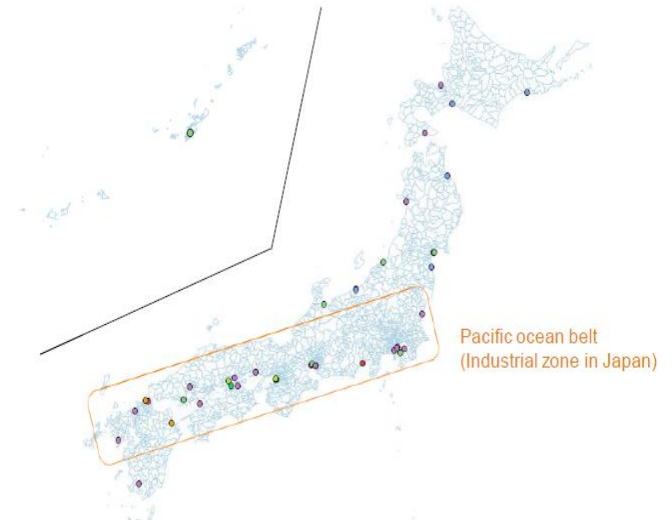


- Es el mayor productor y exportador de gas de Europa, y el que posee la mayor capacidad de licuación SS.
- Posee 35 terminales de recepción de GNL
- Noruega tiene mas de 50 buques navegando en cumplimiento de normativa “gas-fuelled”

**90's:** Contratos en mano de grandes utilities. Crecimiento industrial + Inexistencia red de transporte. -> Creación de logística de pequeña escala para acceder a menores volúmenes mas cercanos.

**2011:** Tsunami -> Fukushima -> necesidad de importar mas GNL y llevarlo al interior -> tanques de almacenamiento en costa y red logística con camiones y trenes.

Japón



Pacific ocean belt  
(Industrial zone in Japan)

# SSLNG: Distribución de pequeña escala

## China



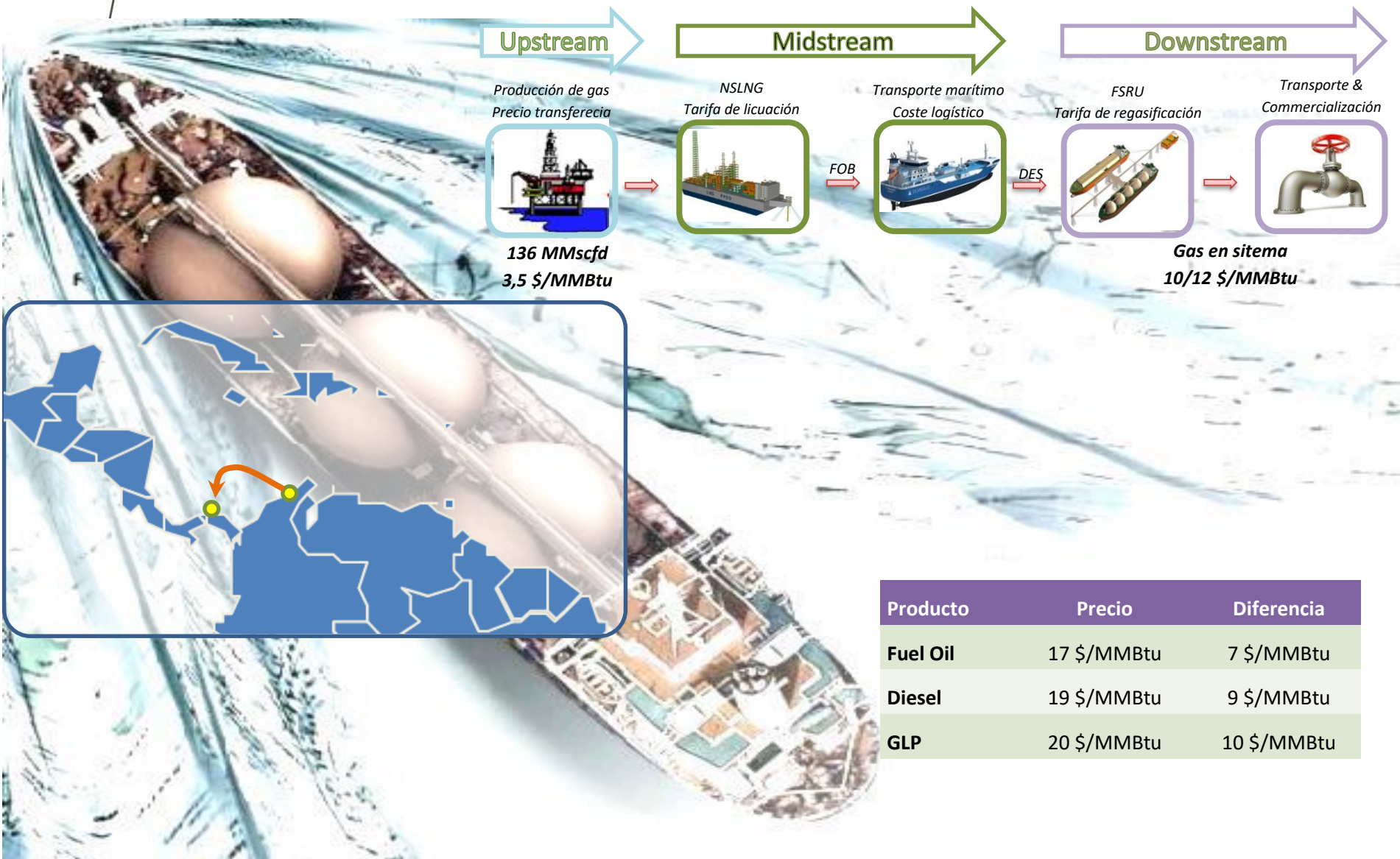
- Condensa la mayor producción de SSLNG del mundo.
- De 100 a 150 plantas de licuefacción (15-20 Mtpa)
- Las plantas se suministran principalmente de los gasoductos de producción doméstica.
- 200.000 Camiones utilizando GNL como combustible
- Para finales de 2015 esperan contar con 1,500 estaciones de servicio

- Incremento de la demanda interna dispersa en islas
- 8 terminales de regas por ser construidas
- Principalmente destinado al consumo para generación eléctrica: mas de 800 MW de capacidad instalada funcionando a diésel.
- Pertamina y Pertagas han comenzado estudios para replicar desarrollar una red de transporte de pequeña escala, aprendiendo de la experiencia de Japón.

## Indonesia



# Caso práctico: Caribe



Producto	Precio	Diferencia
Fuel Oil	17 \$/MMBtu	7 \$/MMBtu
Diesel	19 \$/MMBtu	9 \$/MMBtu
GLP	20 \$/MMBtu	10 \$/MMBtu



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