

The Outlook for a Gas Hub in SE Europe



**INSTITUTE OF ENERGY FOR
SOUTH - EAST EUROPE**

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The Outlook for a Gas Hub in SE Europe

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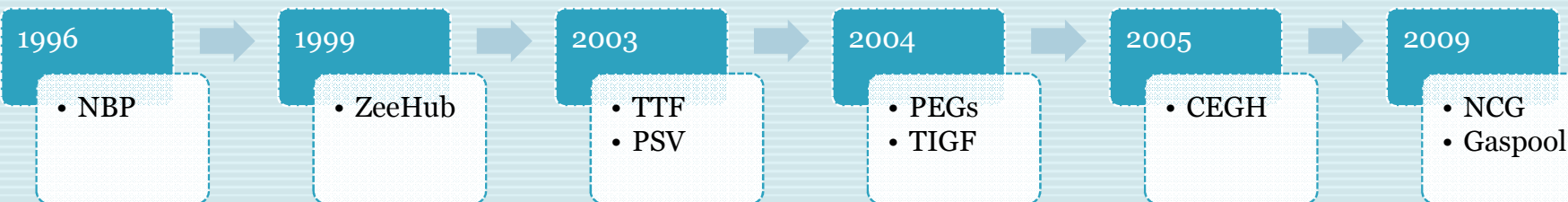
- Study purpose
- Gas price formation mechanisms
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- Stages of market development
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- A gas hub for SE Europe
- Roles of hub participants
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Purpose

- Examine the conditions and prospects for establishing a regional Gas Hub for South-East Europe

Changes in gas price formation

- According to the International Gas Union, gas-on-gas competition in Europe increased from 15% in 2005 to 45% in 2012, while oil indexation decreased from 78% to 50% during the same period.
- Today, there are nine natural gas hubs operating across Europe.



Gas price formation mechanisms



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Oil indexation

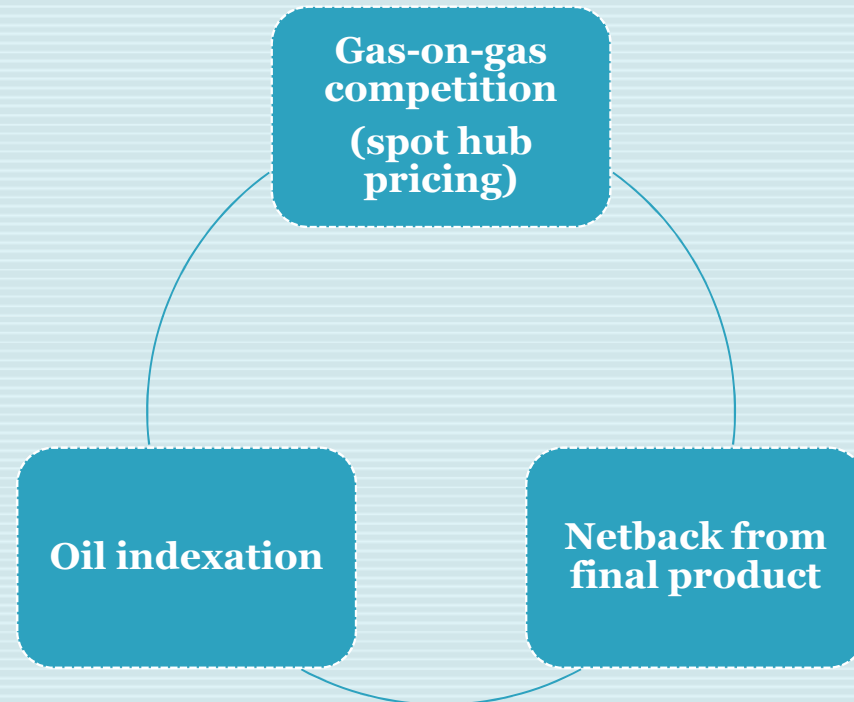
- The price is linked to competing fuels such as crude oil, gas oil or fuel oil, usually through a base price and an escalation clause.

Gas-on-gas competition (spot hub pricing)

- Indexation to spot prices determined by supply and demand of natural gas traded in physical as well as notional hubs.

Netback from final product

- The price received by the gas supplier is a function of the price received by the buyer for the final product the buyer produces (most commonly ammonia).



Oil indexation vs. Gas-on-gas competition



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- Oil-indexed long-term contracts prevailed in the gas sector because they were considered to ensure investment security for the producer as well as security of supply for the consumer.
- Oil-linked prices were also considered more predictable. However, they are now under pressure by a number of factors (2008 financial crisis, full liberalization of British energy markets, deregulation of European electricity prices, shale gas arrival).
- The 20-30-year contracts of most European pipeline imports are still oil-indexed to a large extent.
- A gas price mechanism which reflects the market value of the product should be considered as a natural evolution for the pricing of a commodity.
- It is widely regarded that gas-on-gas competition provides the “right” price of gas.
- Another advantage of market pricing is that it allows for separate financial risk management since it separates the “financial” from the “physical”.
- Market pricing is also more transparent and open.
- The big question is whether traded gas markets will become the dominant gas price-driver in Europe.

Stages of market development



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SE
Europe



- no price discovery
- no standard agreement



- within day, day-ahead and month-ahead trading
- standard contract agreement
- marketplace for transactions
- price reporting
- new participants



- possible to buy gas for future delivery
- index information at hub
- entry of financial players in the market

Hub types (OIES)



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Trading hubs

- Mature hubs which allow the participants to manage gas portfolios.
- Britain's National Balancing Point (NBP) and the Dutch Title Transfer Facility (TTF).

Transit hubs

- Physical transit points where natural gas is physically traded, the main role of which is to facilitate the onward transportation of gas.
- Central European Gas Hub (CEGH) in Austria and the Zeebrugge hub (ZEE) in Belgium.

Transition hubs

- Virtual hubs which are relatively immature, but have set benchmark prices for natural gas in their national markets.
- German Gaspool Balancing Services (GPL) hub and the NetConnect Germany (NCG) hub, the French Points d' Echange de Gaz (PEGs) and the Italian Punto di Scambio Virtuale (PSV).

European gas markets and hubs



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Source: Patrick Heather

A gas hub for SE Europe



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- The establishment of a gas hub will facilitate the wholesale trading of natural gas between participants in South Eastern Europe.
- It will enable competitive markets to function, even though it will probably have an administrative role in the beginning of its operation.

stakeholders

- shippers and traders
- brokers who facilitate trading
- regulatory authorities

hub participants

- Transmission System Operator (TSO)
- Hub operator
- Exchange

Roles of hub participants of a VTP



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TSO

- Operates system
- Accepts flow/trade nominations from system users
- Facilitates virtual trading point through entry-exit
- Provides Title Transfer service at VTP
- Balances system via balancing market

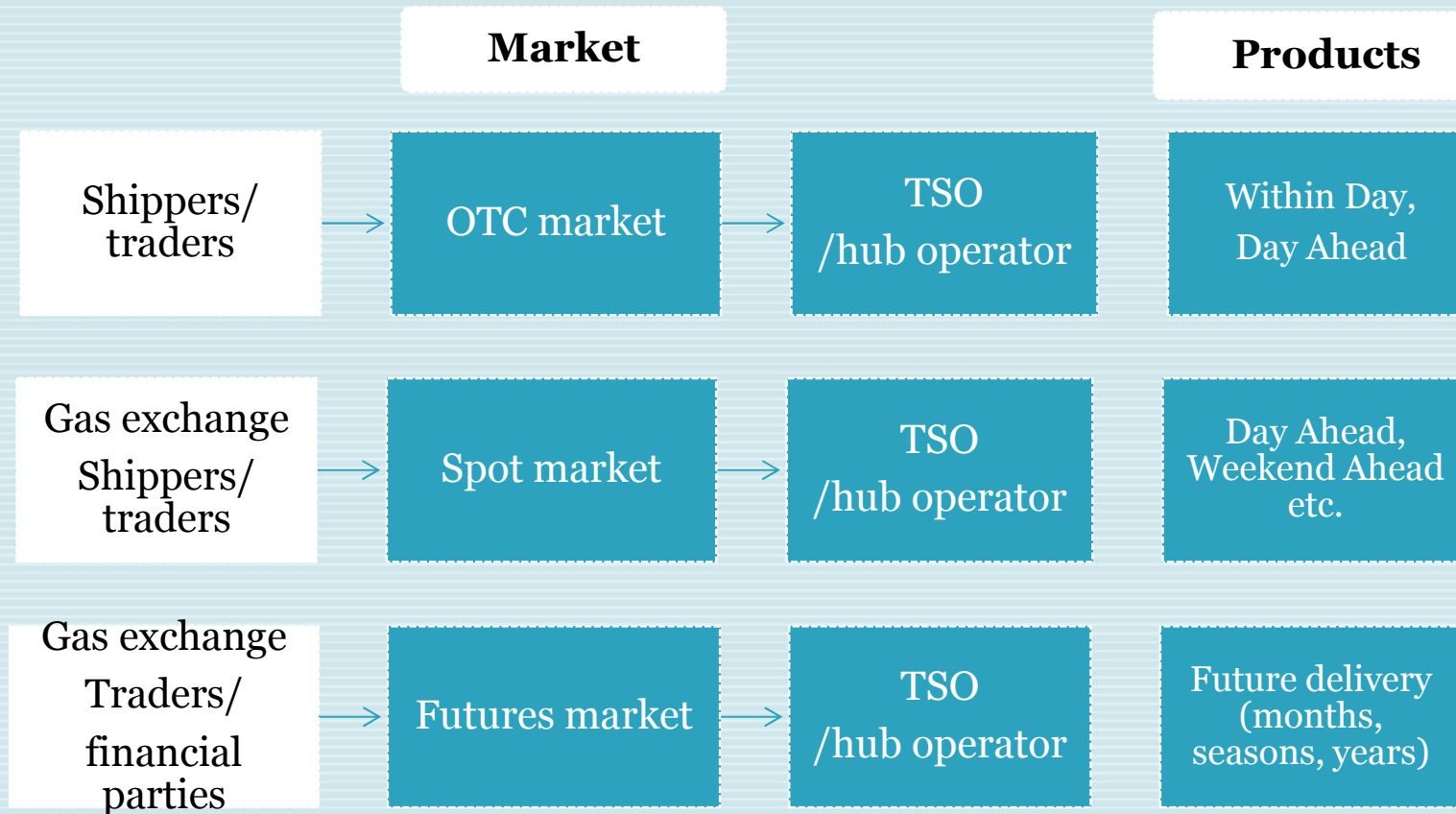
Hub operator

- Platform for registration of OTC trades
- Accepts notice from exchanges of exchange-based trades
- Provides title transfer and matching services
- Ensures trade firmness through back-up/-down
- Runs balancing market
- Market surveillance and reporting

Exchange

- Central counterparty
- Clearing and credit management
- Notification of confirmed trades to Hub operator /TSO
- Licensed / regulated by financial authorities
- Market surveillance and reporting

Generic hub design (1/2)



Generic hub design (2/2)



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- The natural gas hub will essentially serve as a common transaction point for a number of “sub-markets”.
- The spot market is essentially a physical market with delivery obligations used for short-term, balancing purposes by shippers.
- While in a spot market gas is traded for limited time into the future, in a futures market gas products are traded with delivery at a future date (months, years).
- The futures market is a financial market and attracts non-physical players in order to hedge exposure.
- Physical parties (shippers) use the spot market in order to balance their portfolio and are usually less active on the futures market.
- Nevertheless, when moving from physical balancing on the spot market to a futures market, the physical gas supply and the virtual gas supply will meet at this hub - irrespective of whether the hub is physical or virtual.

A physical or a virtual hub? (1/2)



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Physical hubs

- Gas is exchanged at a precise physical location, usually where several pipelines meet. Gas is delivered and off taken from this location by physical players, while pure traders buy and sell at the hub, but they never move gas from the hub.

Virtual hubs

- Gas is exchanged in a zone (part of a national or regional network). Physical parties import or export gas in/from the zone to end customers, whereas pure traders never import or export gas in/from the zone.
- Trading at virtual hubs does not require physical access to the hub.
- When moving towards an entry-exit system, virtual hubs are more suitable for gas trading.

A physical or a virtual hub? (2/2)



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At virtual hubs all gas which has paid a fee for access into the network (zone) can be traded.



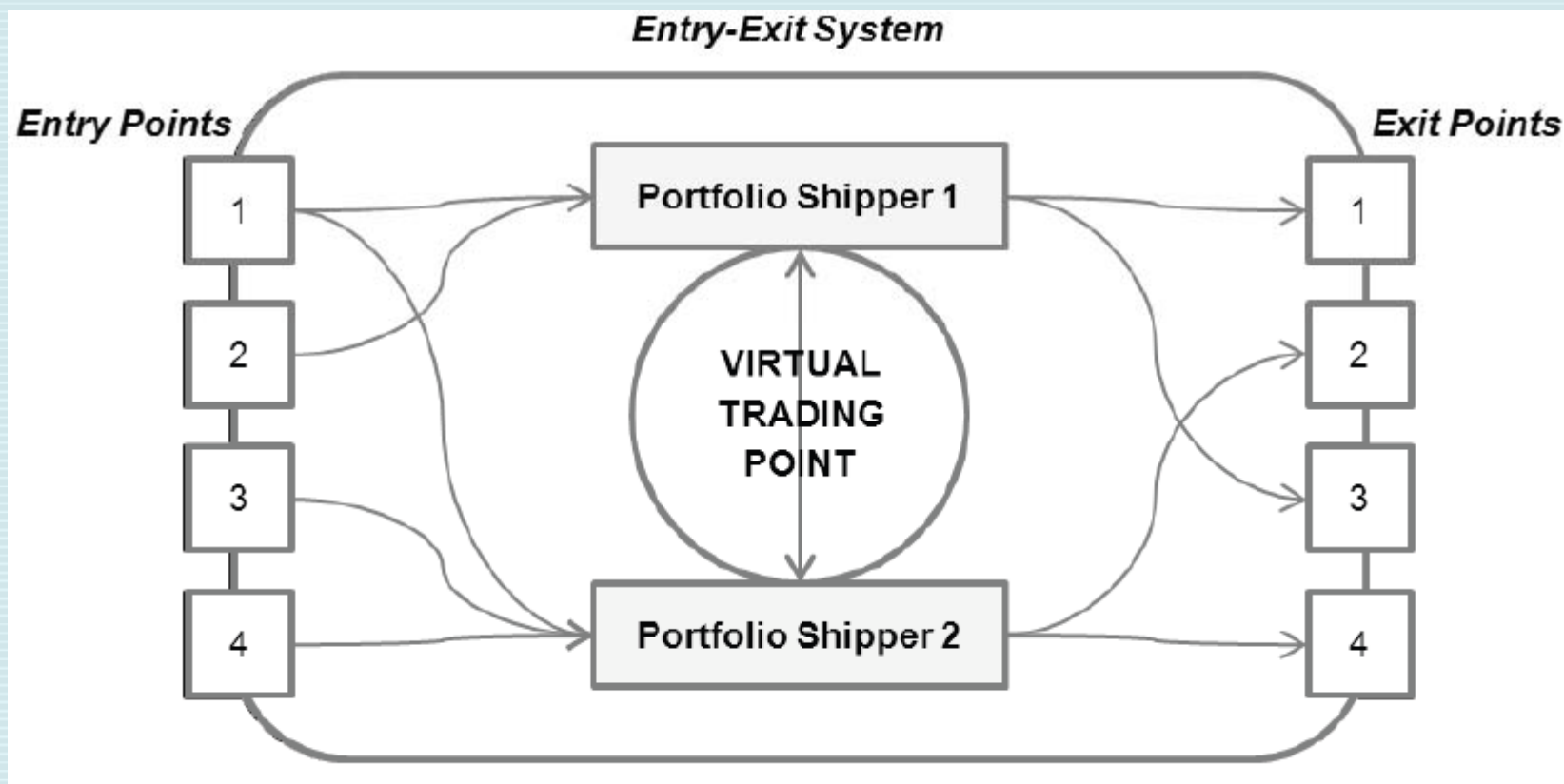
At physical hubs, only gas physically passing at a precise physical location can be traded and this entails higher risks.

- A virtual hub can also serve as a location for operating a balancing market.
- The European experience to date has proven that virtual hubs present more rapid development than the physical hubs.
- The establishment of a virtual hub in South Eastern Europe would demand the creation of an entry-exit system with several zones. The Regulation (EC) No 715/2009 specifies that transmission system operators should have a de-coupled entry-exit system in place.

Entry-exit system



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Conditions for successful hub operation



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Diversification of supply

- Attracting and establishing multiple supply options, i.e. multiple entry points
- Availability of storage and reliable transport mechanisms are also vital, along with supply optionality, for the creation of a gas hub.

Liquidity

- At start, it is necessary that potential market participants express interest in participating in such a hub, thus ensuring initial activity.
- Series of factors affecting liquidity (number of active trading parties, volume nominated within the hub in per cent of volume traded, price volatility and price differentials between hubs, size of bid-offer spreads in the market etc.)

Transparency

- Product price must be transparent and all participants must have access to information.
- Building a regulated trading platform can contribute in creating a transparent environment which will provide reliable published prices.

Reliable delivery mechanism

- Shippers need to have uninterrupted access to capacity.
- As far as the financial players are concerned, if there is not enough volume to back up the physical delivery, the risk becomes higher for financial trading.

Standardization

- Making gas a tradable commodity is essential for the ability of the hub to “pool” transactions such that they can provide net positions.

The case of Greece (1/2)



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Existing

Interconnections

- Interconnector Greece Turkey (IGT)
- GR-BG interconnector (Main line)

LNG terminals

- Revithoussa

Planned

Interconnections

- Interconnector Greece Bulgaria (IGB)
- Trans Adriatic Pipeline (TAP)

Storage facilities

- Underground storage facility in Kavala

FRSU

- Kavala
- Alexandroupolis

The case of Greece (2/2)



Greek Gas Network and International Interconnections



Gas hub location (1/3)



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Turkey

- Largest market by volume.
- Several entry points for both pipeline transmission and LNG deliveries (6 at present, 8 potentially).

Bulgaria

- Small market but will soon become the European landing point for the giant South Stream pipeline (1 entry point at present and 4 potentially).
- Market operates under EU jurisdiction.

Greece

- A small but growing market with 3 entry points which potentially may increase to 7.
- Market operates under EU jurisdiction.

Gas hub location (2/3)



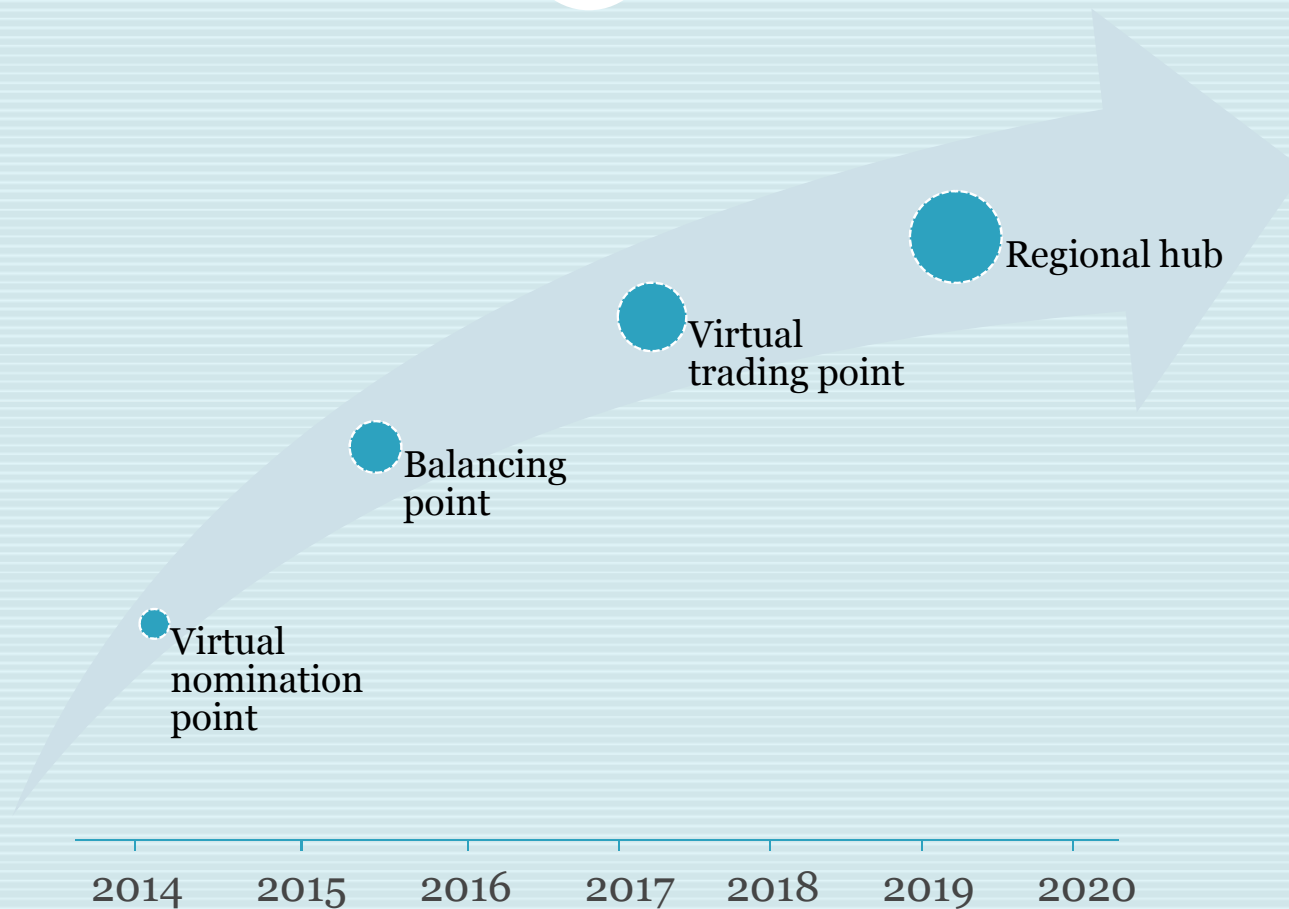
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- Regional gas hub selection will have to take into consideration all the different characteristics of the three markets (Turkey, Bulgaria, Greece).
- A regional hub must combine market liquidity (i.e. gas volumes), experience in market operation, transparency of financial transactions and accommodation of trades from neighboring countries.
- The regional gas hub must have links with other European gas hubs and attain European approval and recognition.



- **Can the Gas Hub be located in Greece?**
 - The Greek TSO (DESFA) will operate a balancing platform by 2016.
 - The balancing point which will be operated by DESFA will have all the prerequisites to evolve in a virtual trading point.
 - By 2020 large gas quantities will become available via TAP. If in 2020 the trading platform is in operation and Greece has set up the primary and secondary market, it will have a competitive advantage over the neighboring countries.
- **If physical, which is the best location for the hub?**
 - Can the TAP/IGB/IGT junction serve as a physical hub?
- **Gas Storage (in Greece) can serve as an important flexibility tool and may affect the location of the hub, if physical.**

Potential gas market development in Greece



It is too soon to talk about establishing a single node that covers multiple countries and regulatory jurisdictions.

- It is more important to implement Entry-Exit regimes with a virtual trading point.
- It is also necessary to establish continuous consultation between hub operators, TSOs, exchanges, shippers and representative trading organizations.
- Define the role of the Hub operator.
- Establish a liquid balancing market.
- Establish an energy exchange.
- Ensure that the roles of the TSO, the hub operator and the exchange are clearly defined.

Thank you for your attention

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