



Gas system & actor description: The  
liberalization of the Dutch gas system

SPM 9541  
November 2010  
Aad Correljé

June 29, 2011

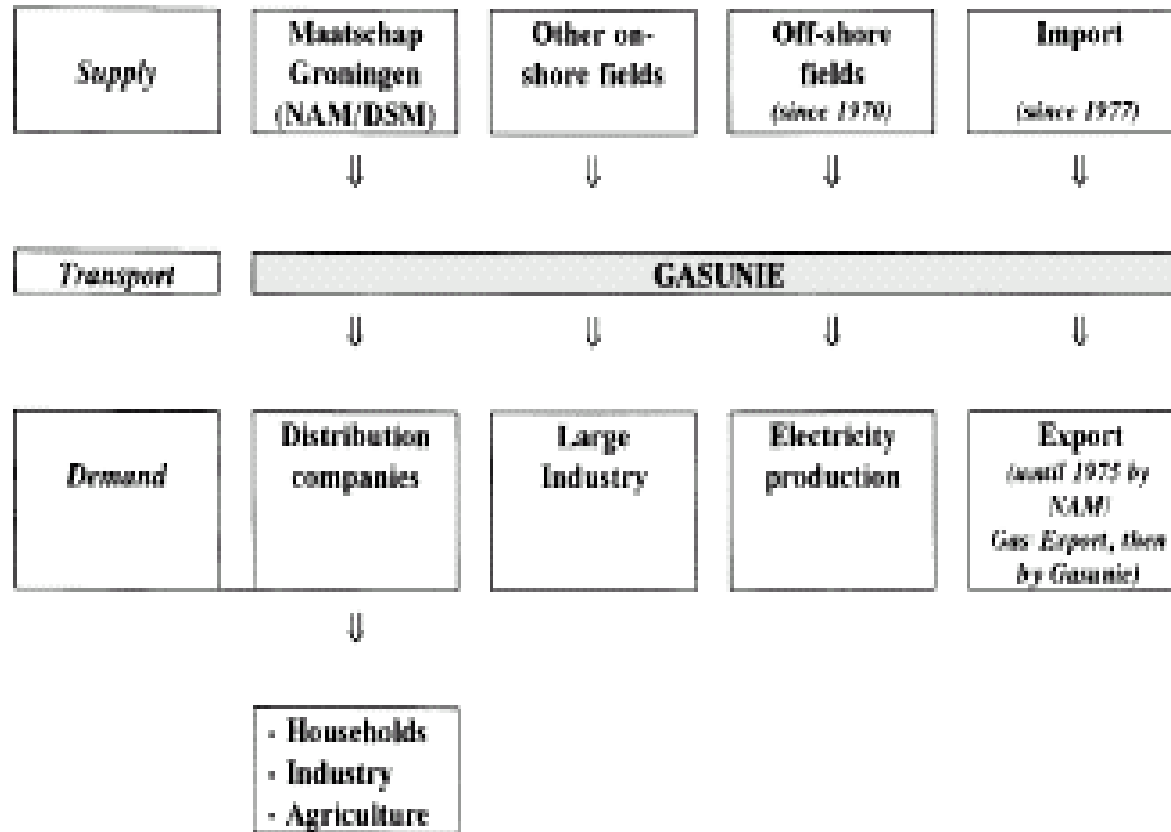
# Liberalization

- What are the main elements of the new Dutch Gas System?
- Analysing NMa proposals and the various elements that have influenced their decisions:
  - Dutch market as gas supplier and consumer
  - Historical legacy
  - Regulatory paradigms
  - Influence of various key players
- Assessing the consequences of liberalization so far
- How does the Dutch gas system fit into the wider European context?

# Where do we come from: 1959-2000

- Gasunie, NAM and the others
- Marketvalue = price alternatives (heating and fuel oil)
- Users do not pay more – but certainly not less!
- State secures production in coordination with sales to avoid shortages and excesses
- State receives +/- 70% of the profits
- Market segmentation
- Sectoral and regional policy
- Small fields policy

# Sector structure



# Some Background

- Pre-1995: Strongly Anti Liberalization in Gas Market
- December 1995: *3<sup>rd</sup> White Paper on Energy*
- 1997: Position paper *Gas Flows*
- 1998: European Gas Directive
- March 1999: Gas Act to Parliament
- June 2000: Gas Act Passed

# The Gas Directive 2003/55/EC

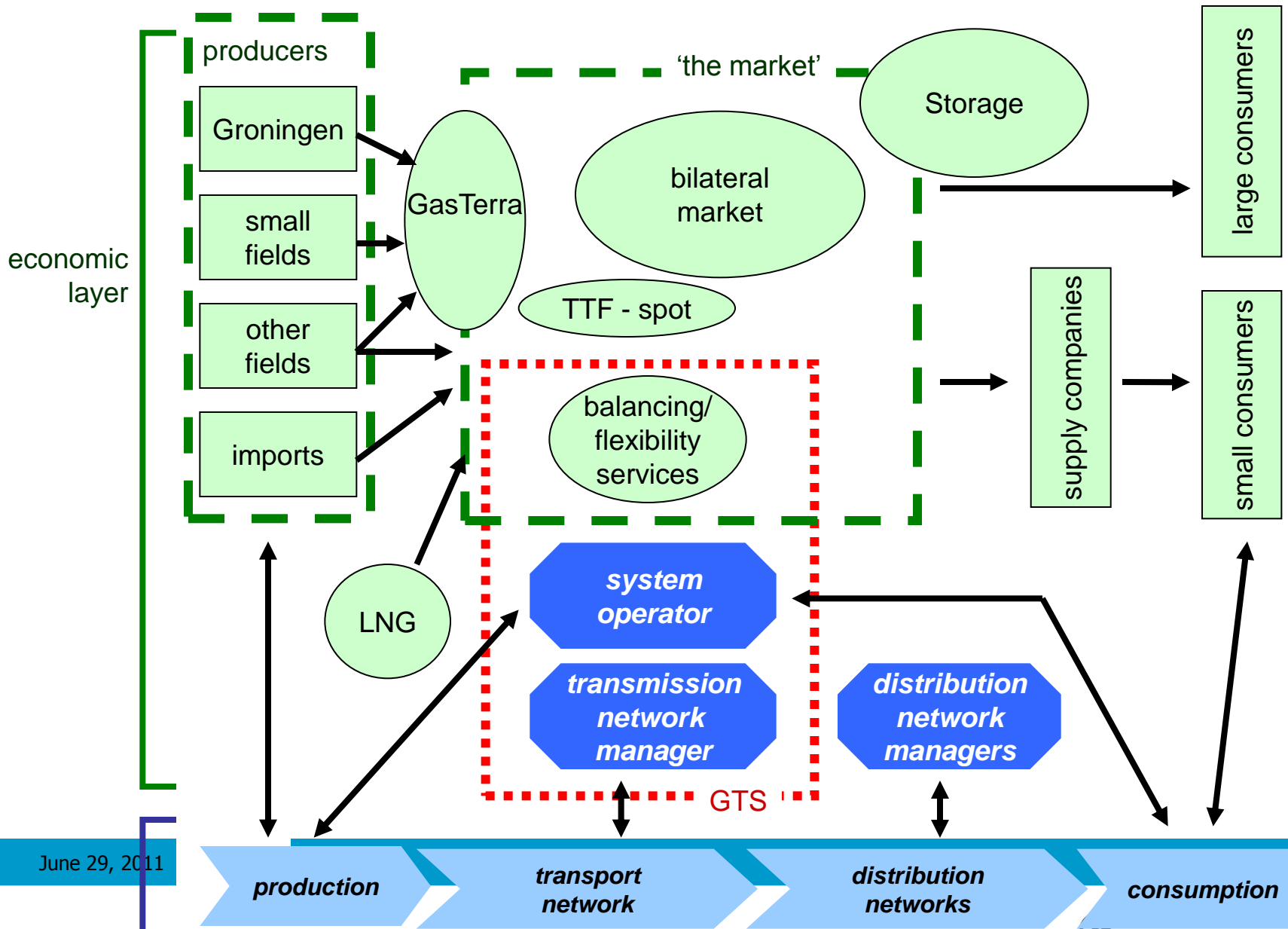
(Successor of 98/30/EC)

Principles:

- transmission, distribution and LNG: regulated
- free market: production and supply
- independent managers of regulated systems
  - juridical unbundling, separate bookkeeping
- regulated access to the networks (rTPA)
- storage: regulated or negotiated access
- supply: free after July 1st, 2007

# Dutch Translation in to Gas Law 2000

- TPA
- Unbundling
- Access to storage, conversion, balancing
- Split up Gasunie monopoly
- Small fields policy, Groningen, coordination.....



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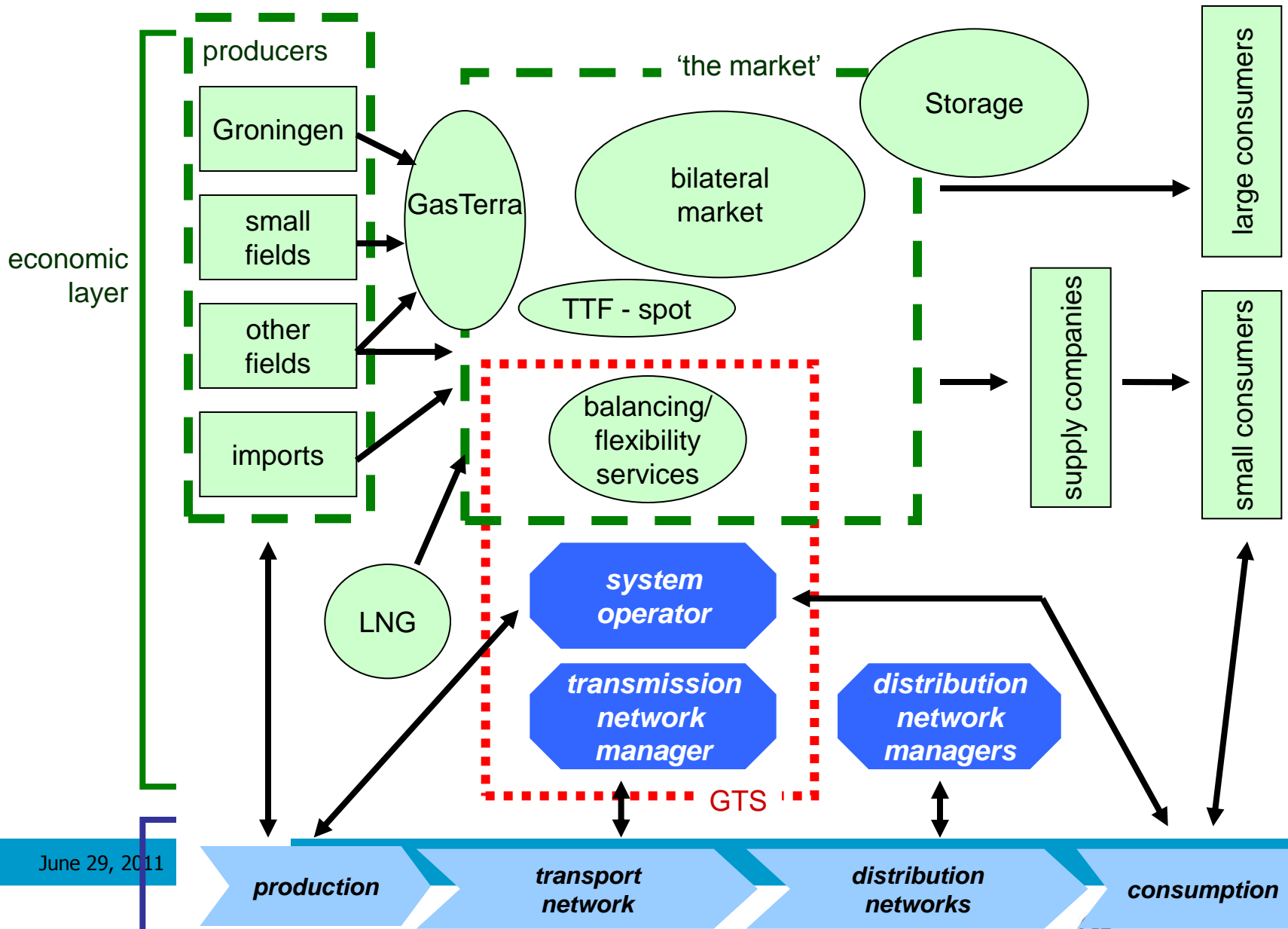


# Steps since the Gas Act 2000

- Information Documents and consultation
- DTe Licenses and guidelines for transport and storage operators
- Separation Gasunie into Transport services (GtS) and Trade & Supply (GUTS) (2002);
- Secondary Market Transport Contracts (2002)
- Choice in Balancing options (2002)
- Eurohub (2002)
- Access to storage facilities (2002)
- Entry-exit system by GtS (2003)
- Title Transfer Facility ( TTF) (2003)
- Establishment TSO (GtS) and DSOs separated from other activities (2004)
- Regulated access to gas networks (2004)
- Market based balancing system (2010)

# DTe 2005 Guidelines (June 2004)

- Basic backhaul (Art. 3)
- Balancing (Art. 6)
  - Efficient use of system
  - Efficient maintenance of system balance
  - Penalties reflect costs
  - Spotmarket
- Access and tradability of interruptible services (Art. 10)
- Transparency and information (Art. 11)
- Conversion Tariffs , with cost based fixed and variable element (Art. 22)
- Differentiation basic and interruptible services (Art. 23)



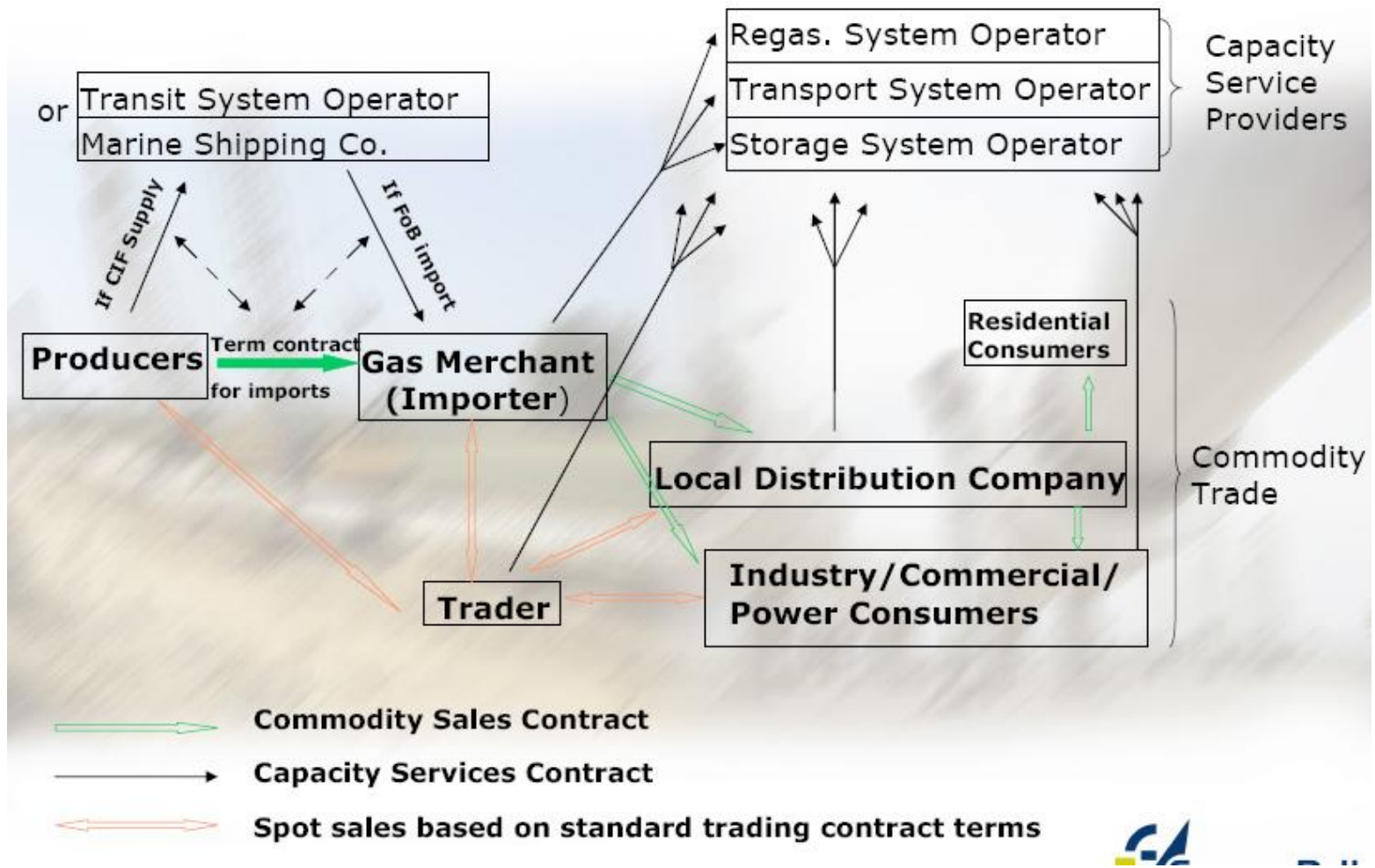
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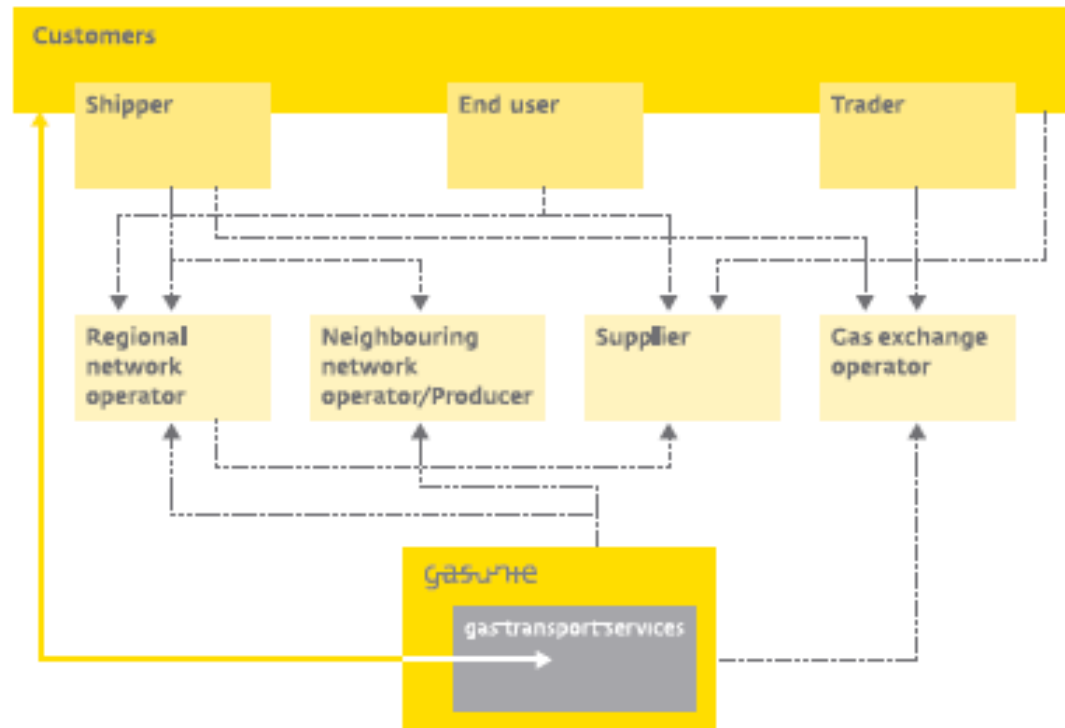
# Key Players in New Structure

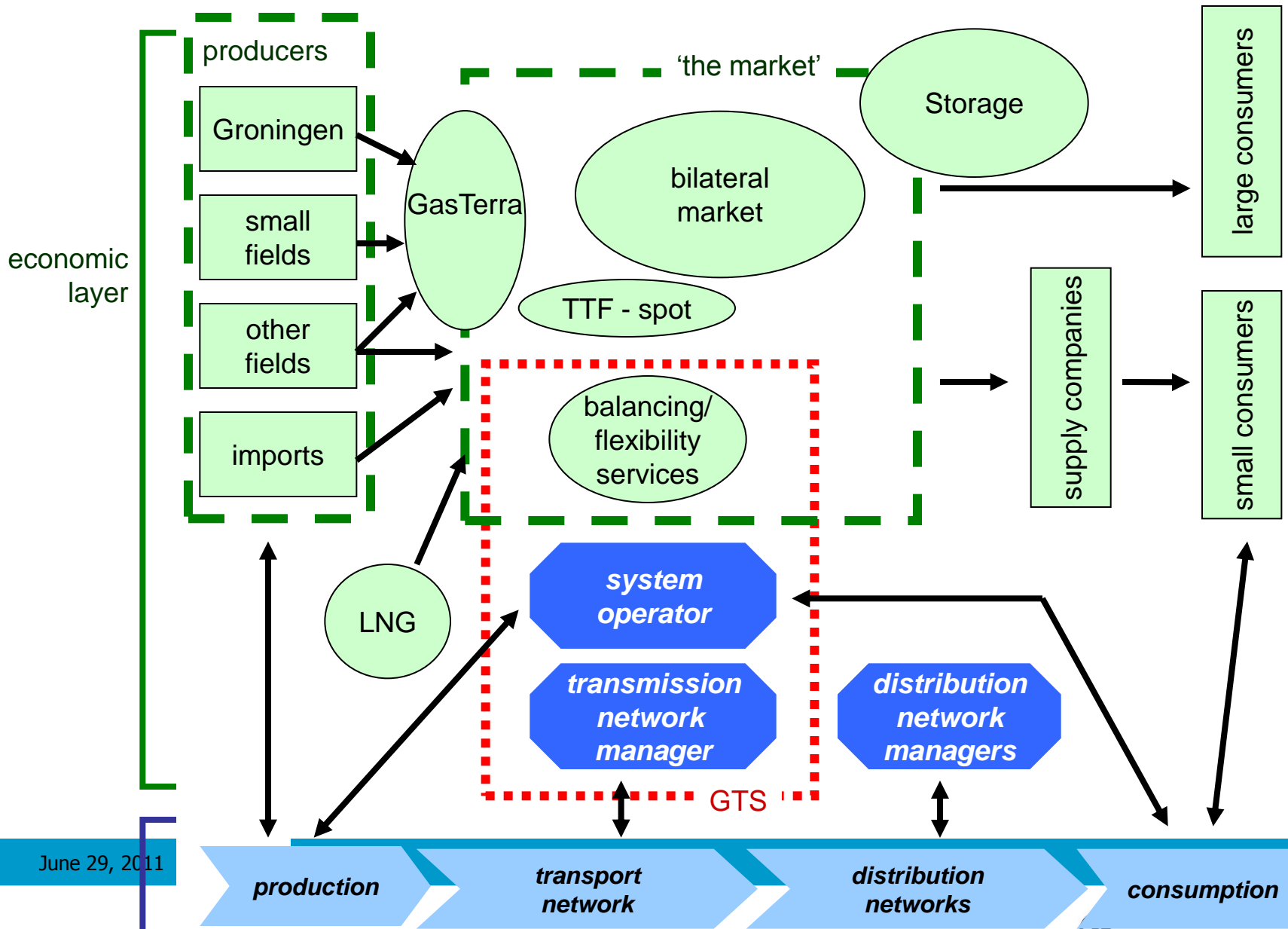
- State
- DTe/NMa
- Esso and Shell (NAM)
- Gasterra = Gasunie Trade & Supply
- Gasunie GtS (TSO)
- Other producing companies (Total, RWE, etc...)
- New Traders and shippers (GdF, Total, Norsk Hydro, Dong, D-Gas, Essent, Delta)
- Large consumers' organizations
- EU Commission

# Gas contract structures



# Contractual relationships in system





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# Network regulation

- Regulatory framework
- Tariffs
- Entry and Exit arrangements
- Balancing



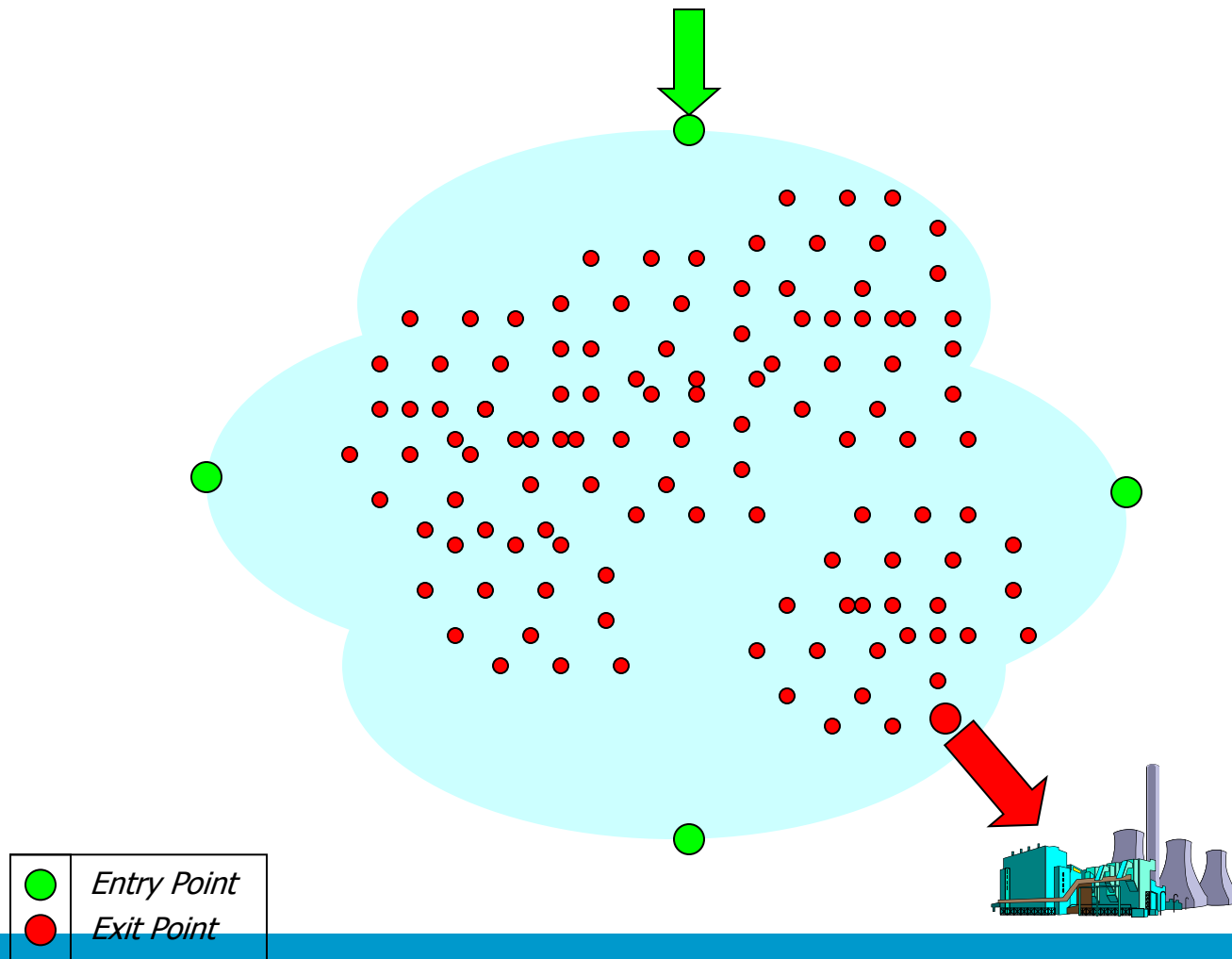
# Regulatory framework:

- Gas Act provides framework for regulation.
- The NMa “Energiekamer” establishes conditions and tariffs, and tests them against the provisions of the Gas Act.
- Tariff Code and Gas Conditions based on proposals submitted by the grid operators (LDCs and GTS).
- Tariff Code and Gas Conditions elaborated in GTS Transmission Service Conditions (TSC), including non-regulated GTS services, as a a bilateral contract between GTS and its customers.

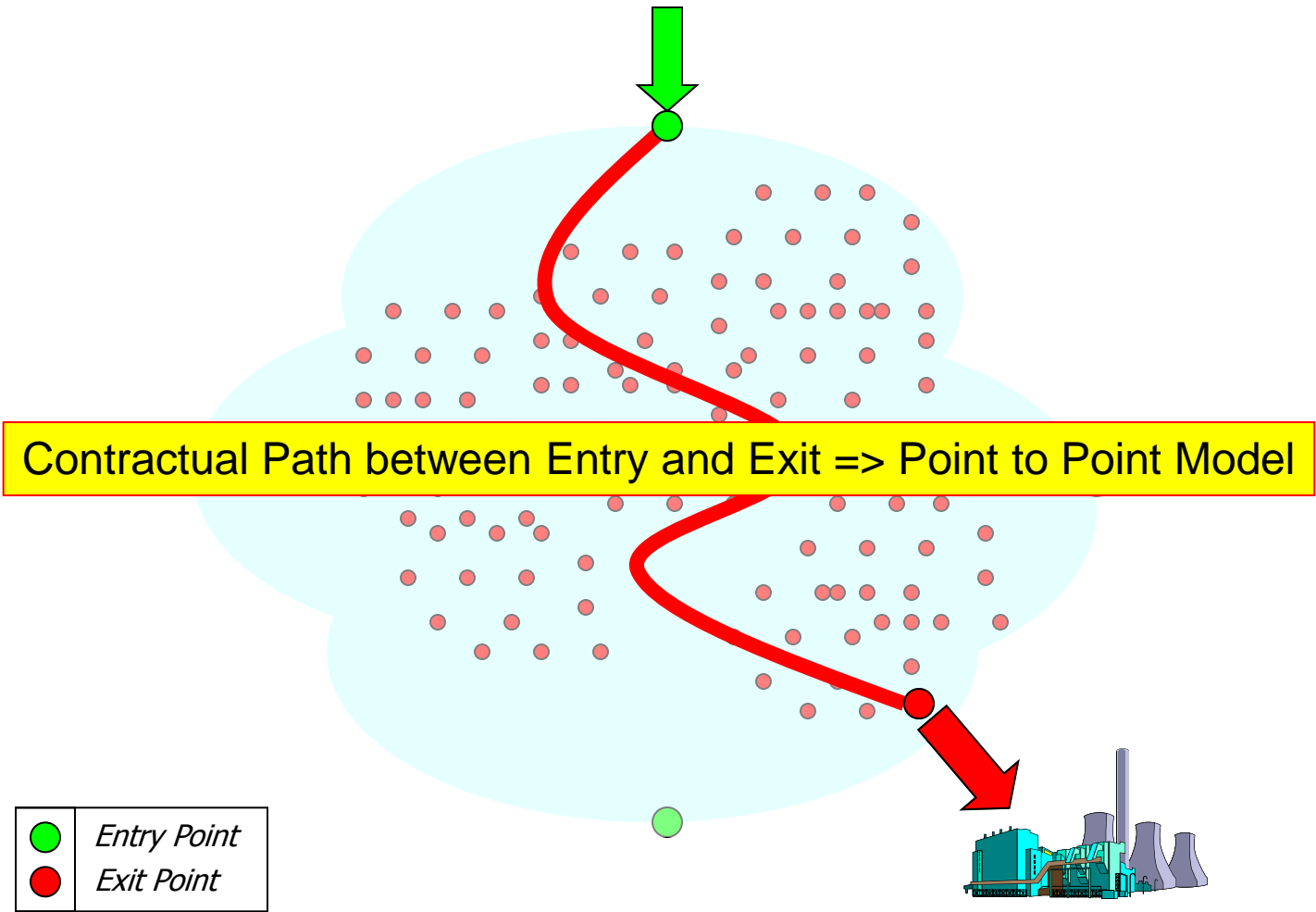
# Network regulation

- Regulatory framework
- Access rules
- **Entry and Exit arrangements**
- Balancing
- Investment Issues

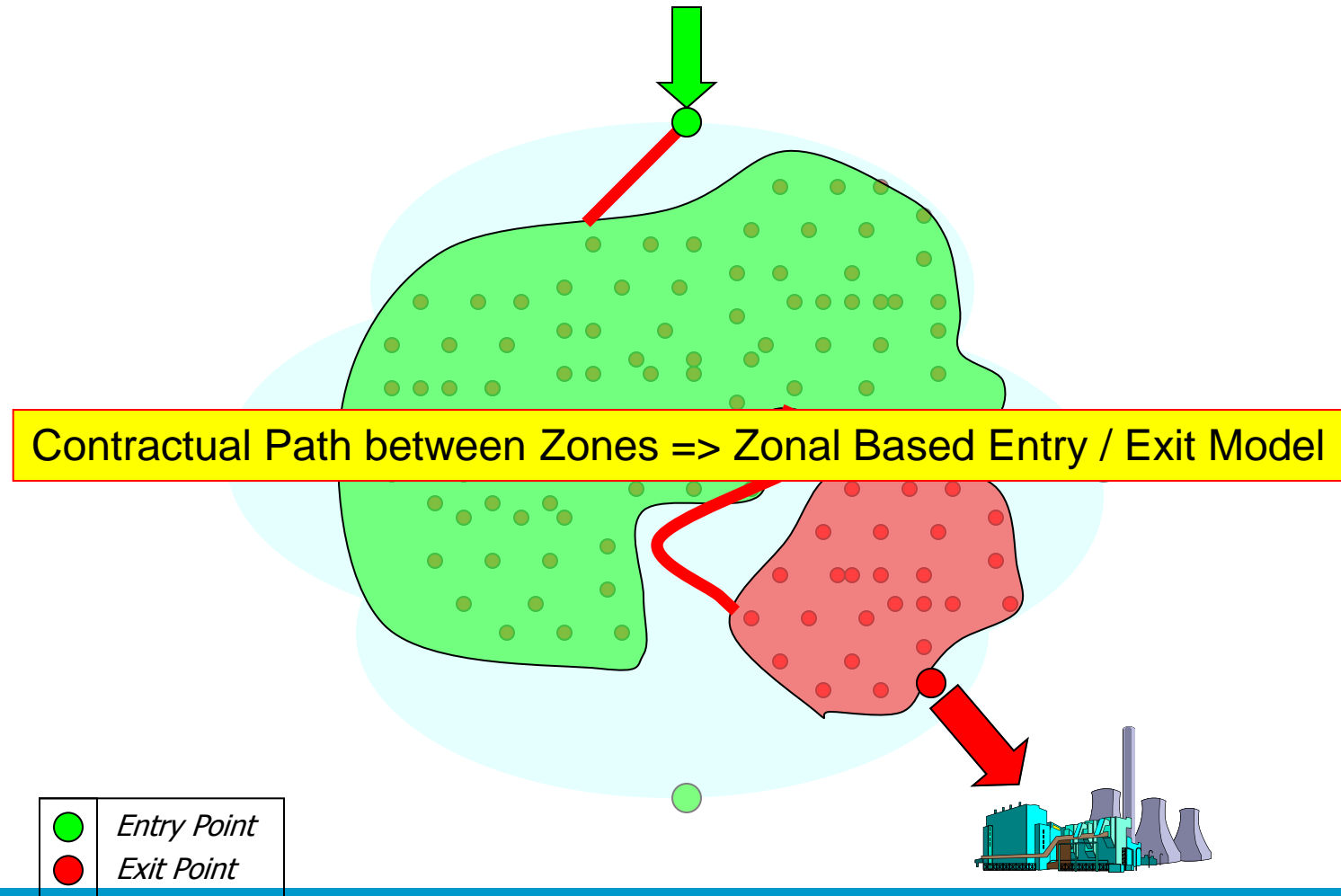
# Illustration of Booking Systems for Transmission



# Point to Point Booking Model

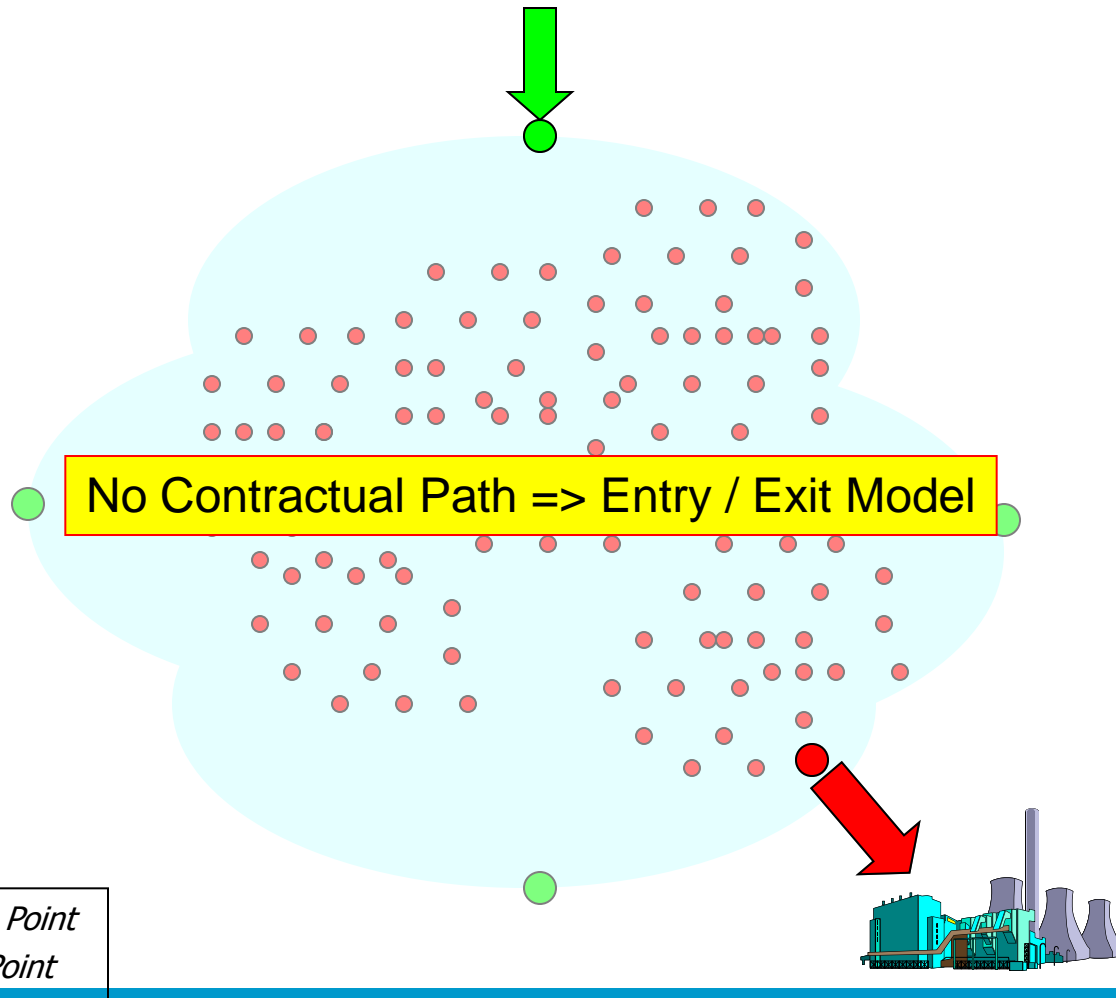


# Zonal Booking Model

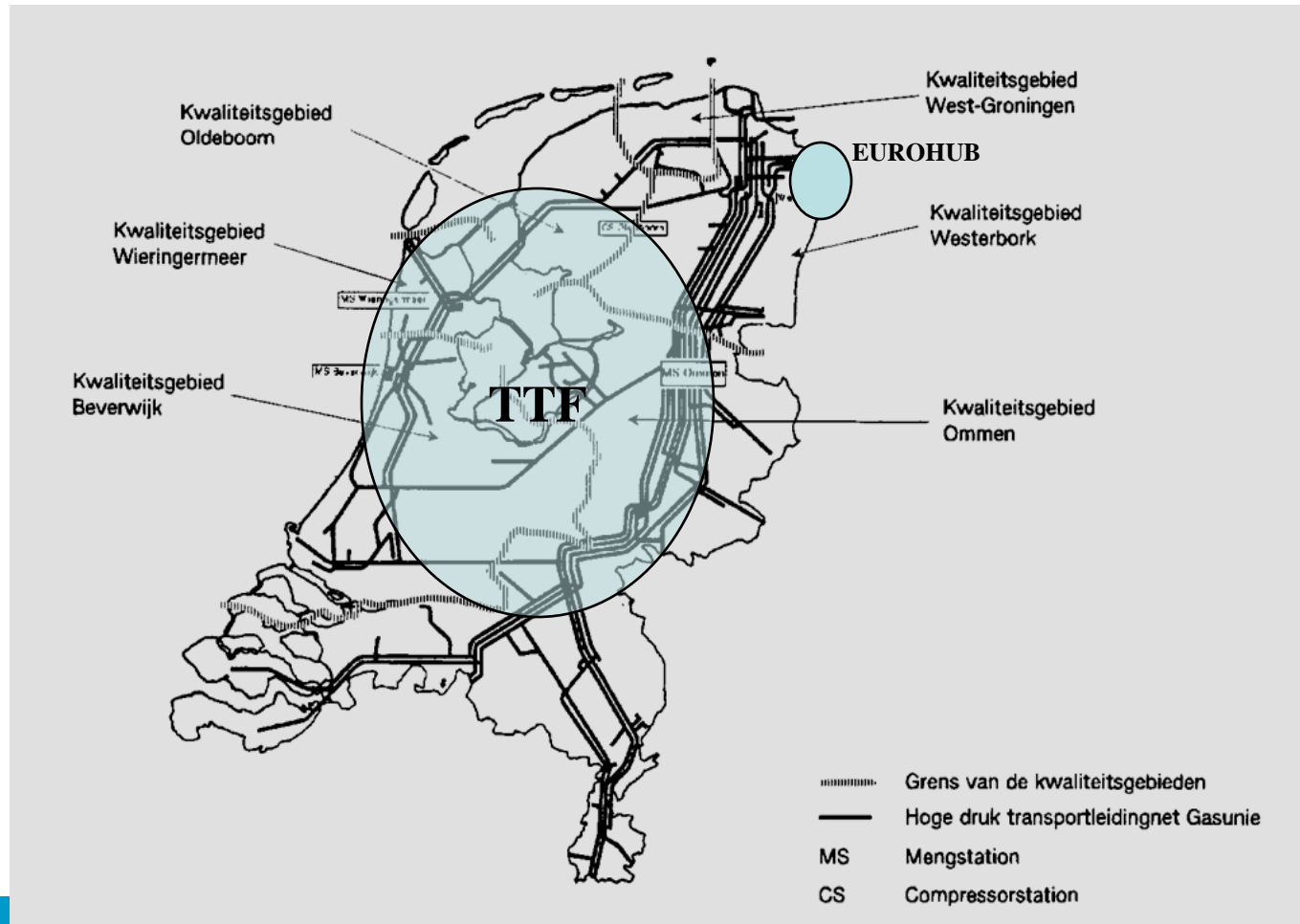


# Uncoupled Entry – Exit

# Booking Model

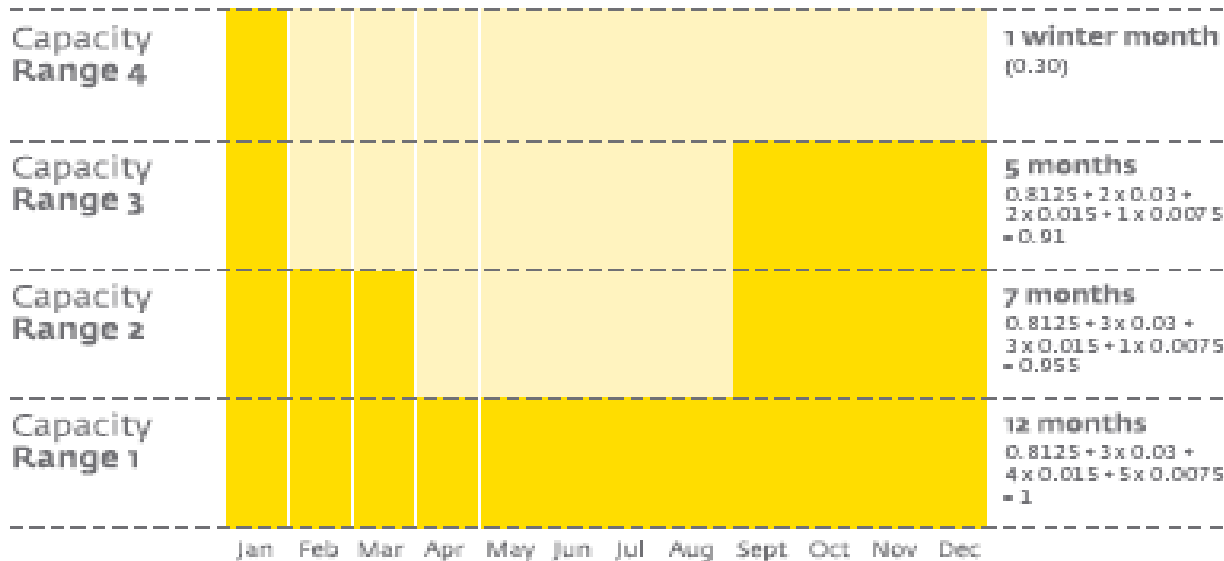


# GTS entry/exit tariff zones



# Entry –Exit Tariffs I

Example: tariff calculation profiled booking

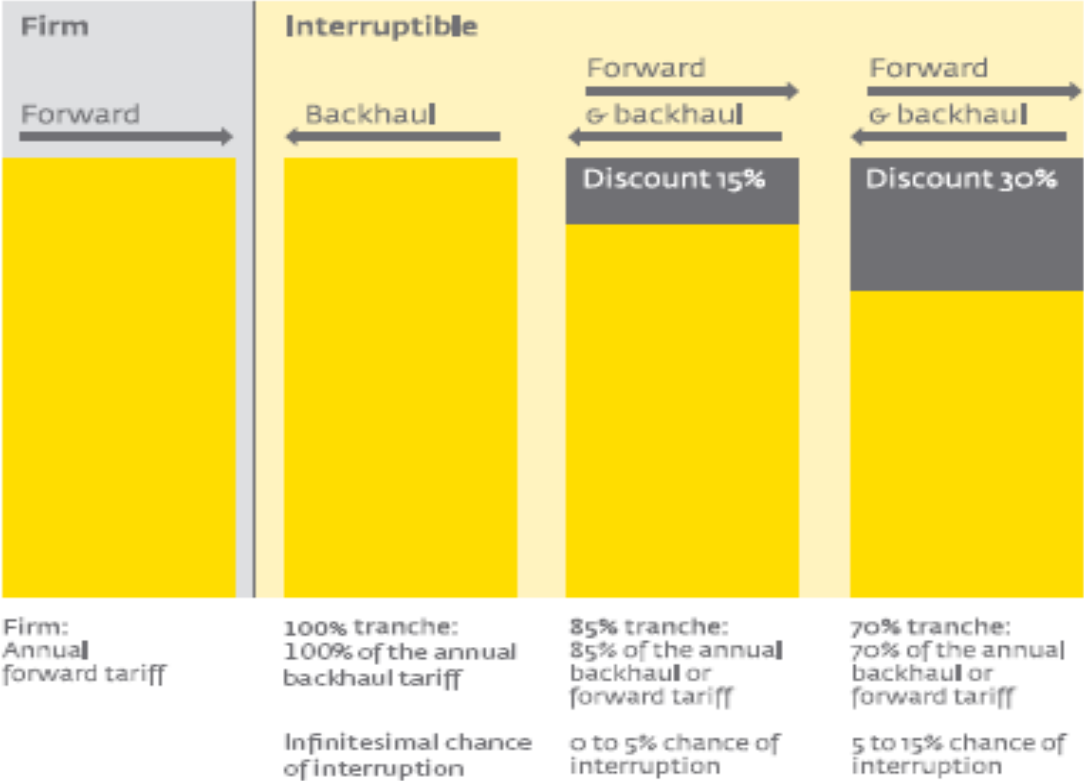


	Months	Monthly factor percentage of annual tariff	
Forward	Winter months	January, February, December	30%
	Shoulder months	March, April, October, November	15%
	Summer months	May to September	7.5%
Backhaul	January to December	12.5%	



# Entry –Exit Tariffs

Capacity and tariff



# Network regulation

- Regulatory framework
- **Tariffs**
- Entry and Exit arrangements
- Balancing
- Investment Issues

# Main objectives of a Tarification System

- Non-discrimination between users (= shippers)
- Transparent and easy-to-use
- Promotes development of gas market and facilitates the trade of gas
- Ensures system security and integrity (penalties if shipper exceeds contracted rights)
- Provides timely and relevant market signals if new investment required
- Provides system operator/system owner incentives to invest timely and efficiently
- Prevents abuse of de facto or de jure monopoly position of System Operator (SO)
- Facilitates cross-border gas flows

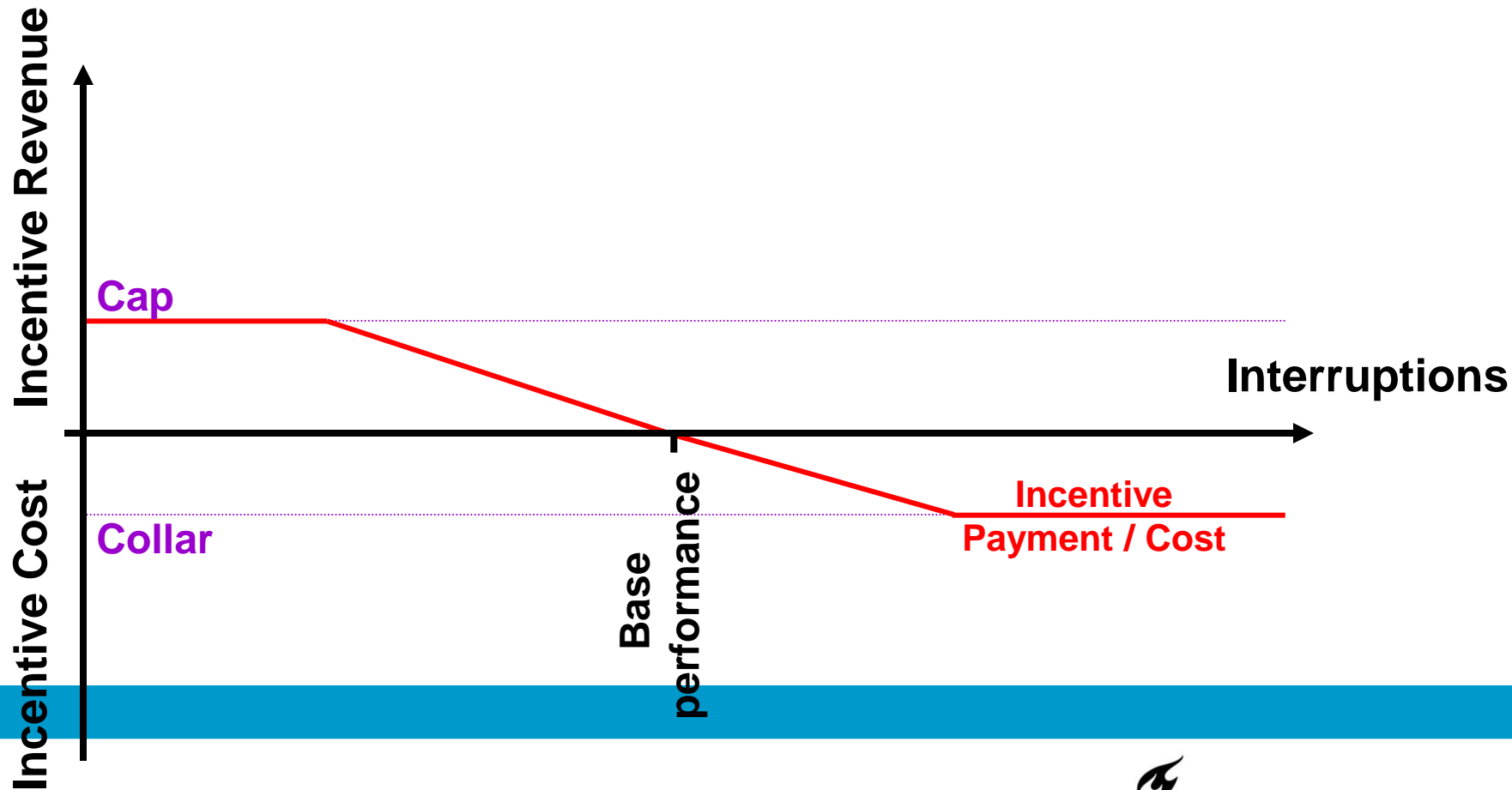
# Tarification Methodology

- Three major concepts
- The *market value* concept is often implemented by an auction system
  - The regulator determines the auction products
    - Daily, Monthly, Slots (LNG), bundles (Storage), Long Term
  - Example: Entry-capacity UK, Bundles in Rough
  - Prices on auctions may be very volatile
  - The auction system leads easily to abuse if insufficient bidders
- *Benchmarking* is used to simulate a competitive market for infrastructure
  - Regulator determines competitive tariffs elsewhere and decides on tariff structure and level
  - Example: LNG terminals, Transit & Interconnections
- *Cost-based* methods are most common, although in different ways
  - Tariff Regulation
  - Revenue Regulation

# Tariff Regulation: cost based tariffs

1. Regulator decides on tariffs
    - Volume risk for the TSO
    - “Tariff = Transport cost / transport capacity”
    - Rather complicated for regulator to decide on tariffs
  
  2. Regulator decides on total revenues
    - Revenue = RAB x WACC + Depreciation + OPEX
    - Volume risk for the Market
    - Easy for regulator (and for TSO/owner)
- This choice makes however a very significant difference in case of investments to increase capacity
  - Revenue regulation requires the regulator to decide on new investments;

# Incentive regulation



# Costs for gas infrastructure

- Mainly Capex oriented
  - OPEX may be just 3-4% of replacement value
  - And a significant part of OPEX is fuel cost
- Example: TSO Netherlands
  - 100 bcm/year; 11000 km pipe line, 600 MW compression
  - 1100 exits & entries, 10 blending stations
  - 400.000 m<sup>3</sup>/h N<sub>2</sub>-capacity (to create L-gas from H-gas)
  - Required investments: 200-500 mln/yr
    - CAPEX 7 bln € (Regulated Asset Base)
    - WACC = 5.5% (real, pre tax, Regulated)
    - Depreciation 300 mln €
    - OPEX 400 mln; 50% fixed (fuel cost, N<sub>2</sub>-cost, balancing cost)
  - Regulated turn over = 1100 mln €
    - Just 20% (200 mln) can be influenced
    - Efficiency Regulation will not result in significantly lower tariffs

# Costs and Tariffs

- Costs are mainly fixed
  - Tariffs should be fixed as well
- Should tariffs be distance-related?
  - Post Stamp?
- Should tariffs be utilisation-related?
  - Summer versus Winter
- Should tariffs send investment signals?
  - High tariffs when congestion
- Should tariffs encourage long term commitments?

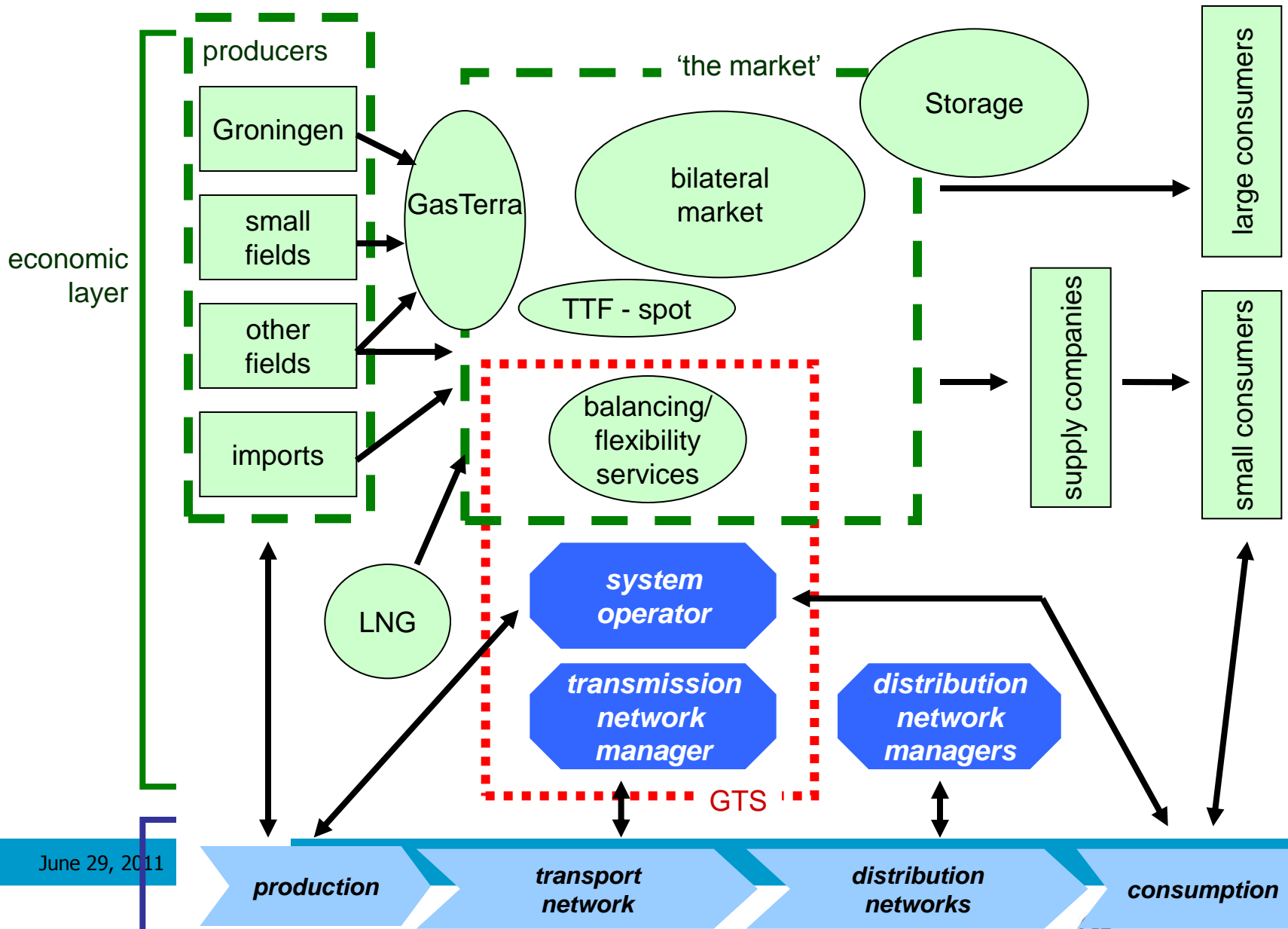


# Tariff Components

1. Capacity charge (€/m<sup>3</sup>/hour/year) or Bundle charge (€/year)
  2. Volume charge (€/t/m<sup>3</sup>)
    - often based on actual volume
    - the sum of volume charges may be equal on actual fuel costs
    - Volume charges may also be virtual costs (UK)
  3. Fixed charge period (€/month)
  4. Indexation to Inflation
    - often 25%-35% (to follow the increase in the operational costs)
- **Be aware of the various components and the service you get**

# Network regulation

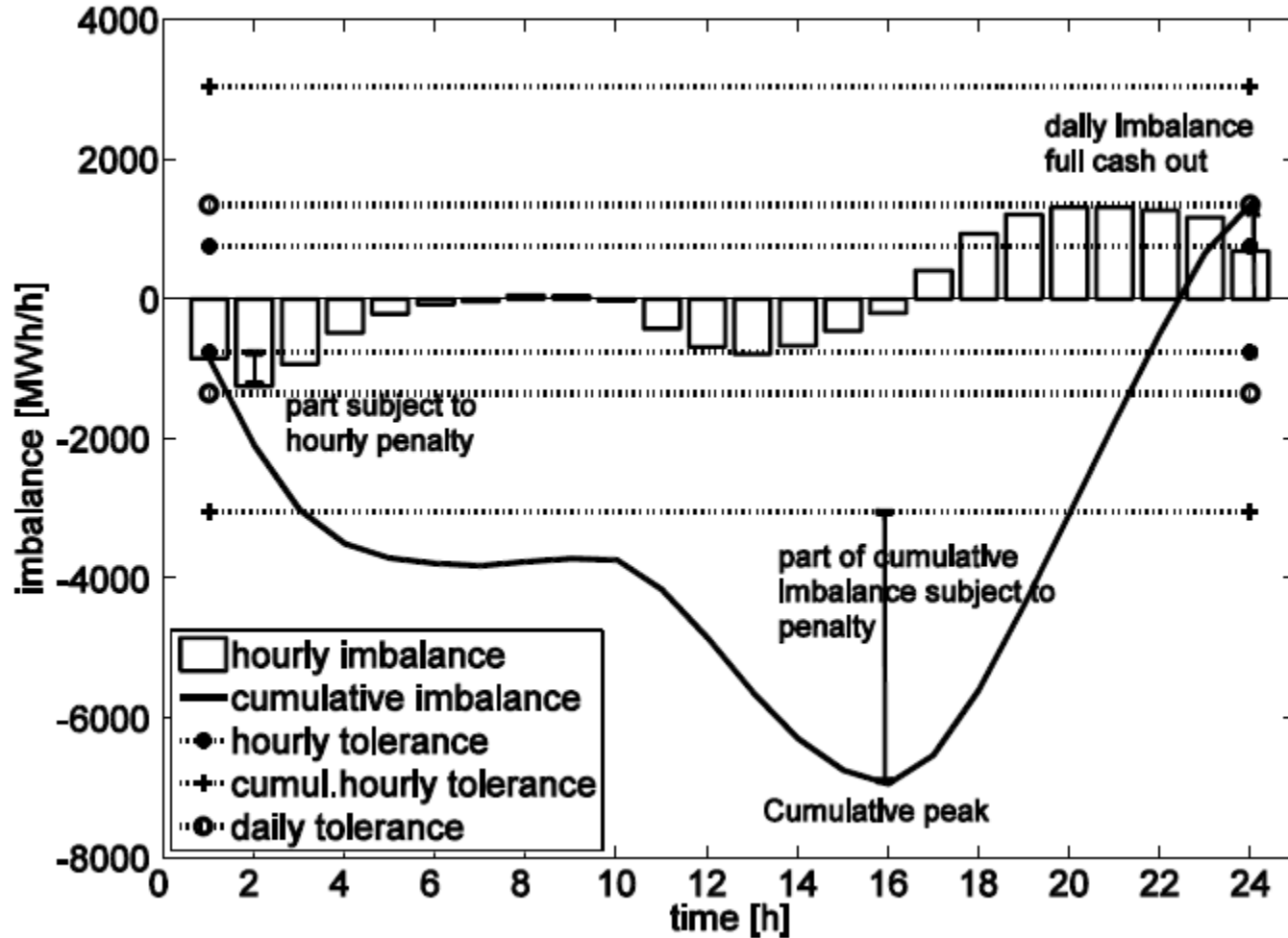
- Regulatory framework
- Access
- Entry and Exit arrangements
- **Balancing**
- Investment Issues



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Typical residential imbalance profile for one day



# Balancing

- GTS responsible for the balance in the system, the 'grid integrity'.
- Individual shippers balance entry and exit gas, within specified tolerance limits.
- There are hourly, aggregate and daily tolerances, which accumulate.
- Hourly tolerance and cumulative tolerance are assigned on the basis of the contracted transport capacity (monthly average).
- The tolerance will be assigned for both firm and interruptible capacities and backhaul.
- No tolerance will be assigned at virtual entry or exit points, such as the TTF.
- Both hourly tolerance and cumulative tolerance are temperature-dependent.

# Network regulation

- Regulatory framework
- Access
- Entry and Exit arrangements
- Balancing
- Investment Issues

# Investment issues

- Growth of international transit
- Growth imports of gas
- More complex directional patterns
- Connection BBL
- Connection storage inland and abroad
- More demand for conversion (TTF = H cal.!)
- Announced new power plants

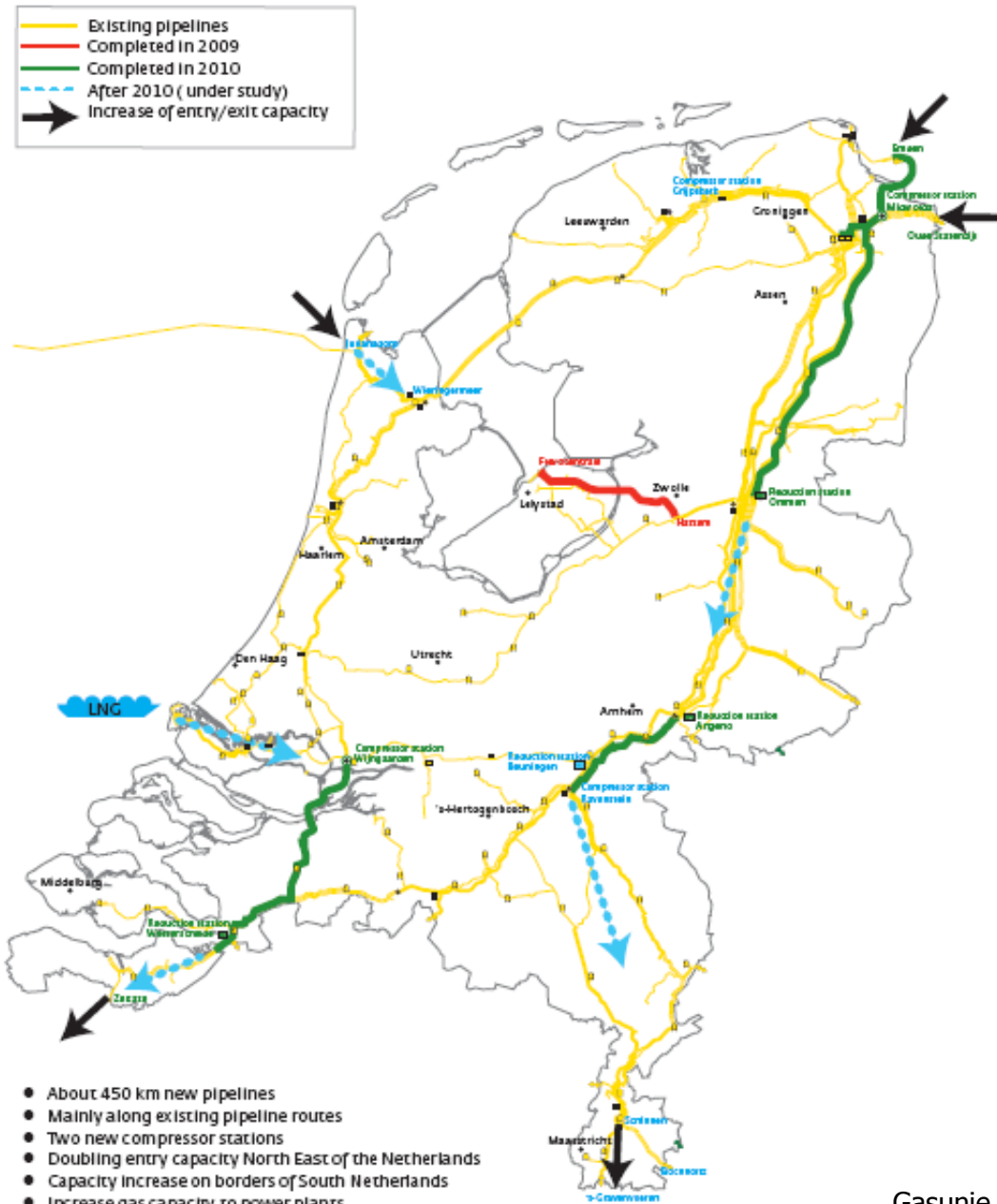
# Regulation Issues

- Allowed revenue set by DTe
- Investments to be agreed upon by Dte
- Exemptions to be agreed upon by Dte
- Open season for expansions
- Investment plans are delayed
- Wishes of international transit shippers are not easily awarded
- Entry-exit system, plus cost plus tariffs, causes wrong incentives and under/over use of capacity



# Investment issues: GTS

- GTS among lowest tariffs in wider Europe
- Open season for expansions show great interest
- GTS owner (Min. Fin.) requires acceptable rates of return
- Investment plans are delayed
- Wishes of international transit shippers and LNG plants are not easily awarded
- Entry-exit system, plus cost plus based tariffs, causes wrong incentives and under/over use of capacity
- Diversion of transport from Germany over the Dutch system



- About 450 km new pipelines
- Mainly along existing pipeline routes
- Two new compressor stations
- Doubling entry capacity North East of the Netherlands
- Capacity increase on borders of South Netherlands
- Increase gas capacity to power plants
- Capacity increase to Industries in South Netherlands

# Gasunie's strategy

## Secure operational excellence

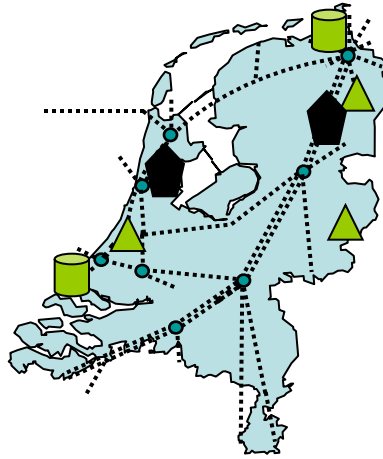


Ensure transmission

- **safety**
- **reliability**
- **cost efficiency**
- **sustainability**

as a basis for continued public, regulatory and political support for expansion

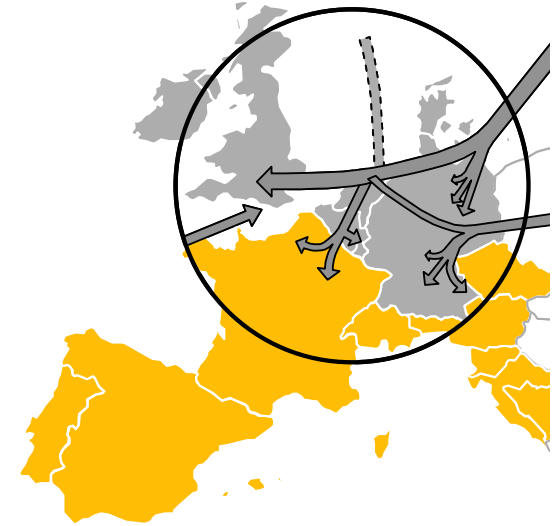
## Expand transmission activities



Provide **sufficient** transmission capacity and international **access**

Offer additional services (and make contracts/tariffs market based) to make Dutch gas **market attractive** 'gasrotonde' in Europe

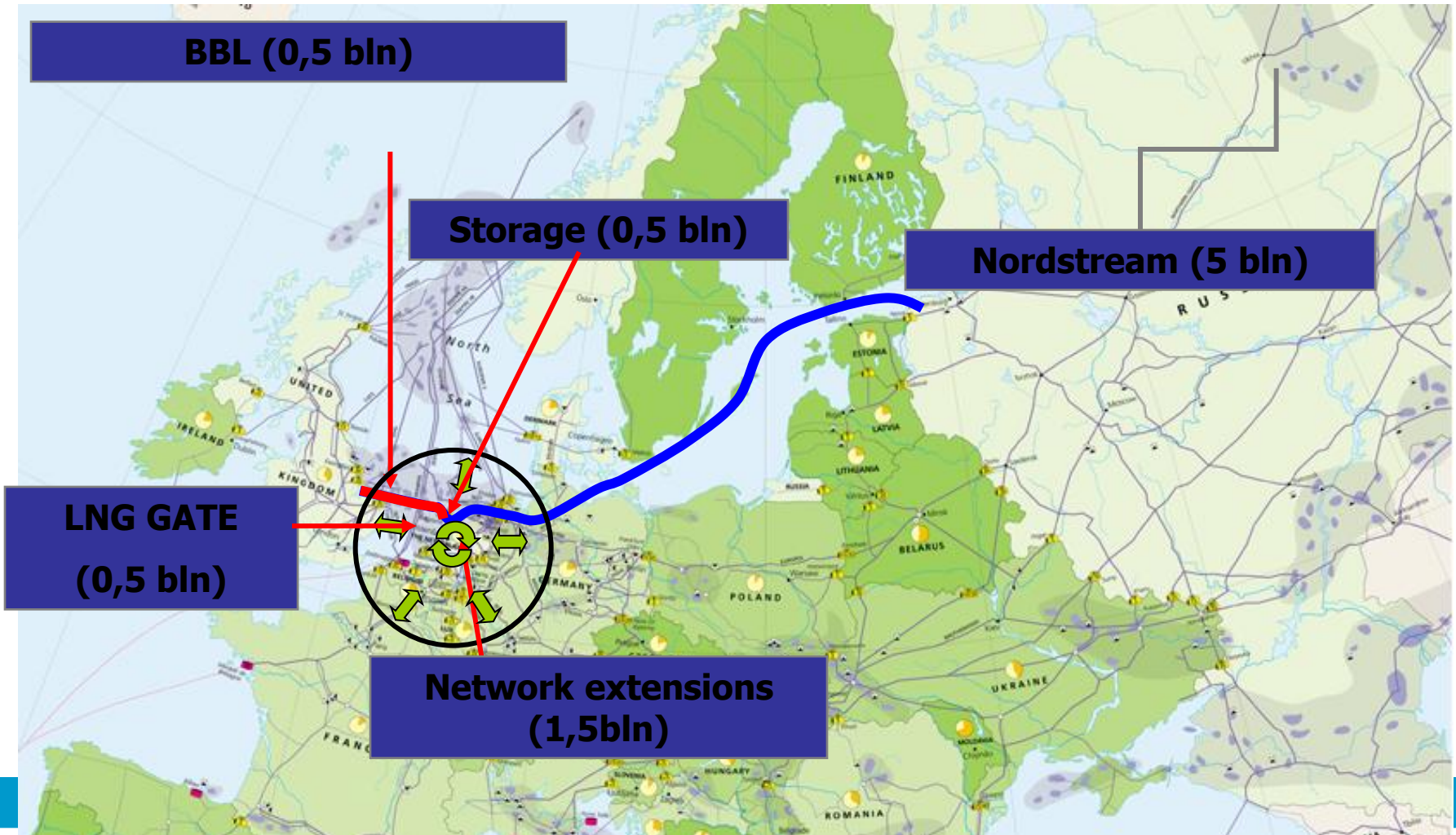
## Capturing of new gas flows



Facilitate **access** to gas resources of the **future** & enable gas resources to reach market

Attract transit through Dutch grid to ensure **central position** in future (consolidating) EU transmission landscape

# The Gas Roundabout



# Extensions of the Dutch Gas Grid

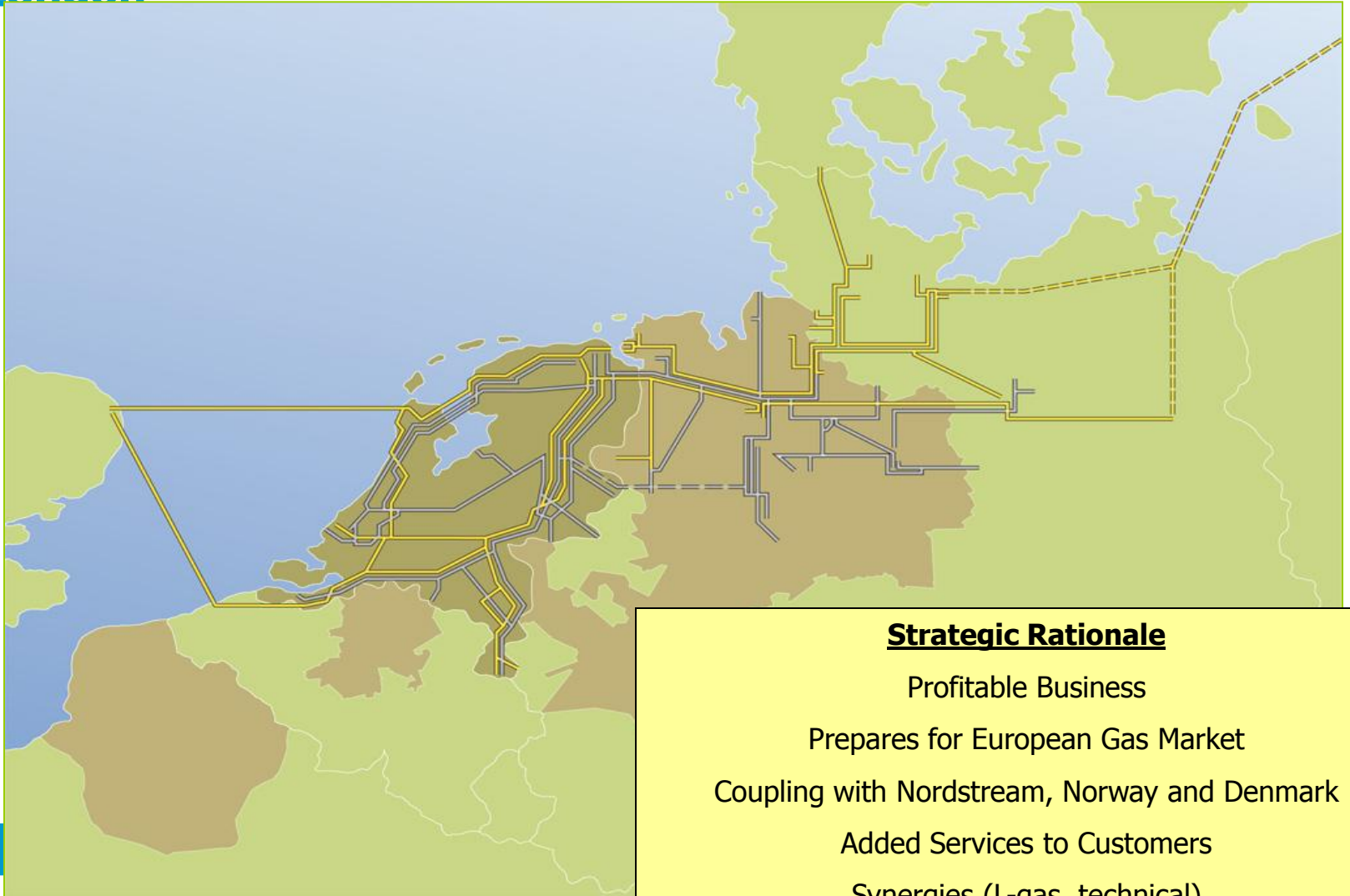


Gasunie

Alterra, apr 12, 2006



# Gasunie and BEB: a highway from Berlin to London



## **Strategic Rationale**

Profitable Business

Prepares for European Gas Market

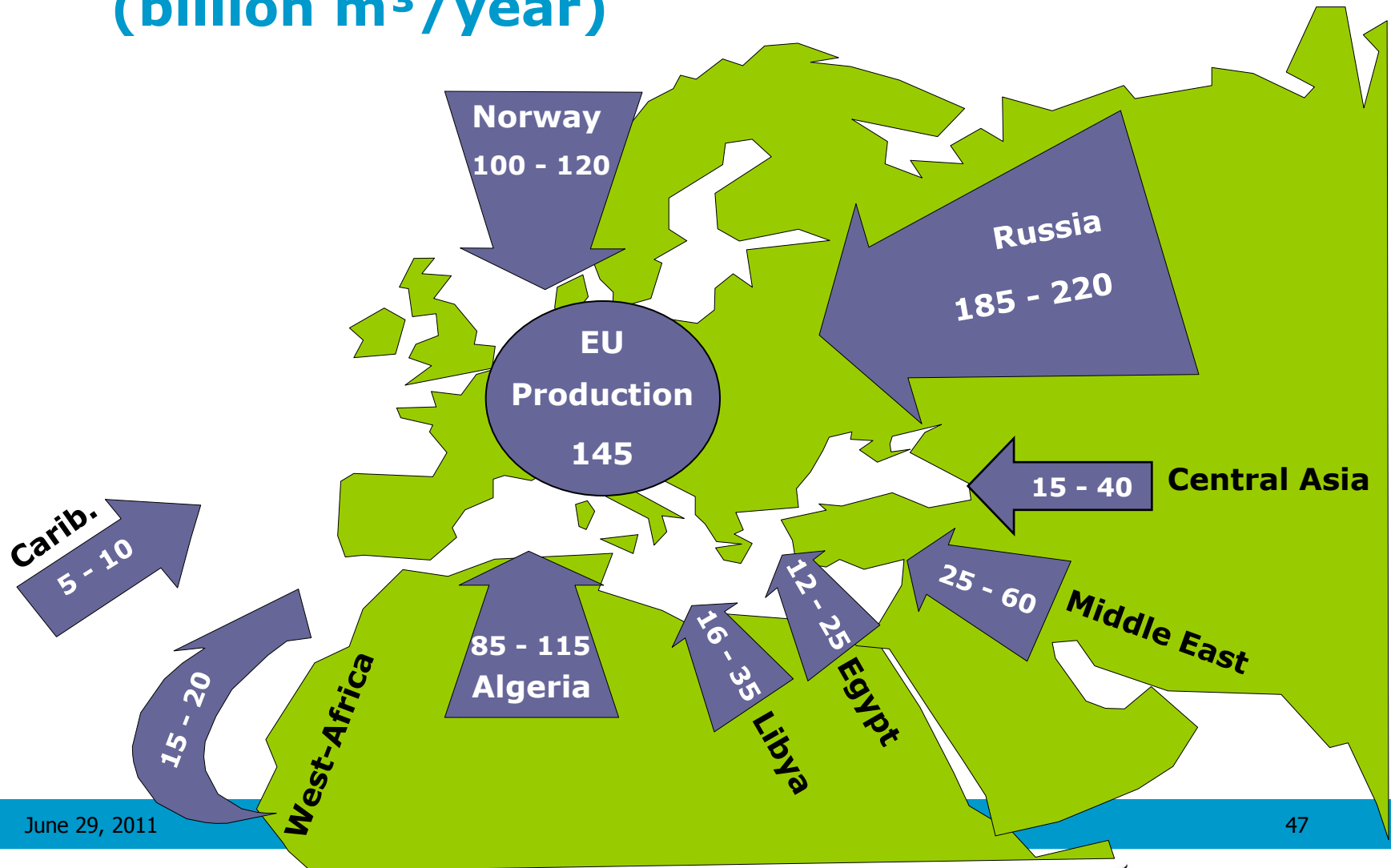
Coupling with Nordstream, Norway and Denmark

Added Services to Customers

Synergies (L-gas, technical)

Integrated Network Planning

# Supply Capacities for Western Europe 2010-2020 (billion m<sup>3</sup>/year)

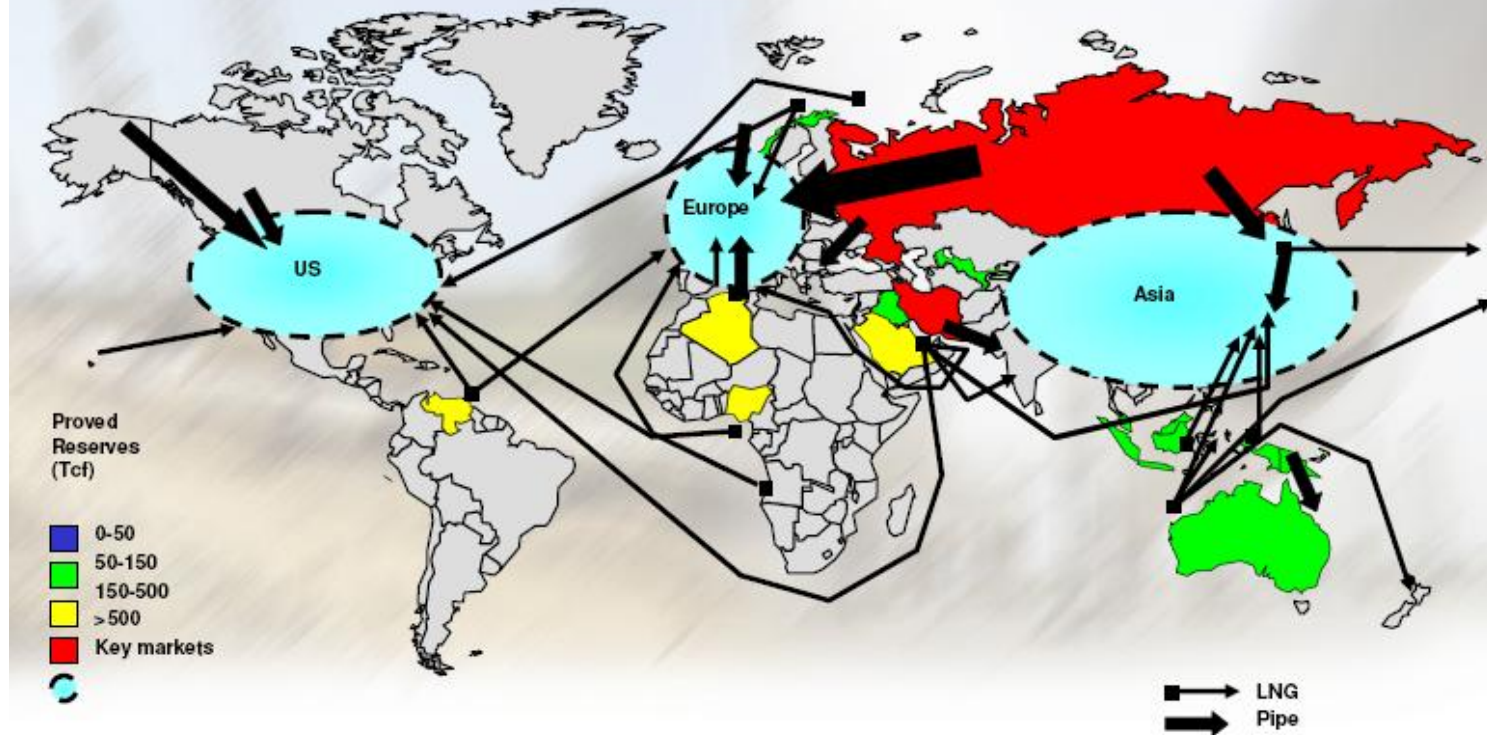


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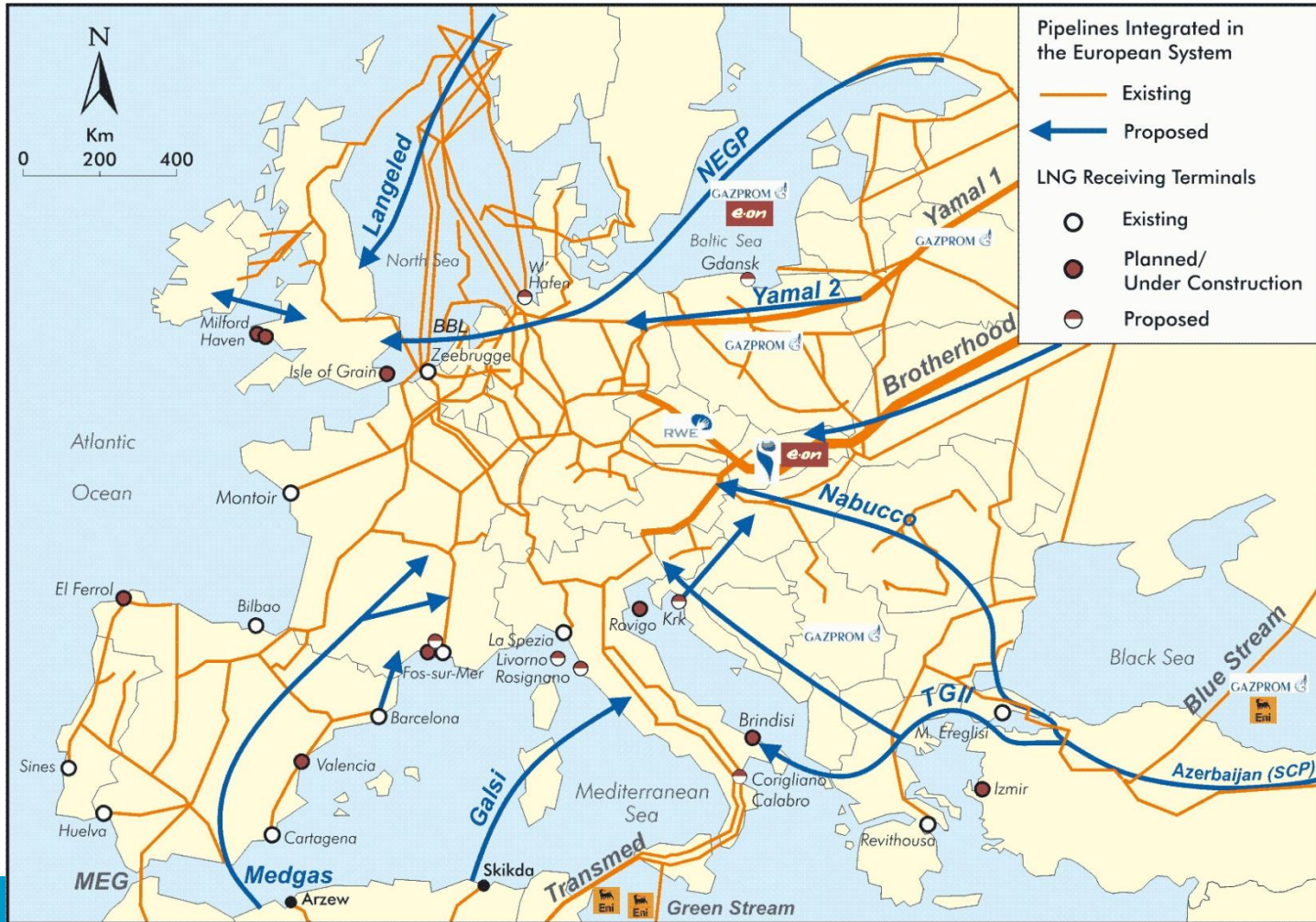
Source : IEA/OME 2004

A complex global gas trade dynamic is emerging as the market becomes increasingly interconnected





# European Gas Infrastructure



# How does the Dutch gas system fit into the wider European context?

- Two Faces of the Netherlands
  - Down-stream EU gas market: short-term consumer vision  
*logic of liberalization*
  - Up-stream (non-EU) gas industry: long-term supply stability  
*logic of control*
- No real up-stream competition: 4 suppliers
  - Ambivalent discussion and positions.....
  - Or are there three faces....?

# Assessing the liberalization...

- Gasterra: full dismantlement or ....?
  - Cost of a split-up
  - Role of state in resource management
  - Information asymmetry
  - Small fields policy/Groningen
- Long term co-ordination of the system by the market.....?
- Storage, conversion and LNG?
- Gas Roundabout and industrial policy?