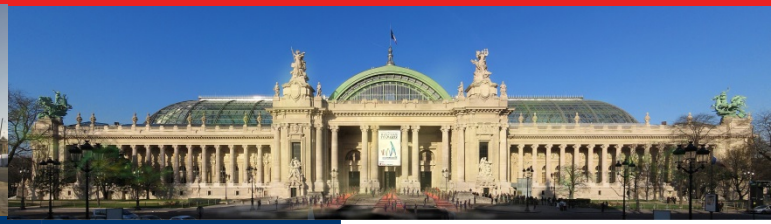
26th World Gas Conference

1 – 5 June 2015, Paris, France



PGCB SG3 Strategy & Regulation

IGU
WGCPARIS2015
WORLD GAS CONFERENCE

PGCB Study Group on Strategy and Regulation

Team

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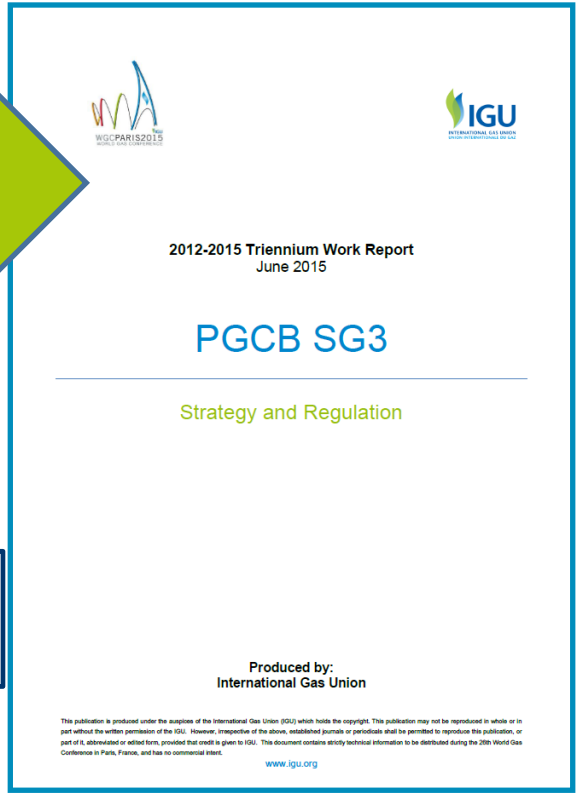
2012-2015 Triennium Work Report
June 2015

PGCB SG3

Strategy and Regulation

Produced by:
International Gas Union

www.igu.org

PGCB S3: Strategy and Regulation

Contents of the Report:

1. Business Cases:
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2. Investment Challenges Facing the Gas Industry:
   - Aidan O'Sullivan (General Manager – Gaslink ISO)
3. Cooperation between IOCs & NOCs:
   - Luis Ignacio Parada (Enagas)
4. Energy Poverty survey: first insights and proposed next steps
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Introduction

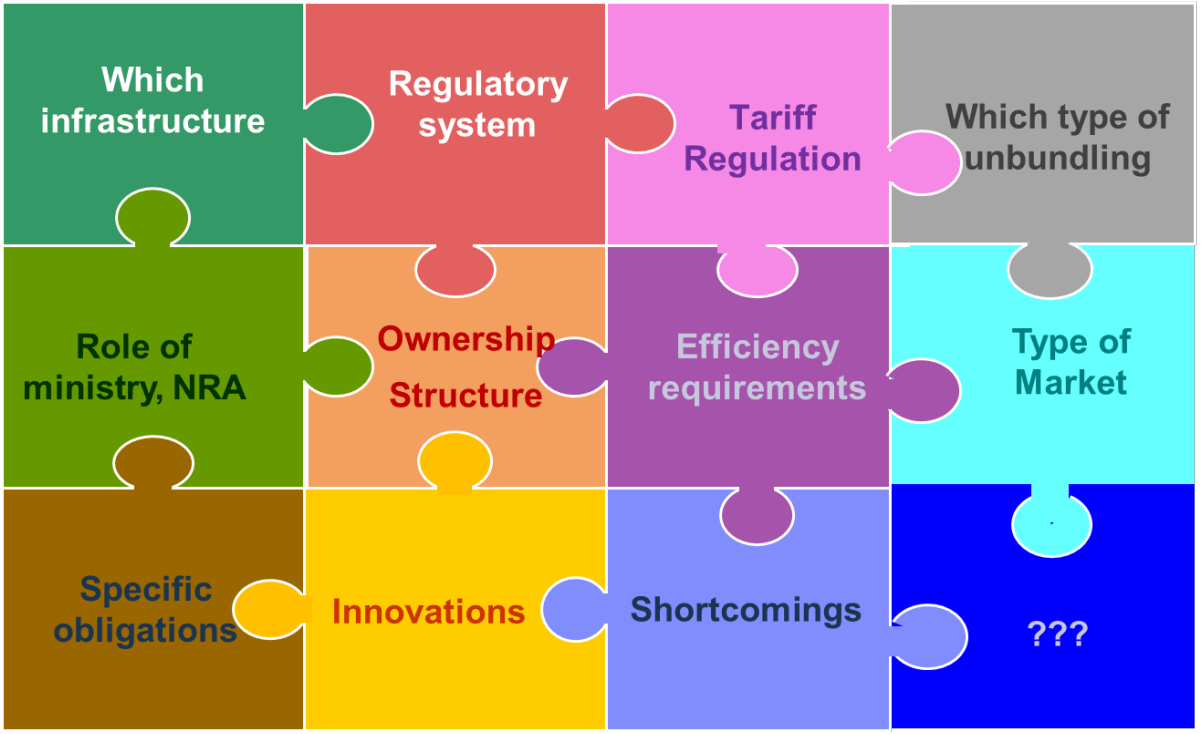
The 2012-2015 job in a nutshell:

"to explore the relation between company's strategy and regulation"

"to build on top of work done"

"to obtain and analyse quantifiable data"

About the scope of the survey



Survey aimed to understand the characteristics.

It was not an easy task!

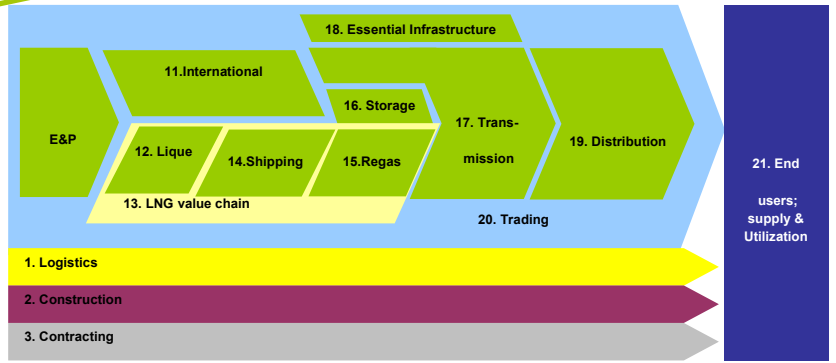
From “what is it” to “where is it going”.

Our results from the internetsurvey

Value chain element	#	%
10: Exploration and Production	1	2%
11: International transmission	3	6%
13: Liquefaction	3	6%
15: Regasification	2	4%
16: Storage	7	15%
17: Transmission	15	31%
19: Distribution	10	21%
20: Trading	5	10%
21: End users	2	4%
Total	48	100%

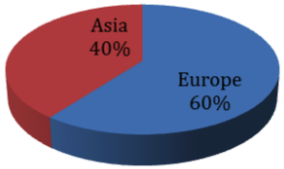
Statements are only statistical valid (with limitations) on Transmission and Distribution

Good response



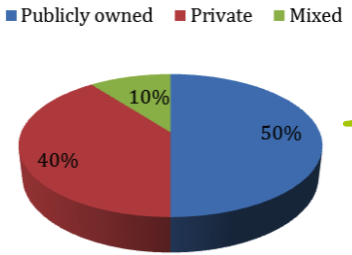
Some results

Geographical representation



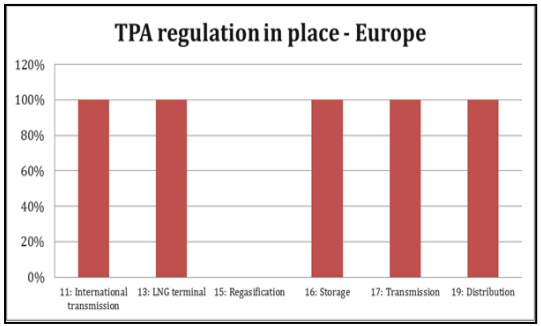
Only Europe and Asia!
Asia Pacific, America, Africa are missing

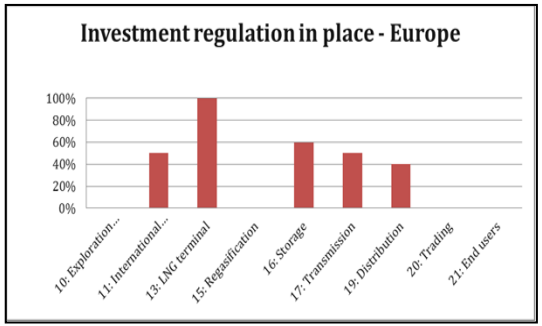
Ownership of the companies

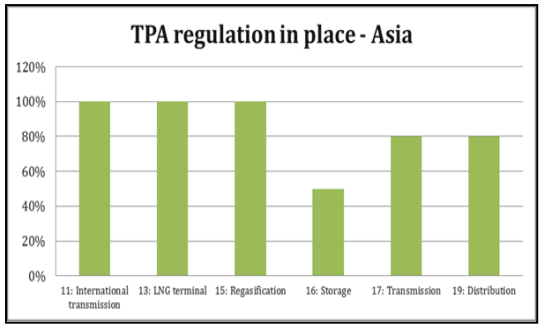


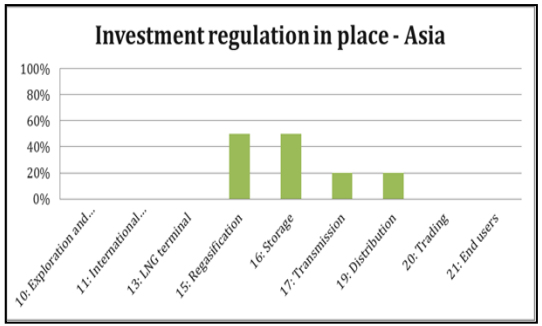
Still interesting results!

Some interesting indicators









Indicators for interesting differences available.

Further study required!

Next steps

- Enough clues to continue to investigate the relation between strategy and regulation.
- Limited response on both the global coverage as well as coverage of the value change needs rethinking of the approach and scope.
- The search for a common denominator requires understanding both the instruments as the goal of regulation.

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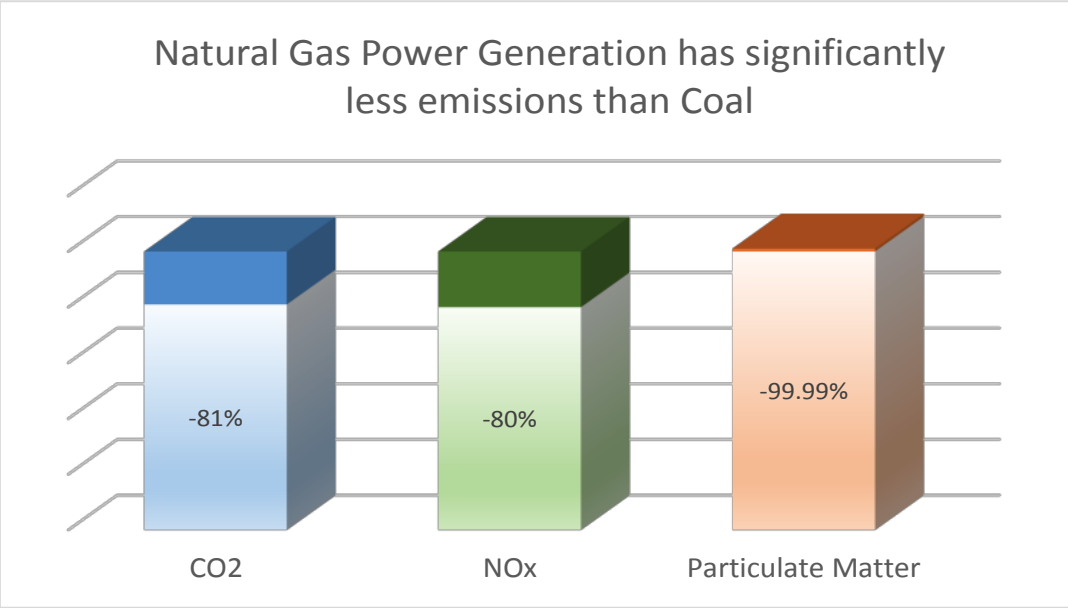
Agenda

1. Why Gas? Incentives for ALL gas stakeholders (upstream/midstream/ downstream) to promote the benefits of gas)
2. Key Challenges for Gas in Europe
   - The Coal Renaissance
   - Gas Role in Power Generation
   - Shortcomings in the Emission Trading Scheme (ETS) carbon scheme
   - Investments required to support more renewables
3. US: the paradigm shift
4. What is needed to meet the European challenges for gas?
5. Conclusions

1. Why Gas?

Natural Gas should be ideally placed to deliver on the world's climate change and CO_2 abatement targets

- Extensive global reserves and gas infrastructure network
- Ideal partner to renewable sources as the most efficient and least polluting conventional generation technologies



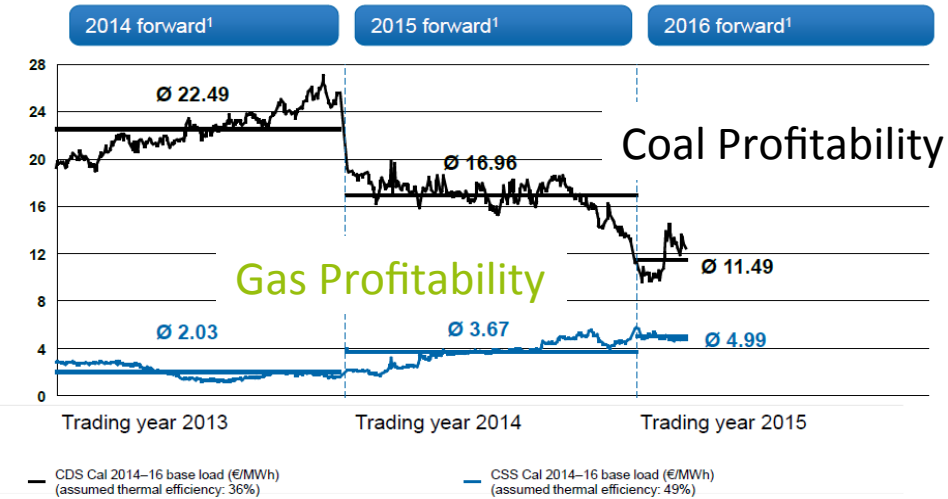
2. Key Challenges for Gas in Europe

1. The Coal Renaissance
2. Mothballing of Gas Fired Power Plant
3. Shortcomings in European CO_2 trading scheme
4. Investments Required to meet increased renewable sources

Challenge 1: The Coal Renaissance

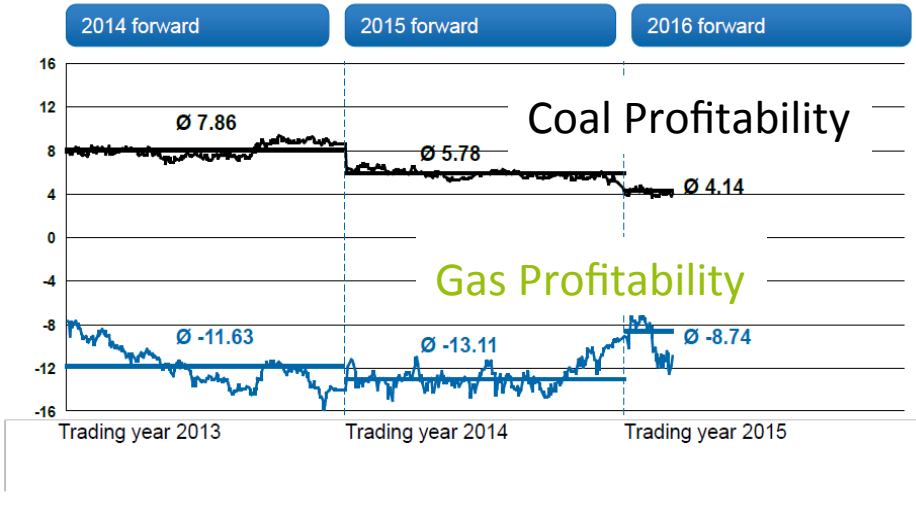
- Low ETS carbon price
- Profitability of coal fired generation outpacing gas

UK: Clean Dark (CDS) and Spark Spreads (CSS)



1 Including UK carbon tax.
Source: RWE Supply & Trading, prices through to 02 March 2015

Germany: Clean Dark (CDS) and Spark Spreads (CSS)



Challenge 2: Mothballing of Gas Fired Power Plant

- Leading to Low/Negative Operating profits in gas fired generation is leading to mothballing of plant
  - Increased renewables
  - Coal more profitable for power generation
- 20GW of European gas plants mothballed in 2013
- Studies Estimate that up to 110GW of installed CCGT capacity (60% of EU's total gas fired capacity) are not recovering fixed costs
- Knock on impact for Gas Network utilisation across Europe

Challenge 3: Shortcomings in ETS Trading Scheme

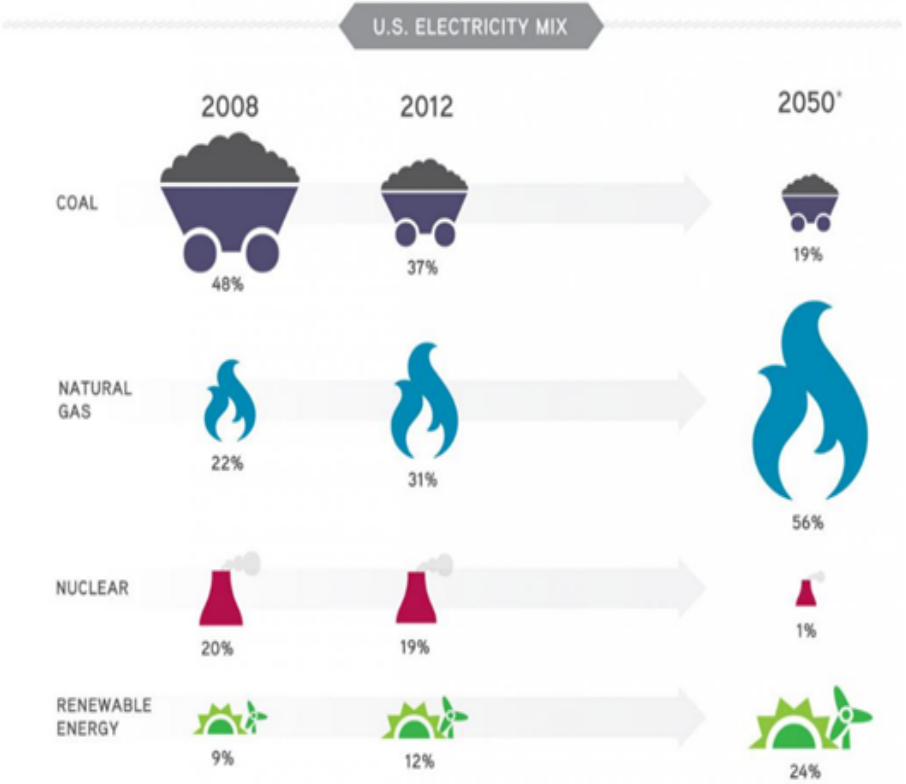
- ETS scheme was intended to create disincentives to use carbon intensive fuels such as coal
- Carbon price too low to favour the displacement of more carbon intensive coal fired generation
- Properly functioning European level ETS required to make significant progress on achieving carbon targets

Challenge 4: Investment Requirements for Increased Renewables

- To meet the Renewable targets further significant investment will be required in gas infrastructure
- Flexibility is required
- Gas the ideal fuel for this role
- Will current policies facilitate natural gas to assume this role?
- Key policy makers and environmental advocacy groups and leaders in the US have spoken in favour of Natural Gas as a key enabler of increased renewables e.g. Energy Secretary Ernest Moniz

3. Contrasting Paradigm Shift in US

- US electricity system going through its biggest transformation in half a century
- Old & inefficient coal plants closing
- Projections see 56% of electricity being produced through gas by 2050 (up from 31% in 2012)
- Natural Gas projected to dominate



4. So What is Needed?

1. Stability for investors and customers
2. Incentivise new investments
3. Advocate & Promote Gas as a Destination Fuel
4. Targeted Investment

4.1 Stability for Investors and Customers

- Revenue and Tariff Volatility are Increasing in regulated sectors
- Volatility Drivers
  - Network Tariffs
  - 'Vicious Cycle' emerging in gas industry
  - Short term capacity bookings = Free Rider Behaviour
  - Network Code requirements

Volatility in revenue and tariffs must be mitigated to help encourage investment in Transmission Infrastructure

4.1 Stability for Investors and Customers (continued)

IGU Position

- IGU believe in the interest of fairness and the principle of ‘user pays’

What is required to attract investment

- Regulatory consistency
- Energy Policy consistency across member states
- NRA’s and governing ministries collaboration
- EC & ACER collaboration

To achieve long term goals, long term investment is required, not short term focus

4.2 Incentivise new investments

IGU Stance

- Improved investment climate required to;
  - Secure sustainable returns on investment in existing assets
  - Support future investments
- IGU supports mechanisms such the Projects of Common Interest (PCI) and Connecting Europe Facilities (CEF) CEF processes in Europe.
- Certain 'policy levers' are available at national level that could incentivise new investment.

What is Required?

- EC estimate that > €70bn is required for investment in the European gas grid up to 2020 to facilitate completion of the internal energy market
- Investment to deliver Security of Supply requirements
- Stable regulatory commitments
- Address uncertainty regarding TSO revenue recovery

Benefits to Investors

- Stable, long term returns on investment

4.3 Advocate and Promote Gas as a Destination Fuel

- Gas – Transition or Destination Fuel?
- Most efficient and least polluting fuel for power generation
- Should be seen as both a transition fuel and enduring base-load fuel for the low carbon economy
  - Policy makers should encourage increased gas penetration
  - If gas becomes the 'Destination Fuel,' there is no need to move past gas on the road to a low carbon economy
- Gas Advantages as a 'Destination Fuel'
- New supply routes opening
- There are proven reserves at the end of 2012 of 56 years – 187 trillion cubic metres
  - Discoveries have kept pace with increased consumption
  - Incentives for ALL gas stakeholders (upstream/midstream/downstream) to promote the benefits of gas
  - Win Win.

We need to educate Policy makers and the public about the benefits that gas can deliver to Europe

4.4 Targeted Investments

- Subsidies for mature technologies are misplaced
- Target investment towards next generation technologies:
  - Combined-heat-and-power (CHP)
  - CNG and LNG in transport
  - “Power to Gas” to store energy
  - Increase market share in the power generation mix
    - Replacing old coal plants with new natural gas-fired plants could curb the GHG emissions by more than 60% per kwh generated.
  - Investment in gas transmission infrastructure can improve Security of Supply
  - Bio-methane
- Natural Gas infrastructure is again the enabler

5. Conclusions

- The flexibility provided by gas to compliment renewables needs to be recognised
- Closer integration between gas and electricity industries
- Gas industry must strive to be competitive, sustainable, innovative
- Reform of the ETS
- Contradictory National Energy Policies and Strategies to be resolved
- Gas Advocacy/promotion needs to take place
- Incentives for ALL gas stakeholders (upstream/midstream/downstream) to promote the benefits of gas
- IGU will welcome continued engagement with Regulators and Policy makers

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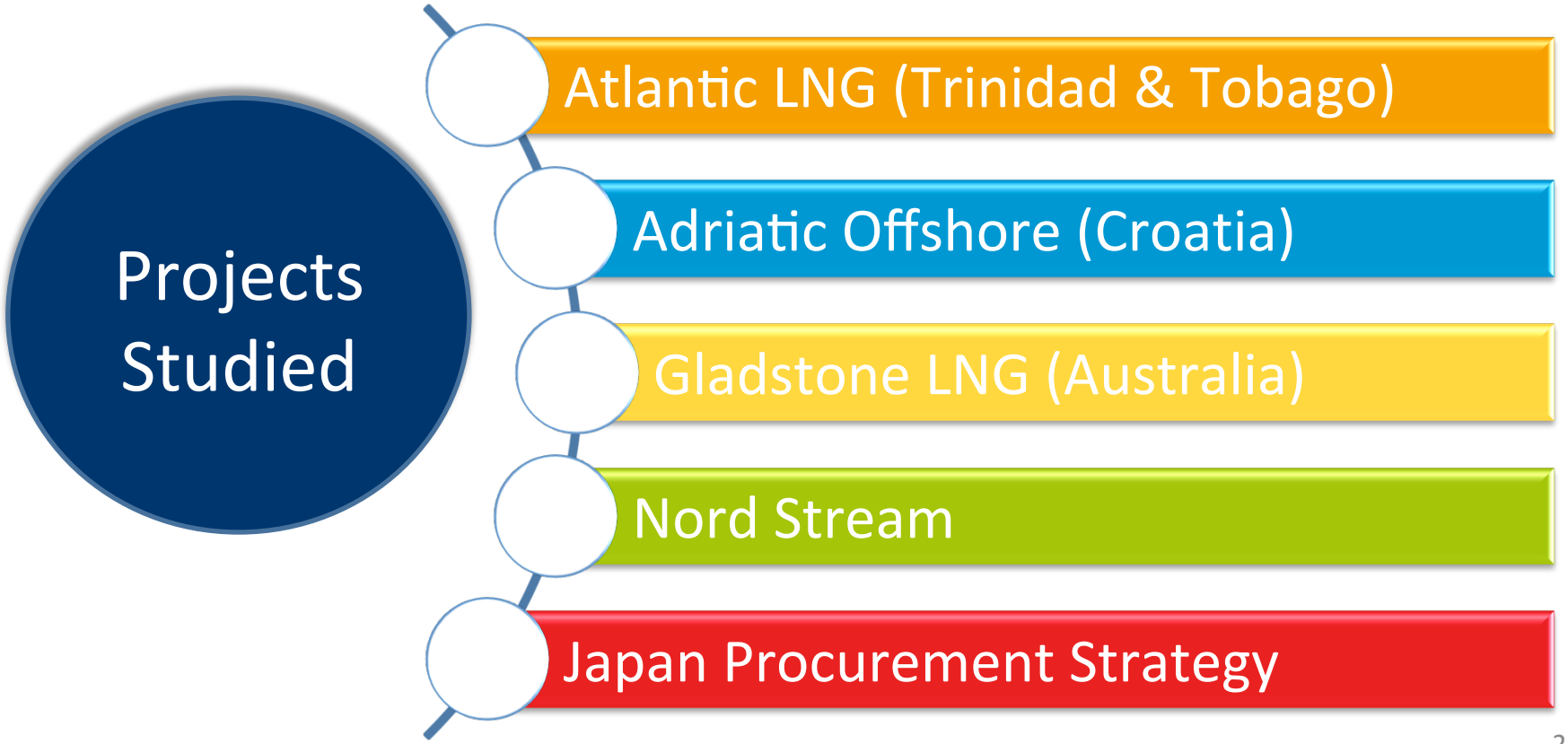
Cooperation Between IOCs & NOCs



Main Strategy Drivers for IOCs & NOCs

IOCs seek	NOCs seek
• Access to Reserves • Access to Governments • Access to closed in-country markets are only open to NOCs • A stable and attractive investment, fiscal and legal framework • Economically competitive projects and economies of scale • Avoiding resource nationalism • Risk sharing • Asset Diversification • Maximum Shareholder value	• Access to downstream markets • Access to technology • Access to skilled personnel • Access to capital &international subsidies • Improved efficiency • Quality investment in their country • Knowledge transfer, employment • Economic development in-country • Meeting & fulfilling government priorities • Sharing risk and reducing the risk level to one acceptable to the government

Source: Ledesma, DAVID., July 2009, The Changing Relationship between NOCs and IOCs in the LNG Chain (p.21), Oxford, Oxford Institute for Energy Studies

Projects – the key to success

Nord Stream

GAZPROM 51%

wintershall BASF Group 15.5%

e·on Ruhrgas 15.5%

gasunie 9 %

GDF SUEZ 9 %

"The complicated structure brought trust and stability to the project"

"There were owners from different segments of the value chain"

"Group of investors which provided additional trust"

"Group of banks that were able to provide project finance"

TRUST

Added Value

Finance

Atlantic Moving a generation ahead

Train 1:

bp 34%

REPSOL 20%

BG GROUP 26%

Cabot Oil & Gas Corporation 10%

NGCTT 10%

"Unique features both commercially and technically exceptional in the world at that time."

"A host government can, confer a competitive advantage to projects in its country."

"Consistent government support and encouragement"

"Trust amongst the partners"

Added Value

Gvt Support

TRUST

Projects - the key to success

Gladstone LNG

Santos	PETRONAS	TOTAL	KOGAS
30%	27.5%	27.5%	15%

"Partners bring unique strengths which complement each other"

"Partners have strategic goals that are not in conflict"

"Partners have a long term view of and commitment to the project"

Added Value

TRUST

Case Study of Japan

Japan's Strategic Energy Plan

Government Support to Upstream business

Gvt Support

- New LNG Projects
- Financial support to realize LNG projects in the US and Indonesia
- Dialogues with new supply sources
- Financing for LNG carrier ship building

and

- Support to technology development & research.

Key Factors for Succesful IOC/NOC partnerships

TRUST

Added Value of the IOC

- Technology
- Widening the customer base
- Local Skills & businesses

Government Support

Finance

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Why a (first) IGU survey on energy poverty ?

- The **access to energy:** a **fundamental right of human being** ! (cf United Nations **M**illennium **D**evelopment **G**oals).

☛ However, **1.5 Billion people** have presently **no access to electricity**, 2.5 Billion use biomass for cooking. The **world 2008 crises** has significantly contributed to **increase energy poverty**.

Why a (first) IGU survey on energy poverty ?

- NGOs and economists have highlighted the **link between access to energy and individual / global and sustainable economic welfare.**

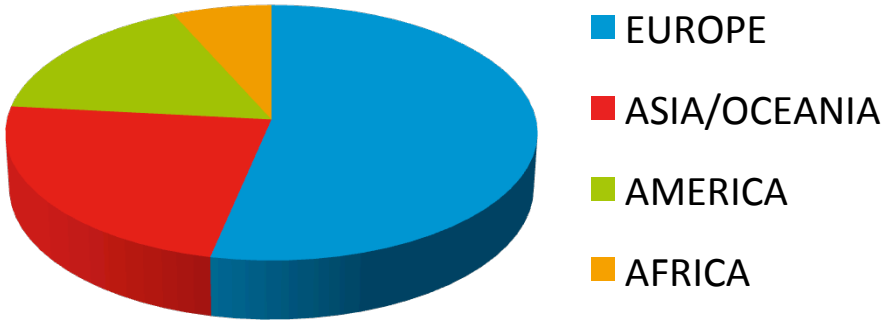
☛ Dealing with energy poverty does not only mean providing "**affordable energy prices**" for vulnerable customers, but also helping them to have **access to cleaner fuels** and **"sustainable /energy efficient" solutions**.

Objective : identify if possible appropriate practices

- By collecting information at a **country level**
- **Seven main topics raised** in this survey :
  1. Existence of measures to prevent energy poverty
  2. Type of customers concerned / definition of “vulnerable customers”
  3. Type of energies concerned by these measures.
  4. Kind of measures implemented
  5. Existence of a legal/regulatory framework versus private/voluntary initiatives
  6. Sources of financing of those measures
  7. Self assessment of the accuracy and the efficiency of those measures

Overview of countries' contribution

- **33 answers received, representing 30 different countries.**
- A majority representation from **European countries : 16**
- **Asia /Oceania : 7 countries.**
- **America : 5 countries.**
- **North Africa : 2 countries.**



Main elements of conclusion

- Energy poverty is a **growing concern** shared by a majority of countries participant to this survey
- ... However, the type of measures, the appreciation of their efficiency are linked to the economic situation of the country, to its "culture" → **one size don't fit all**
- Beyond the question of energy price, **preventive measures, access to energy efficient solutions** are a priority target, to be adapted to the specificity of each country

Next steps (1)

With hindsight, this survey could be considered as a draft starting point for a better focused survey for the next triennium ; **main improvements** could result in :

- A better formulation of some questions to avoid misunderstanding
- A focus of the survey on **other parts of the world than Europe** given the number of reports on European situation
- A specific approach for producing countries (price policy)

Next steps (2)

- A focus on **residential vulnerable customers** needs, with both curative and preventive (energy efficiency) dimensions
- The necessity of a **dynamic analysis** : growing concern about energy poverty, feedback about the measures in place, budget difficulties of some countries … imply evolutions in policy, sometimes stop and go policy → **Don't stay on a static point of view**

Thank you for your attention !