



25th world gas conference  
"Gas: Sustaining Future Global Growth"

# WOC4 SG2 Smart gas metering systems

Report Presentation

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Natural Gas Distribution - Eandis

Date: 6<sup>th</sup> june

Venue: Level 3 – Room 302/3



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# Smart gas metering systems




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## [Smart meters explained](#)

Heard about **smart** meters but not sure how they work? uSwitch explains everything you always wanted to know about a **smart meter** but were afraid to ask.  
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## [How we install your smart meter | First Utility](#)

Where the **gas** meter is mounted in an outside ground meter box. Our **smart metering system** requires a dry installation above ground. We can normally modify ...  
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## [Home - Smart Metering Systems](#)

**Smart Metering** Group UK ... Management of new **gas** connections and **meter** services. read more ... The key to the future efficiency of the UK's energy **system**.  
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## [Eurogas Distribution Committee Report on Smart Gas Metering](#)

**metering systems**. The text of the Directive states that the implementation of **smart gas** meters may be sub- ject to an economic assessment of all the long-term ...  
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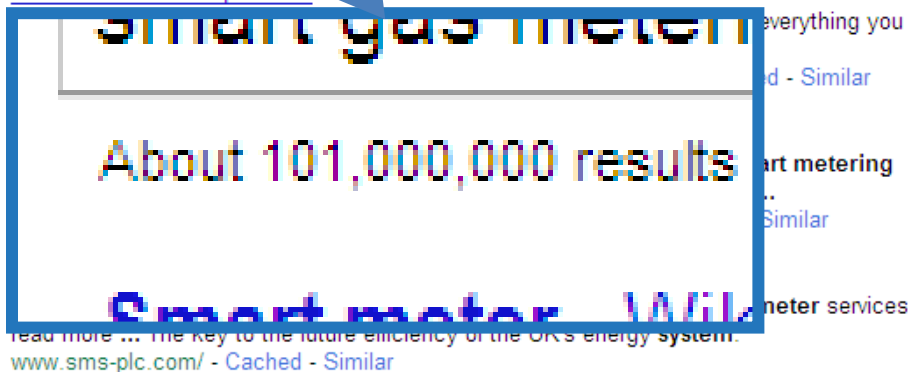
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**metering systems**. The text of the Directive states that the implementation of **smart gas** meters may be sub- ject to an economic assessment of all the long-term ...  
www.eurogas.org/.../Smart%20Metering%20Report%20Eurogas\_Final.pdf - Cached -

# Smart gas metering systems

- Report presentation

Kim  
Vrancken



- Introducing (gas) smart meters in Europe: the challenge of standards

Daniel Hec



- Approach for the implementation of AMR system for gas meters in France – GrDF project

Isabelle  
Drochon



# Smart gas metering systems

- Developing advanced metering (the ubiquitous metering system)

Yasuhiro  
Fujii



Kenichiro  
Yuasa



- The policies for the large-scale deployment of smart gas meters in some European countries - Italy

Stefano  
Cagnoli



**Oral Q&A after each presentation**

- **Introduction**
- **Data analysis**
- **Conclusion**

- **Introduction**
- **Data analysis**
- **Conclusion**

### **Smart gas metering systems – get more than gas!**

**Review the various technologies available and Identify the best practices in smart gas metering activities.**

#### **Special focus will be on:**

- What role the gas meter plays today in a gas distribution company
- What role can a smart gas metering system play tomorrow in a gas distribution company
- Smart gas metering technologies
- What kind of costs and benefits does a gas distribution company includes in their cost benefit analysis.

→ questionnaire



## Scope

**This study covers only meters up to and including G6 (Qmax 10m<sup>3</sup>/h)**

## Definition

**Any smart gas metering system should be based on:**

- Remote communication of metering information;
- Helping the end user to manage its gas consumption by providing better quality information;
- Facilitating the end users to switch energy suppliers;
- Offering the right balance between cost and additional functionalities
- Offering functionalities through communication.

## 2010 survey

Smart metering is evolving rapidly – this report is a result of a questionnaire carried out in 2010

## Point of view

### Smart metering involves a number of stakeholders

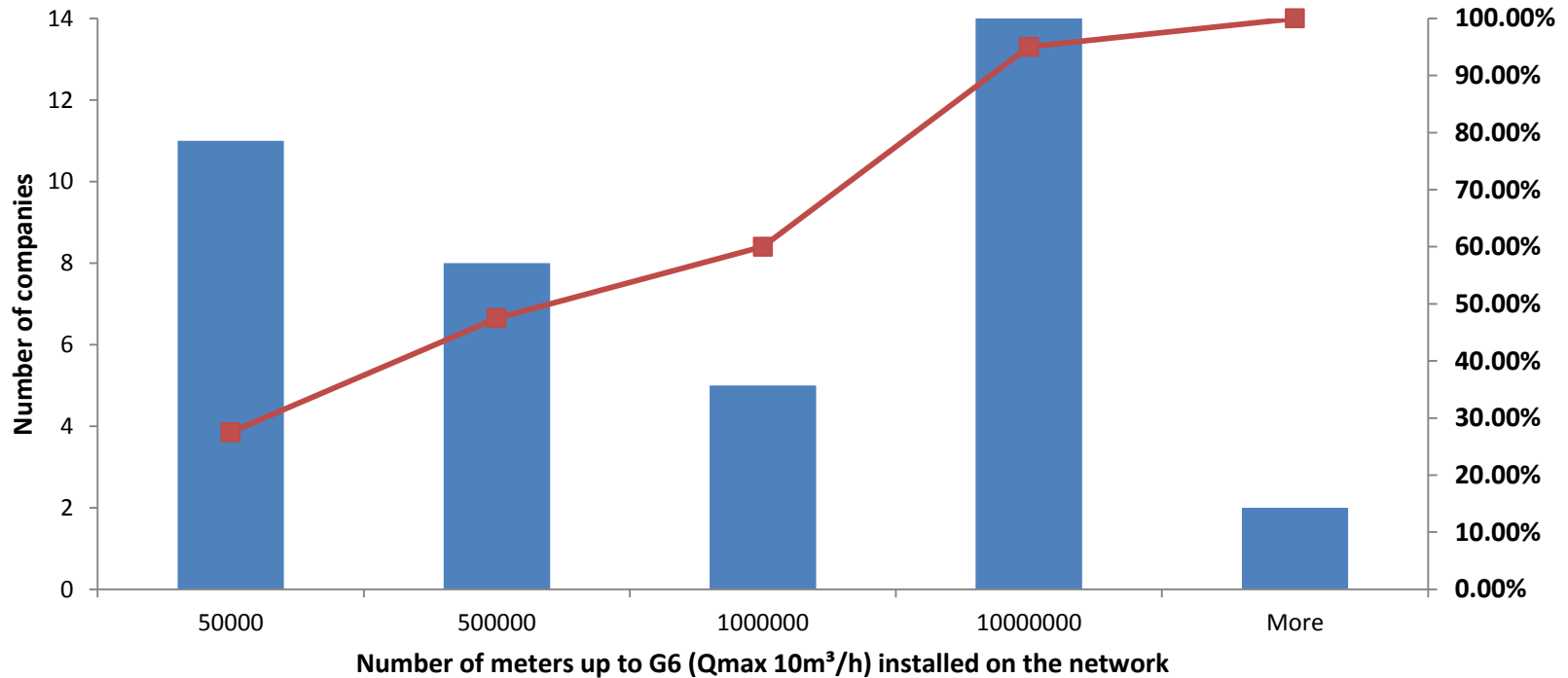
- Distribution network (and meter) operators,
- Energy suppliers,
- Metering industry,
- Energy regulators,
- Government,
- Consumers.

Results are representing only the point of view of gas distribution network operators.

- **Introduction**
- **Data analysis**
- **Conclusion**

# Data analysis – General

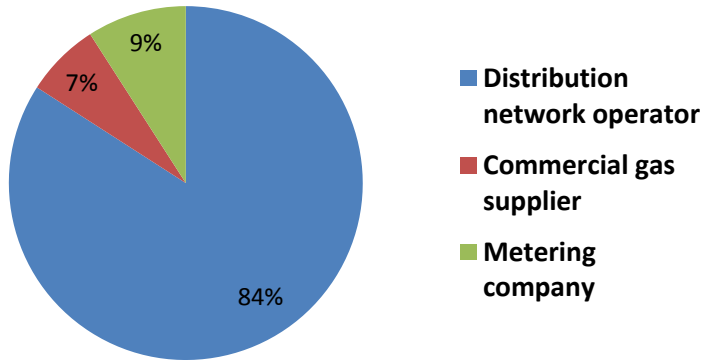
Number of meters up to G6 (Qmax 10m<sup>3</sup>/h) installed on the network



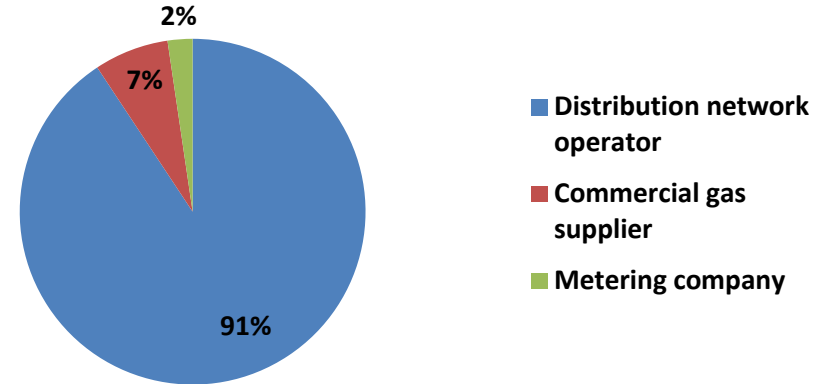
- 50% less than 500.000 meters installed
- About 40% between 1 and 10 million meters installed

# Data analysis – General

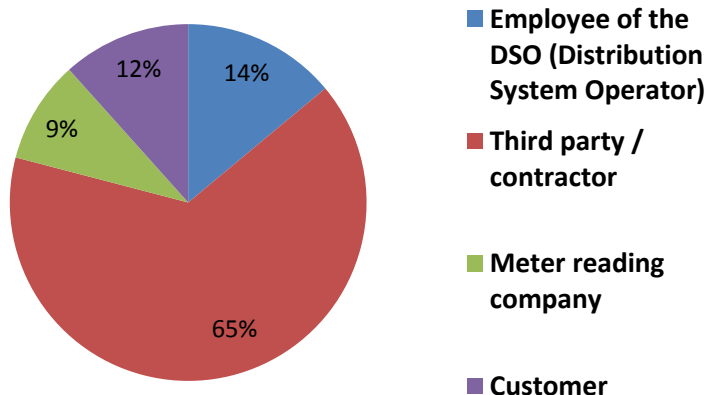
## Meter owners



## Responsible for the meter reading

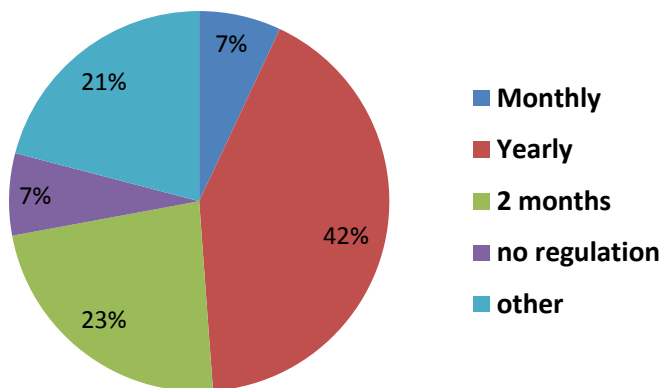


## Physical meter reading



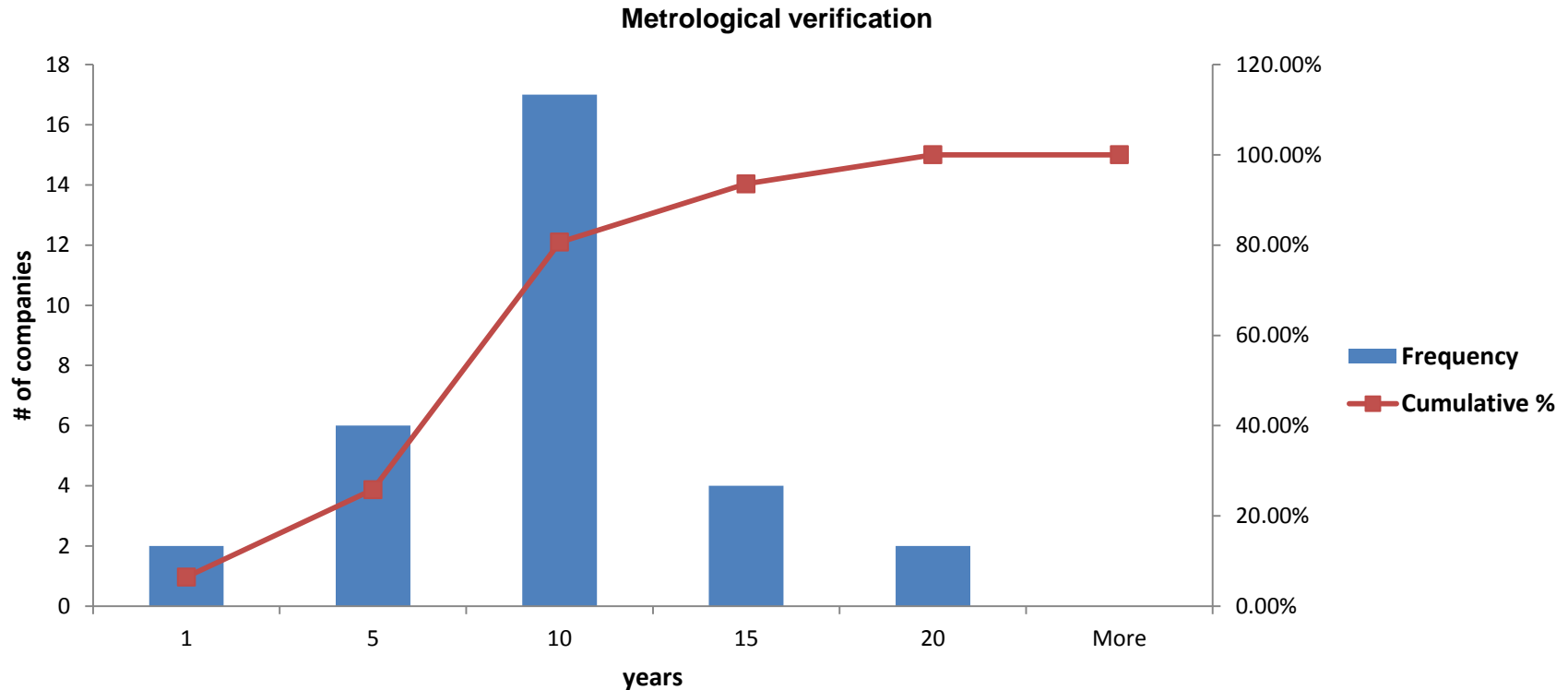
- The difference between the graphs shows that the party who owns the meter is not always responsible for the reading.
- In 65% of the cases the physical meter reading is done by a third party or a contractor

## Mandatory frequency meter reading



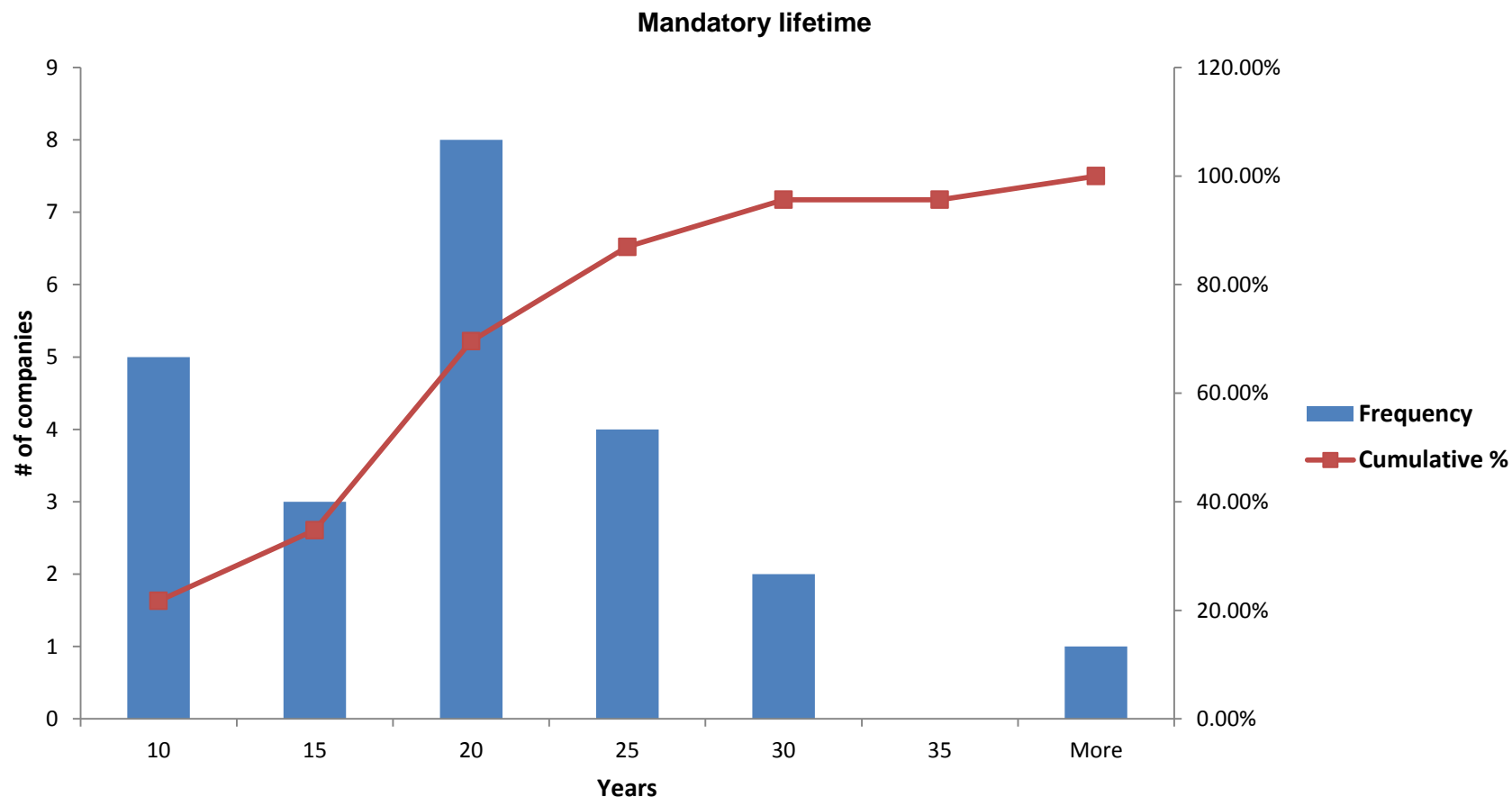
- In most companies: mandatory meter reading = yearly
- In a significant amount of companies: mandatory meter reading = monthly / every 2 months
- In Japan: no specific regulation on this topic, but meter reading = monthly.

# Data analysis – General



- 4 companies responded that there is no obligation to verify the metrological properties of the meter.
- Most of the respondents carry out a metrological verification every 10 years.
- In some cases, metrological verification is done by sampling

# Data analysis – General

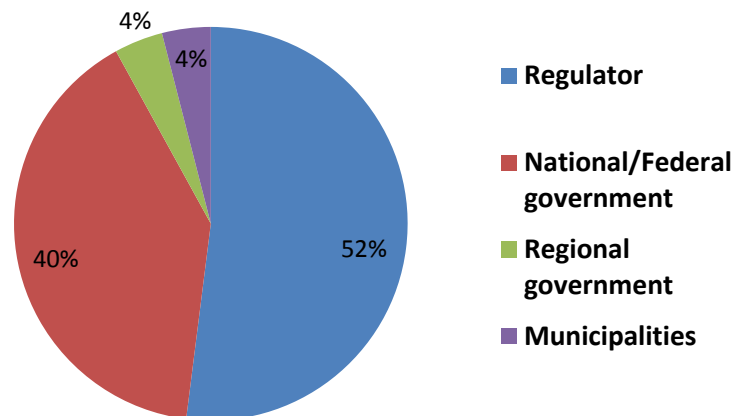


40% of the companies confirm that their meters have a mandatory maximum lifetime. The mandatory lifetime is spread between 10 and 30 years.

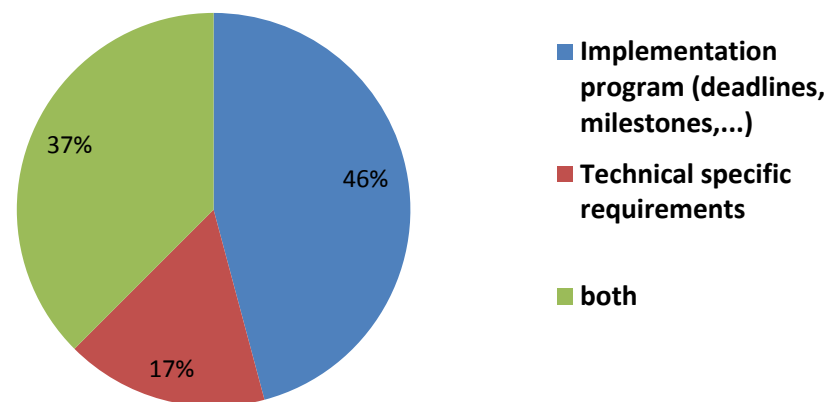


# Data analysis – Regulation

Who establishes the requirements

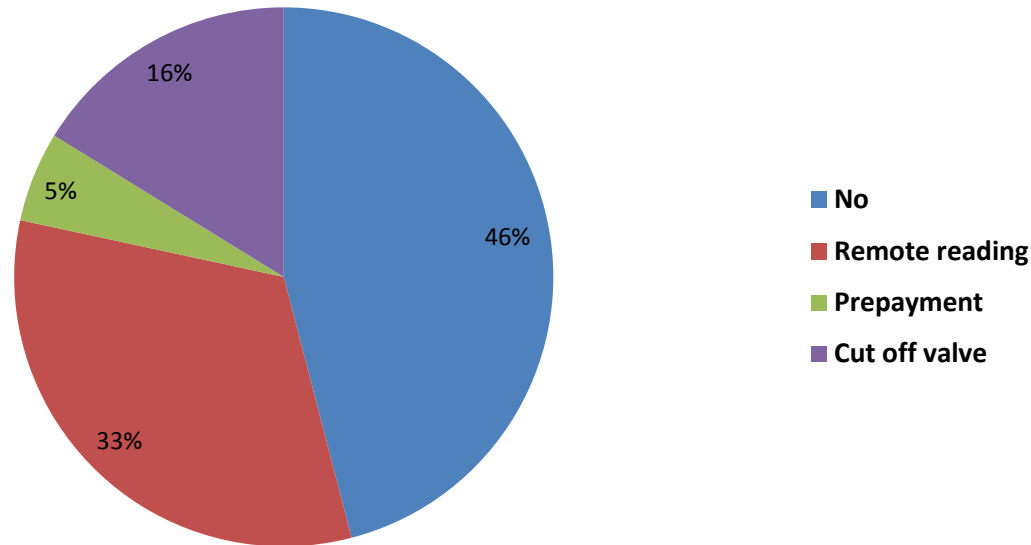


Considered requirements



In 90% of the cases the regulator and the government establishes the requirements of a smart gas metering system.

## Additional functions imposed by regulator, government,...

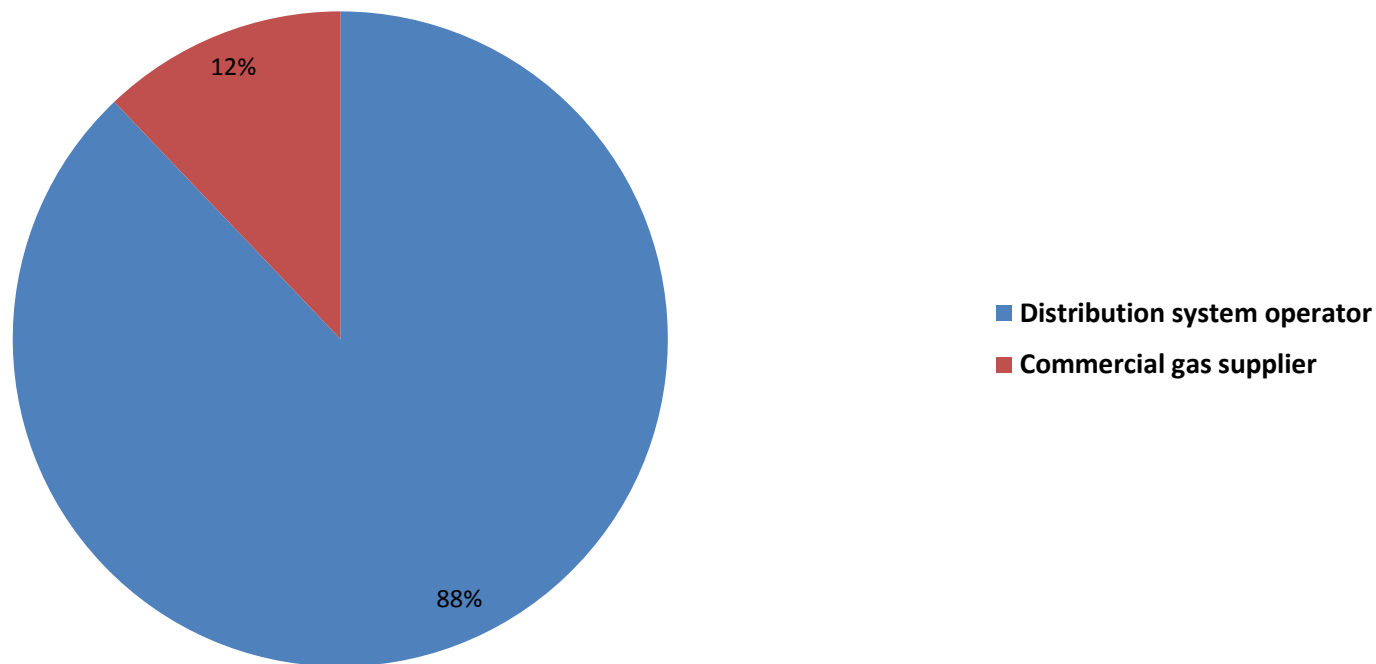


- In almost 50% of cases the regulator or government does not impose specific additional functions.
- Remote reading followed by the integration of a cut-off valve ranks as the highest priority
- The integration of a prepayment function is clearly not popular yet.

### **The specific regulatory situation in Europe (by the end of 2011)**

**The Energy Services Directive (2006/32/EC) + the Electricity and Gas Market directives (2009/72/EC and 2009/73/EC) adopted in 2009 are the framework for smart metering systems implementation in Europe.**

## Who is/will be responsible for the implementation of a current or future smart gas metering project

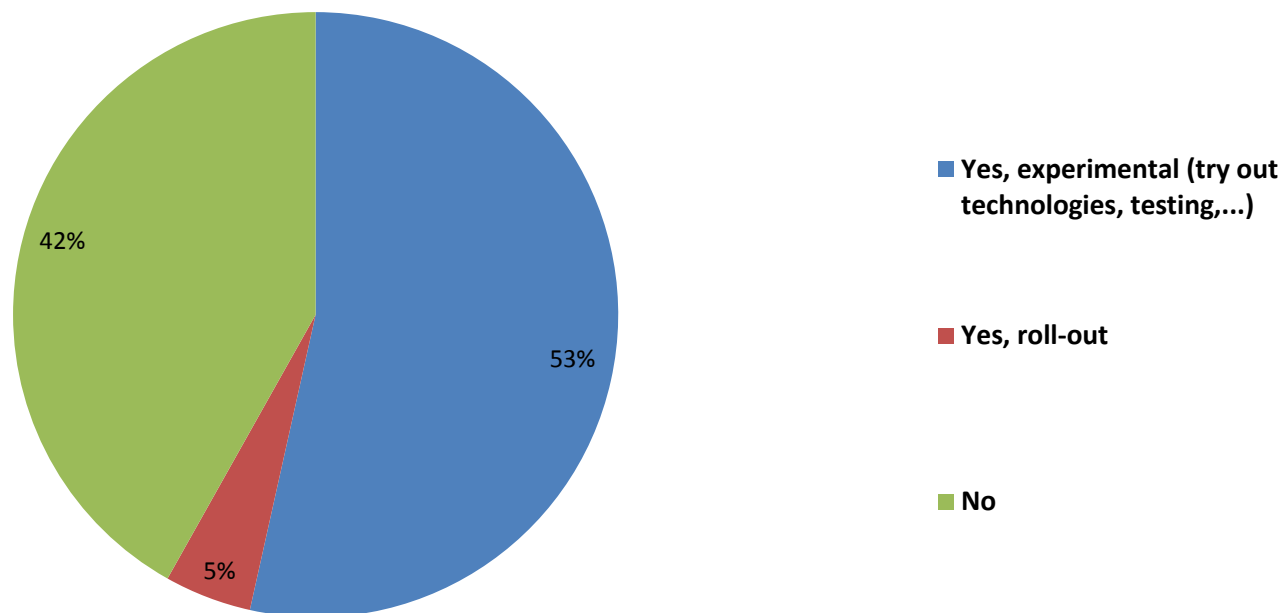


In 90 % of the cases the distribution system operator is/will be responsible for the implementation of a current or future smart gas metering project.

# Data analysis – Smart meter



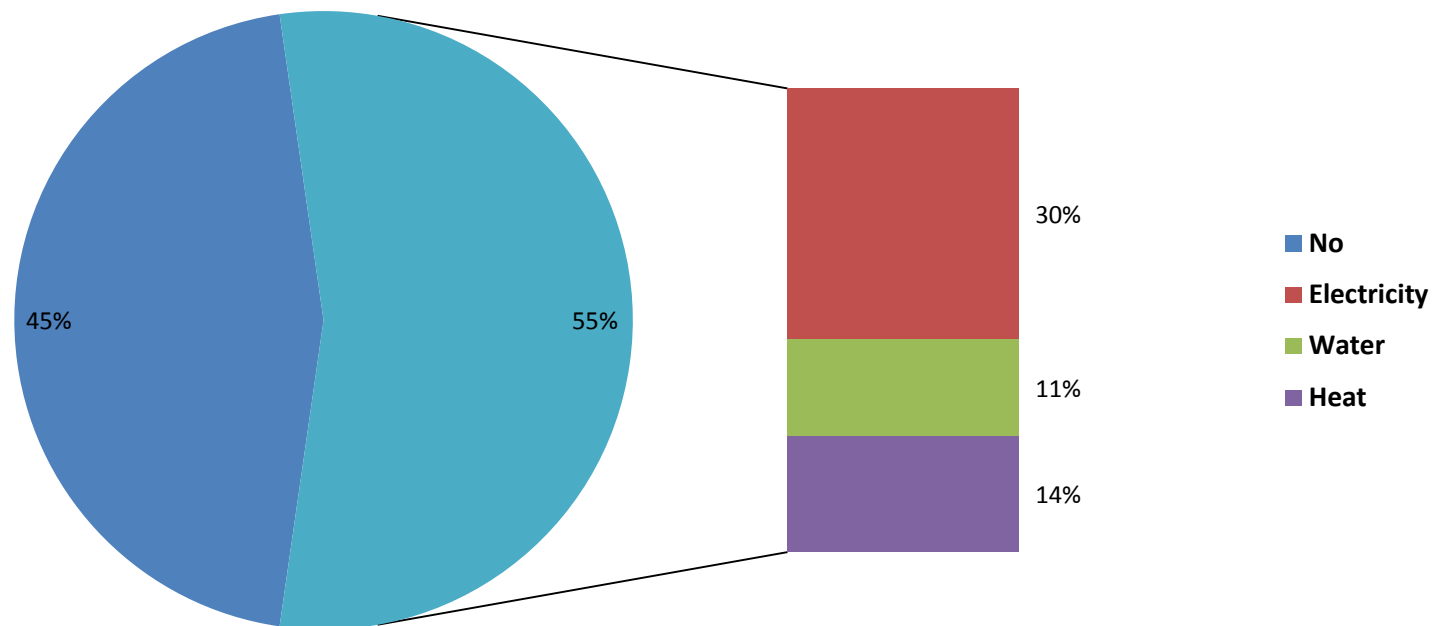
## Do you have a smart gas metering project and status



- Almost none of the companies have a rolled out current smart metering project, except in Japan (10% of the customers are equipped with a gas smart metering system.)
- 50 % of the companies are currently undertaking a test / pilot phase

# Data analysis – Smart meter

## Multi utility

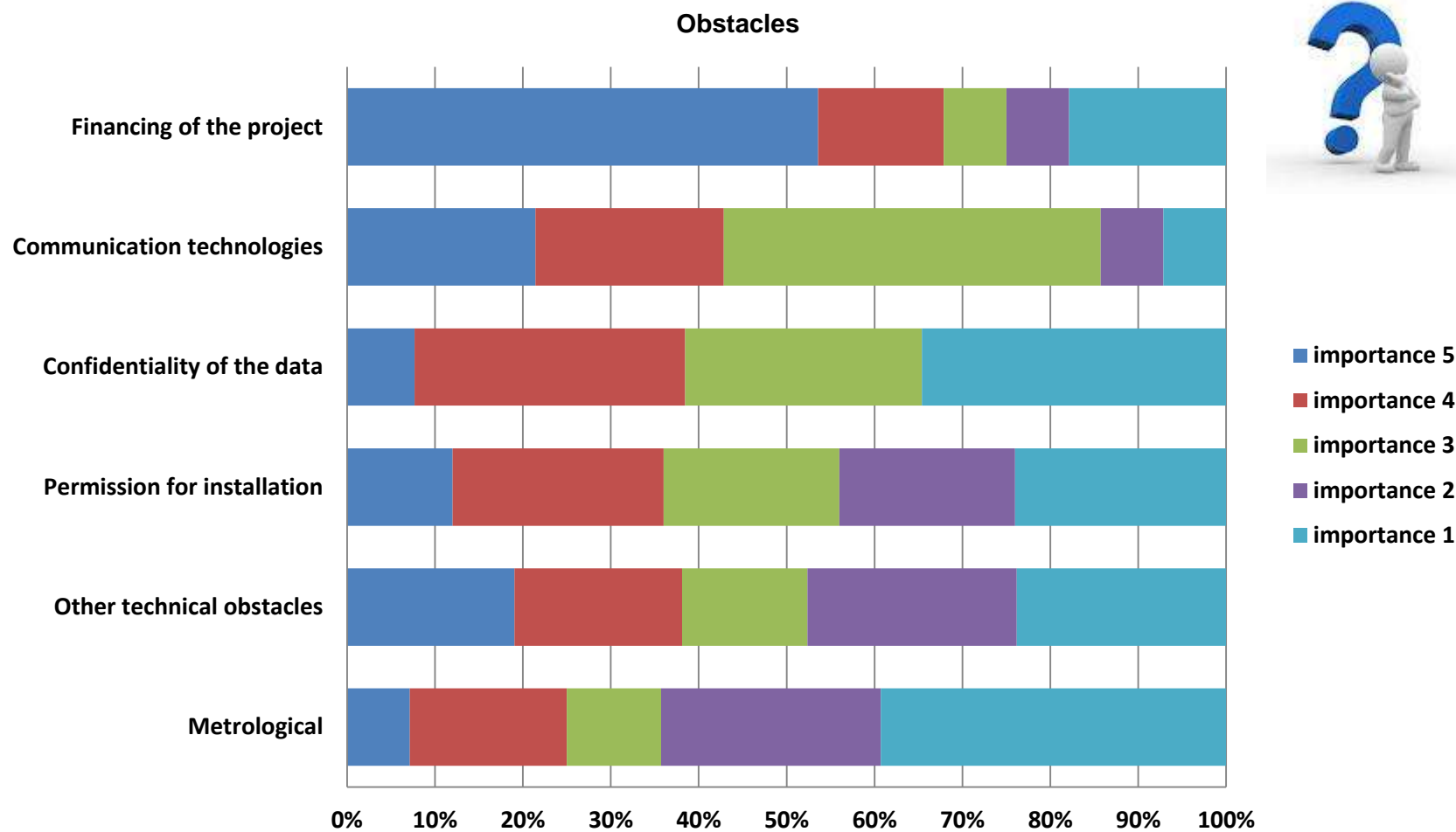


- 55 % of the (mostly multi utility) companies consider not only gas for project, but also electricity, water or heat.
- Electricity is most included in the project

### Considered “additional functions” by the organizations

- Remote reading of metrological register(s) + provision to send to designated market organisation(s);
- Two-way communication between the metering system and designated market organization(s);
- To support advanced tariff and payment systems;
- To allow remote disablement and enablement of supply;
- Communicate with individual devices within the home / building;
- To provide information via web portal/gateway to an in-home/building display or auxiliary equipment.

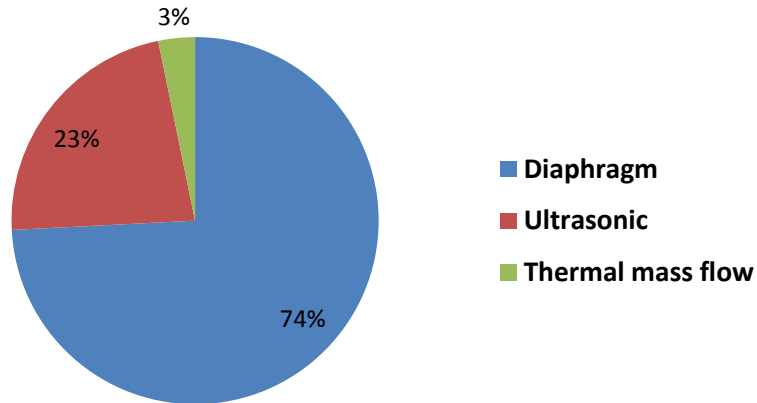
## Possible obstacles to implement a smart gas metering system



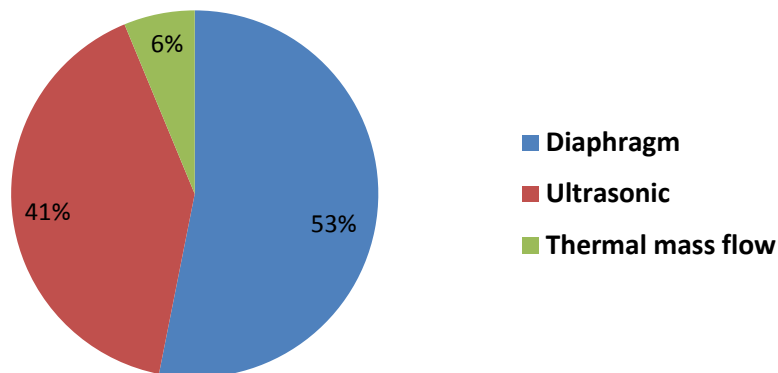


# Data analysis – Smart meter

**Meter technology - projects in progress**

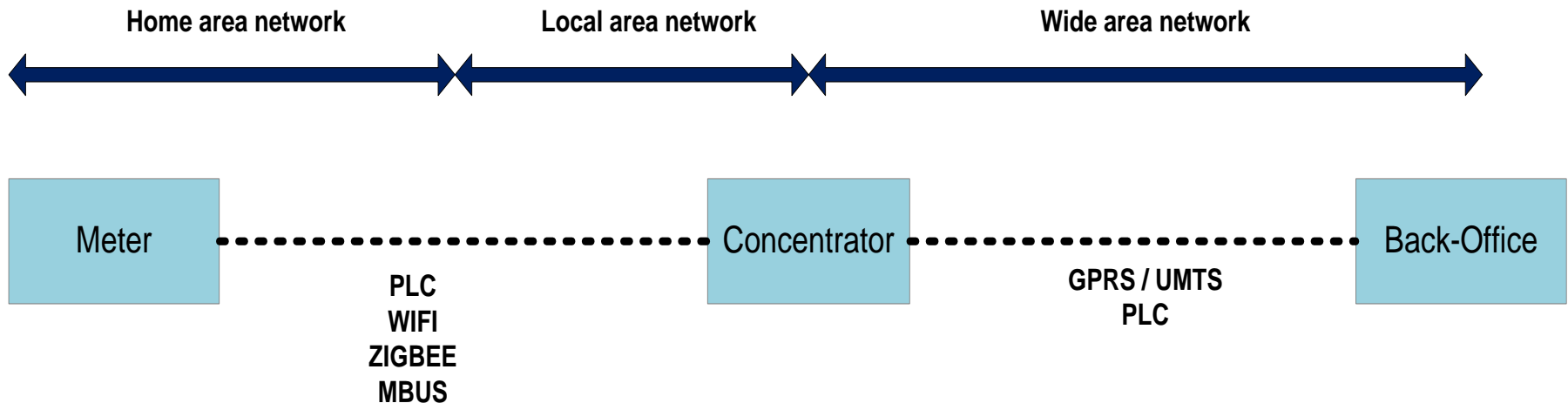


**Meter technology - future projects**

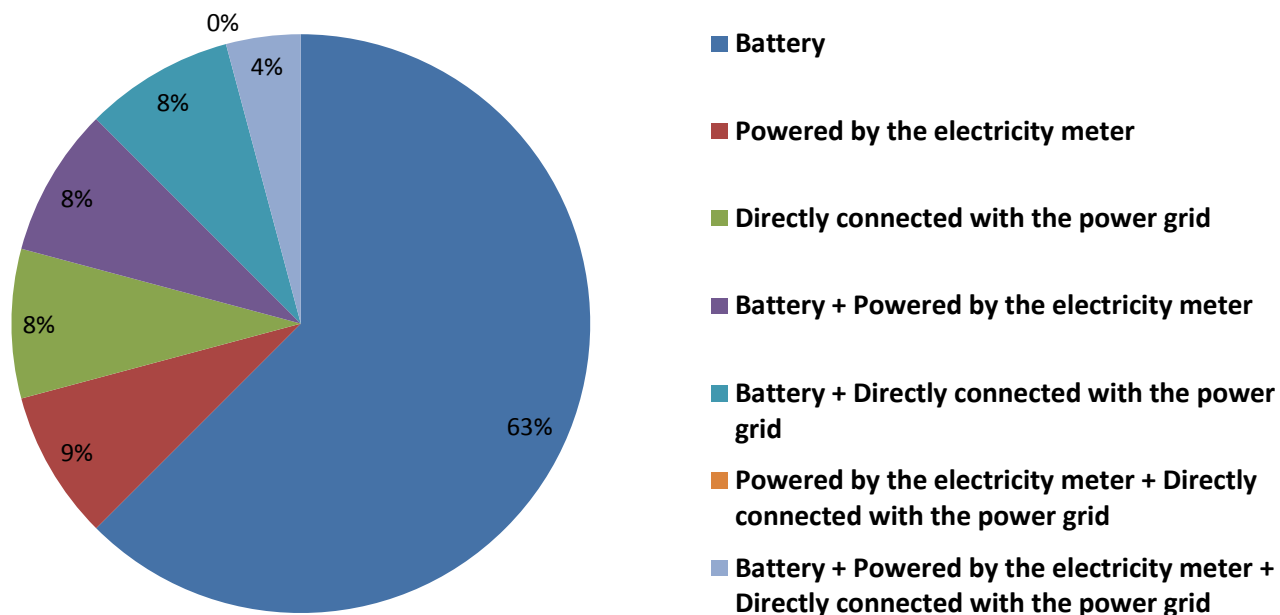


- The classical diaphragm meter is still very popular. Reasons:
  - reliability
  - low cost
  - proven technology
- The ultrasonic meter is an alternative to the diaphragm meter. Reasons:
  - reliability will improve
  - mass production will lower cost
  - technology will be more mature

## Communication technologies suitable for smart gas metering systems



Power supply

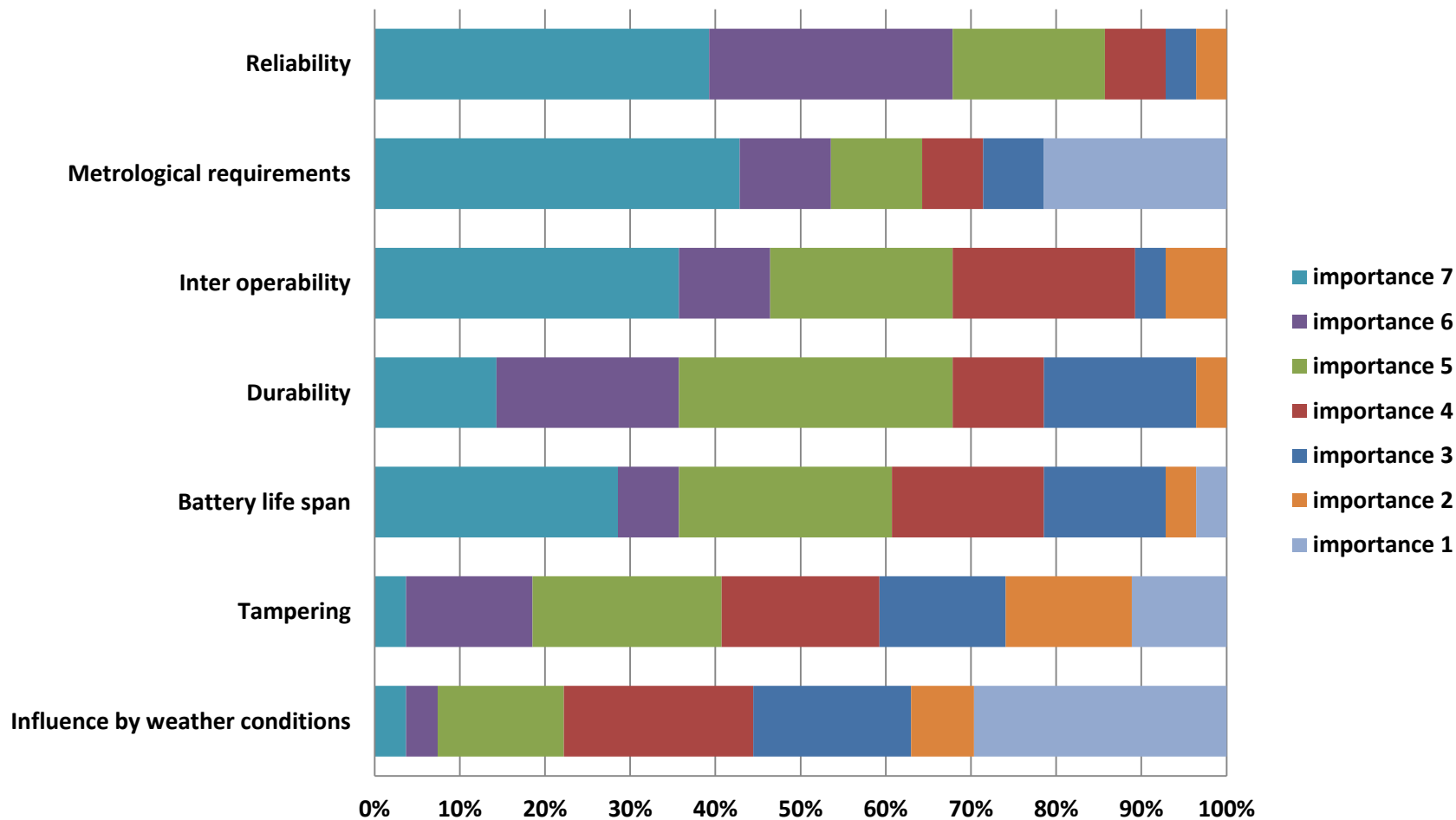


Most companies foresee a battery-powered smart gas meter . This has important implications for:

- all communication related aspects
- the location and installation of the meter

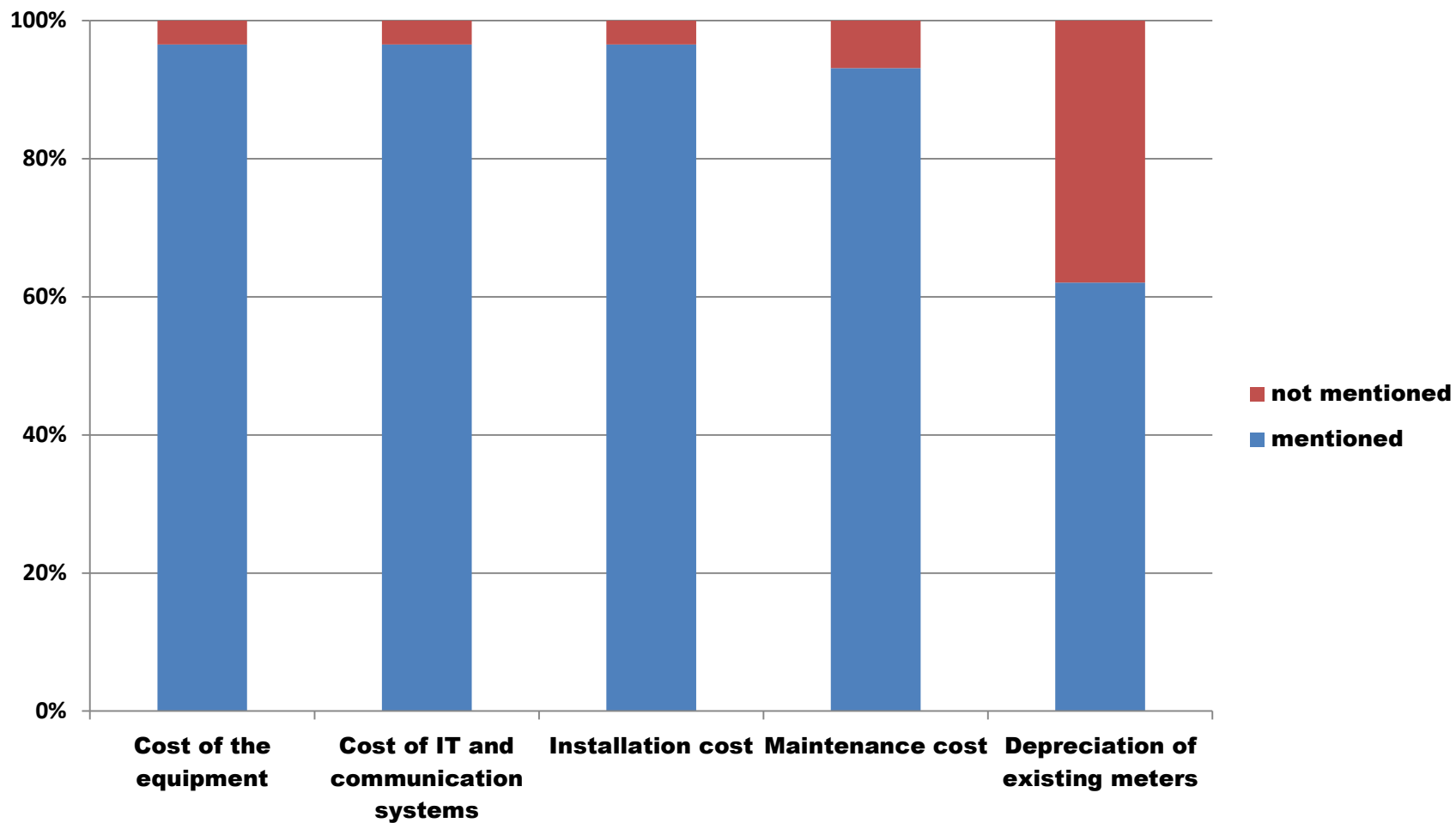
# Data analysis – Smart meter

## Technical issues



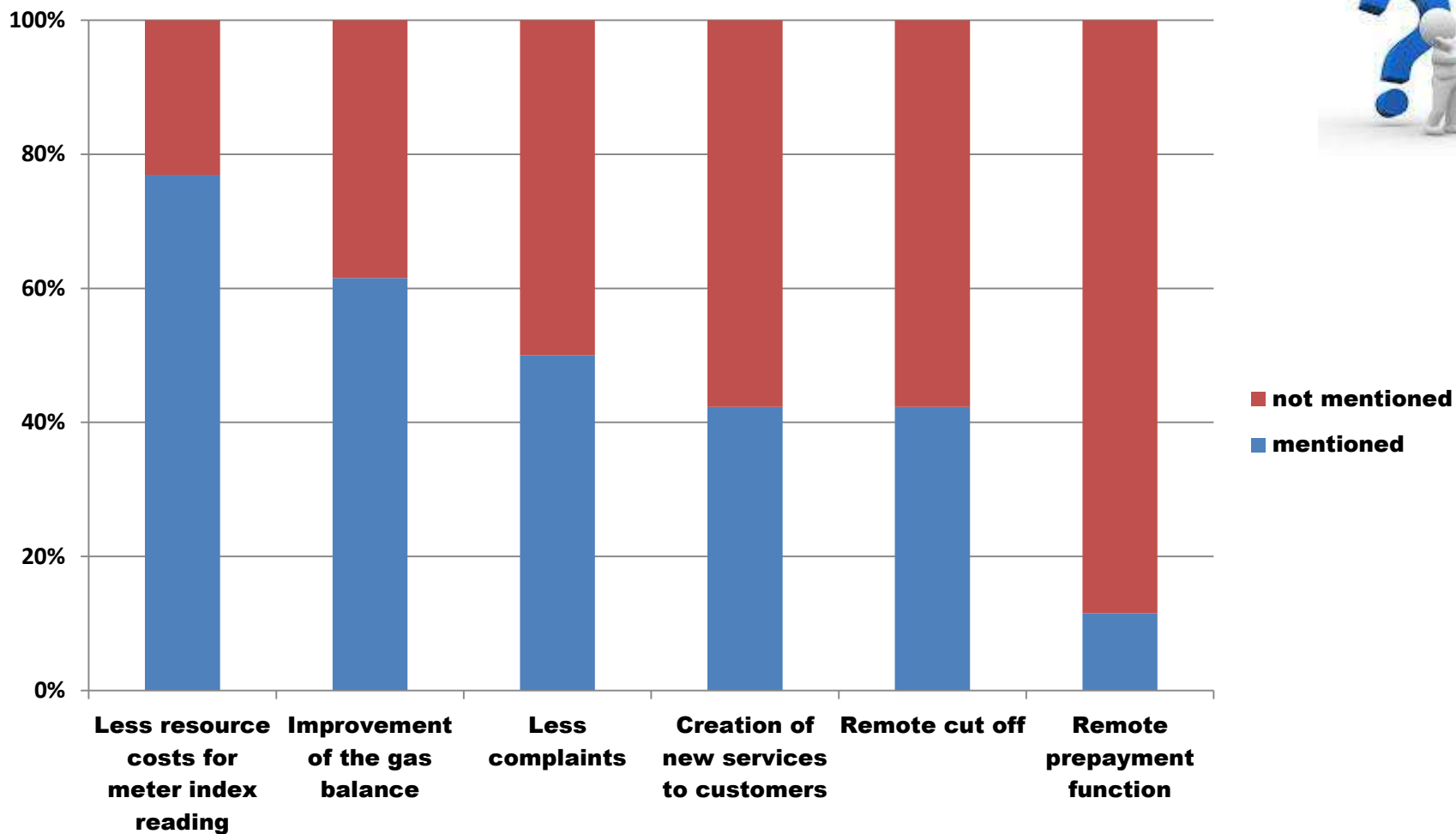
# Data analysis – Cost / Benefit

Costs



# Data analysis – Cost / Benefit

## Benefits



## Data analysis – Possible developments

- **Temperature compensation;**
- **Gas leakage detection;**
- **Pressure drop detection, over pressure protection;**
- **Protection in case of earthquakes;**
- **Tampering;**
- **Smart metering may be a part of a smart grid.**

- **Introduction**
- **Data analysis**
- **Conclusion**



# Conclusion

Legal framework is developing & standardization in progress

Majority of the distribution network operators will be responsible for the implementation. 50% are undertaking pilot test projects

Financing a smart gas metering project is the most critical issue → high quality cost/benefit analysis is crucial in decision making

A list of additional functions is considered. Every distribution network operator has to evaluate which additional functions are important

Ultrasonic meters could be an alternative for the classical diaphragm meter

Reliability is indicated as the most important technical issue to be considered