SG 4.3 Working Group

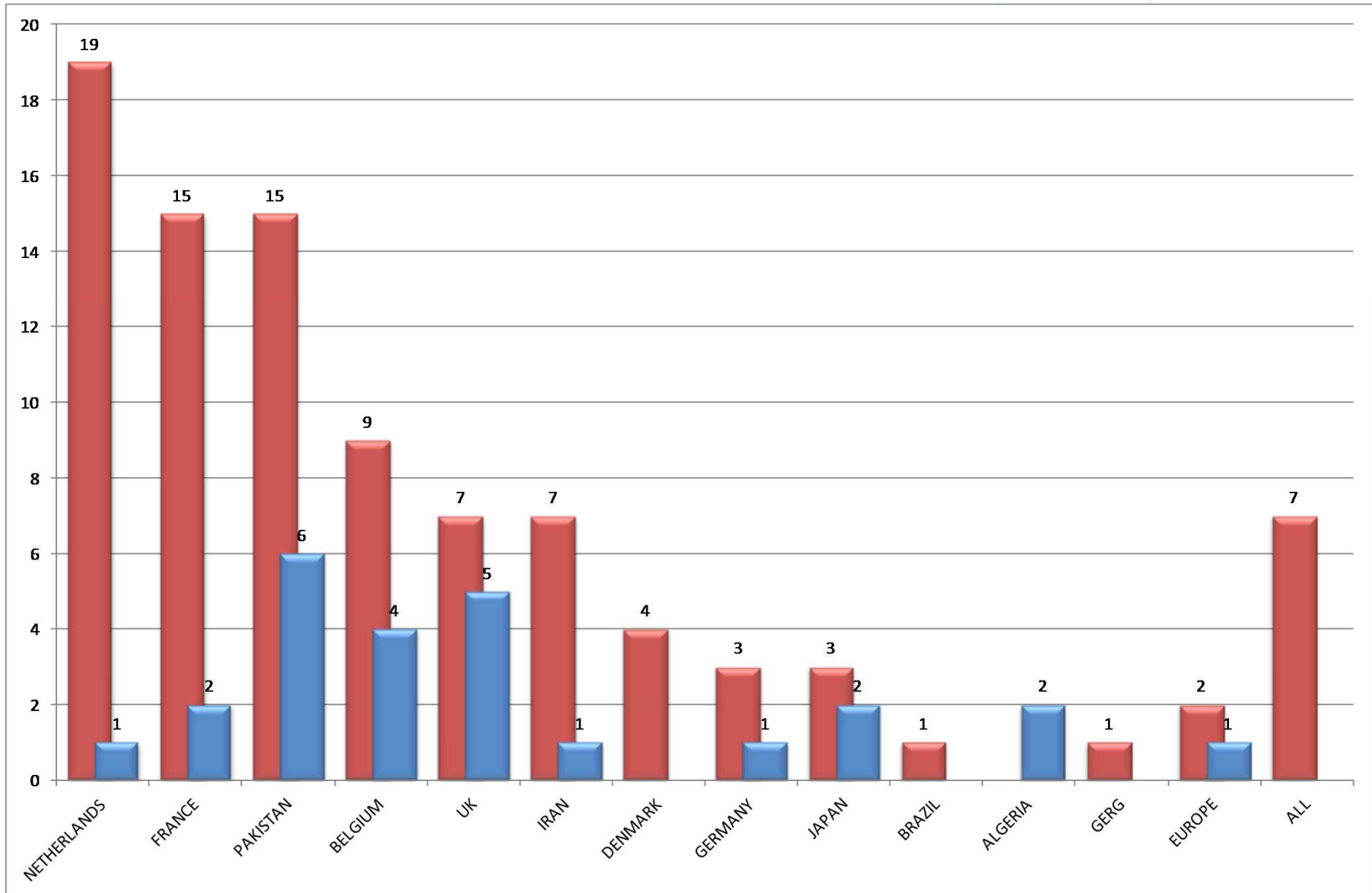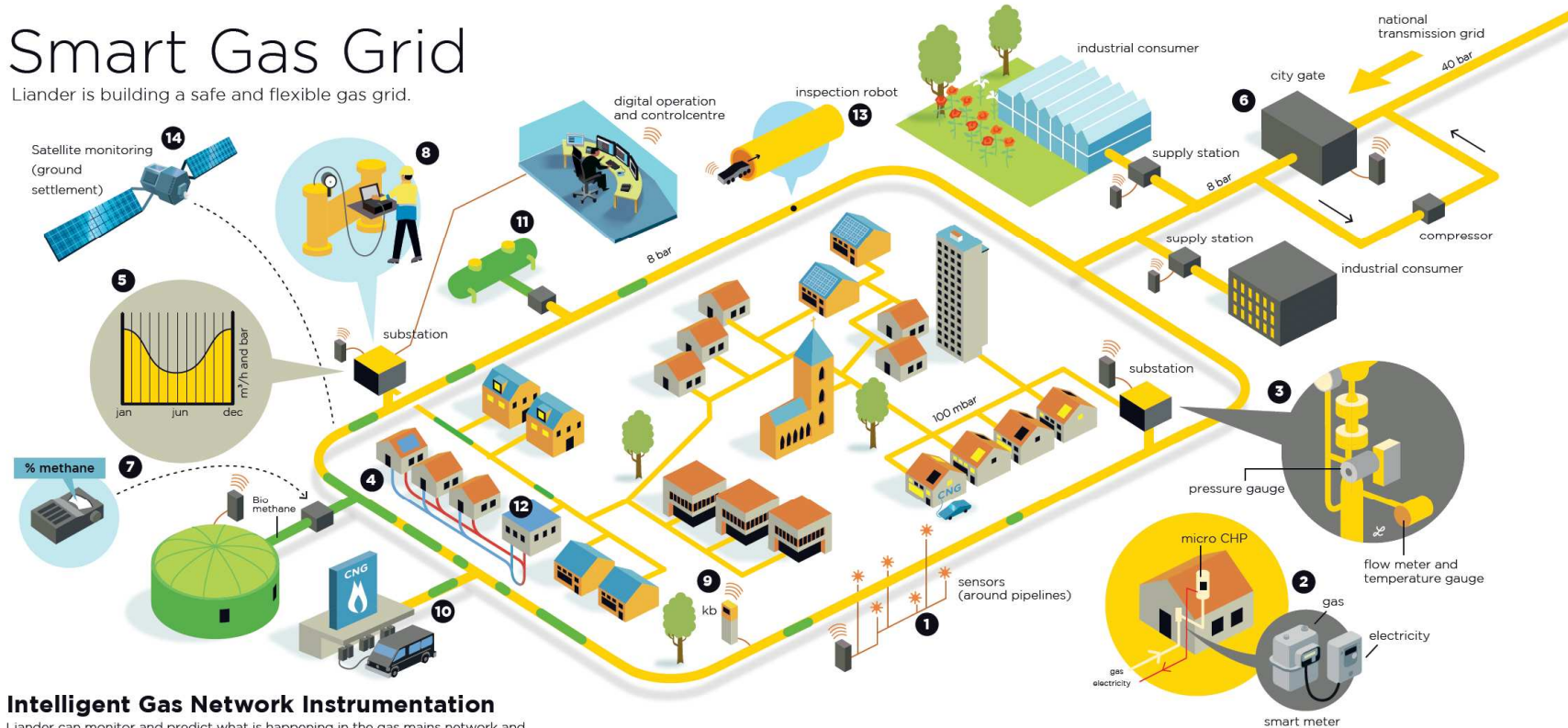## Smart   Gas   Grids

Our working group….

WOC 4.3 survey - 93 Questions and 25 projects shared

Definition of a Smart Grids

Smart Gas Grid
Liander is building a safe and flexible gas grid.

Intelligent Gas Network Instrumentation
Liander can monitor and predict what is happening in the gas mains network and intervene in timegrid using remote measuring and control equipment.

1 Gas Grid Monitoring
Sensors measure ground vibrations, traffic loads, ground settlement, gas leakages, etc, around gas mains 24/7.

2 Smart Metering
Gas meters record gas consumption profile and make this data available in digital format.

3 Measurements in stations
Remote monitoring of gas inlet and outlet pressures, volumes and temperatures.

4 Gas Diffusion
Sensors and computer models measure and predict gas flow diffusion and mixing.

5 Dynamic Pressure Management
Varging the gas pressure depending on demand and supply.

6 City Gate
Real-time GTS (Gasunie) data for gas outlet pressures, volumes, temperatures and quality.

7 Monitoring Gas Quality
The quality of bio methane added to the grid is monitored 24/7.

8 Station Diagnostics
Periodical diagnostics are run to ensure control systems are working properly.

9 Cathodic Protection
Remote diagnostics and monitoring of the polymer coating around steel pipelines.

10 Gas for mobility
Filling stations for gas used as vehicle fuel on the road and on the water.

11 Local Storage
Storage of overcapicity of bio methane.

12 Energyhub in residential area
CHP analog gas driven heat pump for district heating and electricity.

13 Inspection Robots
Internal pipeline inspection.

14 Satellite Monitoring
Monitoring ground settlement at a street and neighbourhood level.

Objectives of the report

- Help DNO managers to build a road map for the network of the future

- Give arguments to face and convince public authorities about the design of future gas networks

- Show that gas can be as smart as electricity and can be in sinergy with the other energies

- Smart is not the target- the target is to identify the best ways for the network of the future

- Highlight some cases where smart gas grids are useful and efficient

REPORT : draft summary

1 Introduction: Why a sub Group on SGG? - (1 page)

2 Definition of smart Gas grids - Daniel HEC (1 page)
Connexion with smart metering, with eletricity smart grids etc…
3 Main challenges (5 pages + 10 pages of technological blocks)
- accept new gases
- improve the performance of the DNO for safety, maintenance, reactivity (remote monitoring and surveillance, maintenance and operation memory, customer information, energy balancing,…)
a) Remote monitoring : safety & continuity of supply b) customer information c) information management
- bring a support to other energy systems for a more efficient and less expensive energy, local energy storage
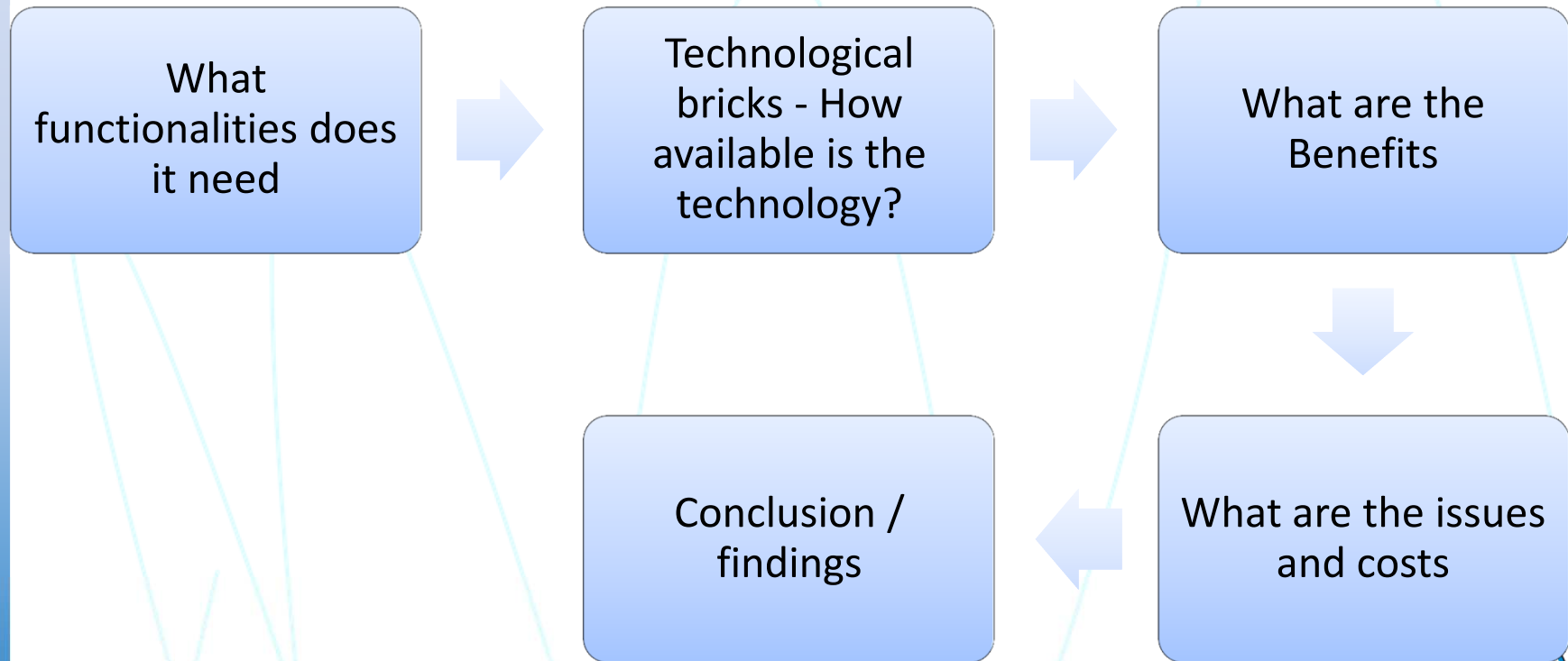
For each challenge see description next slide – EACH COUNTRY CONTRIBUTES

4 Feed back – case studies – case for green and efficient networks (10 pages)
5 Summary matrix (2 pages)
5 Perspectives and keys for success (2 pages)

Content of Report for each major challenge…

What functionalities does it need → Technological bricks - How available is the technology? → What are the Benefits → What are the issues and costs → Conclusion / findings

Priorities – text, schemes, tables

1. **Biogas** – NL

2. **P2G** – FR

3. **Innovative maintenance** – USA (methane sensors, drones, leakage detection), NL (robots, satellites), FR (nanotechnologies), NL (underground / temporary sensors)

4. **Information management** – JP (remote monitoring / control of the gas grid) – IGU (data management) – UK? (information management system – deliver information, process strategy and exploit information/value creation) – CR (remote monitoring, info management, conditional maintenance)

5. **Hardware** (devies to retrieve information and react upon sollicitation) – UK, Denmark

6. **NGV –** Pakistan, Algeria

7. **Storage –** gas storage in MP grids (NL)

8. **MicroCogé, Fuel Cells** - JP

9. **Smart metering –** European Commission CBA report / Marcogaz – balancing application ? – small developments to mention (smart appliances, smart metering data applications, gas quality / pressure sensors / value added services for end-user)

Contribution to WGC 2015 Conference

- SG4.3 meeting : Smart Gas Grids for substainable energy systems

- Proposal for Expert Forum (in relation with SG 4.2)

  Case studies and features of smart gas grids

SG4.3 deals with economy and strategy about SGG

EF is focusing on technical solutions, experimental feedback and best practises

Thank you for your attention!