



International Gas Union

---

Growing together towards a friendly planet



## International Gas Union

### Working Committee 4 – Distribution

#### Fourth Meeting

4<sup>th</sup> – 7<sup>th</sup> March 2014

Madrid, Spain

#### Minutes of Meeting

## List of Participants

1. Spohn, Dietmar – Germany WOC 4 Chairman
2. Almacellas Gonzalez, Jose Maria – Spain WOC 4 Vice Chairman
3. Klaas, Uwe – Germany WOC 4 Secretary
  
4. Broisler Oliver, Jose Carlos – Brazil Leader SG 4.1
5. Flosbach, Peter – Germany Leader SG 4.2
6. Vercamer, Pascal – France Leader SG 4.3
  
7. Somers, Rory – Ireland Vice Leader SG 4.2
  
8. Asada, Akiharu – Japan
9. Biederman, Nicholas – United States
10. Cagala, Libor – Czech Republic
11. Chaczykowski, Maciej – Poland
12. Chaintreuil, Benoit – France
13. Demec, Peter – Slovakia
14. Drozdowski, Roch – France
15. Hakkoum, Mohamed – Algeria
16. Hassanine, Ahmedzine – Algeria
17. Hiranuma, Makoto – Japan
18. Jensen, Flemming – Denmark
19. Liens, Georges – IGU-CC
20. Kopina, Tatiana – Russia
21. Pachernegg, Manfred – Austria
22. Piazza Junior, Walter Fernando – Brazil
23. Schicketmüller, Christian – Austria
24. Sousa, Gabriel – Portugal
25. Suphadul, Torpong – Thailand
26. Takahashi, Tohru – Japan
27. Thauvin, Catherine – France
28. Toriumi, Ryoichi – Japan
29. Tverskoy, Igor – Russia
30. Verbeek, Peter – The Netherlands
31. Vranken, Kim – Belgium
32. Wehnert, Paul – United States
33. Wicquart, Emmanuelle – France (IGO NOC)

### Part-time participants:

34. Hernandez, Jesus – Spain
35. Ortiz de Mendibil, Naiara – Spain
36. Serrano, Carlos – Spain
37. Villalonga, Carlos – Spain

### **Agenda item 1 - Welcome and Opening**

**Dietmar Spohn** welcomes the participants to the fourth meeting of IGU WOC 4, thanks **José María Alamcellas** and GasNatural Fenosa for the kind invitation to Madrid and opens the meeting. **José María Alamcellas** welcomes the members of IGU WOC 4 in Spain and explains briefly the meeting's program and the contributions to the agenda furnished by the Spanish gas industry.

### **Agenda item 2 – Adoption of the agenda**

**Mr. Spohn** briefly explains the draft agenda for the meeting. This agenda is accepted by the members of the committee.

### **Agenda item 3 – Introduction of new members**

There are two members attending for the first time a meeting of IGU WOC 3:

- Mrs. Tatiana Kopina from Russia;
- Mr. Torpong Suphadul from Thailand.

All participants of the meeting briefly introduce themselves.

### **Agenda item 4 – Presentation Sedigas, the Spanish Gas Association**

**Mr. Carlos Villalonga** from Sedigas gives a presentation about the Spanish Gas Association

Natural gas consumption in Spain increased between 2002 and 2008 by 85 %. However, then the economic situation has led to a decrease between 2008 and 2013 by 26 %, mainly due to loss of gas fired power generation. Gas in Spain is mainly consumed by industrial applications (64,1 %), and only 17 % are used in the domestic sector. This is partially due to the relatively small penetration of the domestic market: only 28 % of Spanish households are using natural gas. Gas comes to Spain by 54 % through pipeline (mainly from Algeria, but also some from France) and by 46 % by ship as LNG. The LNG is transported from the landing terminals to 80 satellite plants supplying the gas grid, transport by means of trucks, summing up to 39 000 loads p.a.

After the presentation, a number of members forward some questions (Broisler Oliver, Čagala, Flosbach, Spohn and Vercamer). **Mr. Villalonga** answers their questions, giving some further information.

**Mr. Spohn** thanks **Mr. Villalonga** for the informative presentation.

### **Agenda item 5 – Presentation GasNatural Fenosa on “innovation in gas Distribution”**

This presentation is given by **Mr. Carlos Serrano**. He briefly informs about the profile of GasNatural Fenosa which is active in 25 countries, supplying in total 20 Million customers.

At the end of the presentation, **Mr. Biederman** and **Mr. Spohn** ask questions about leak survey frequency and systems employed. **Mr. Spohn** thanks **Mr. Serrano** for the presentation.

### Agenda item 6 – Presentation on “Gas supply in Spain”

This presentation is given by **Mr. Jesus Hernandez** from GasNatural Fenosa.

After the presentation, members of the committee had the opportunity to ask some questions. **Mr. Sousa** and **Mr. Broisler Oliver** ask about the equipment used and about sales to clients. **Mr. Spohn** thanks **Mr. Hernandez** for the presentation.

### Agenda item 7 - Follow-up Time Schedule of WOC4 for the 2012 – 2015 Triennium

**Mr. Klaas** explains the committee's schedule for the current triennium:

Meeting	Proposed date	Meeting topics	Corresponding meeting of IGU-CC
1	9 – 12 Oct. 2012 Cologne / Germany	- Analyse study group topics - Define areas of study - Questionnaire framework - Intermediate deliverables framework	15 Oct. 2012 Ottawa, Canada
2	19 – 22 Mar. 2013 Sao Paulo / Brazil	- Work on intermediate deliverables (e.g. keywords, articles IGU newsletter)	9 – 11 Apr. 2013 Seville, Spain
3	8 – 11 Oct. 2013 Paris/France	- Analyse input for study group reports - First draft intermediate deliverables	23 Oct. 2013 Beijing, China
4	3 – 7 Mar. 2014 Madrid / Spain	- First draft WOC 4 report - Final draft intermediate deliverables	2 – 3 April 2014 Sydney, Australia
5	30 Sept. – 3 Oct. 2014 Vienna/Austria	- Final draft WOC 4 report - Final intermediate deliverables - WGC preparation: Papers selection	15 Oct. 2014 Berlin, Germany
6	2 – 6 Mar. 2015 Prague, Czech Republic	- Presentation final WOC 4 report - WGC preparation	24 – 26 Mar. 2015 Abu Dhabi, U.A.E.

Also, he explains the key milestones set by the IGU-CC which must be met by the committees:

Year	Date	Milestone/Venue	Event
2014	1st February	Call for papers	Issuing call for papers
	25 March	Sydney, Australia	CC meeting
	July	Call for papers	reminder
	1st September	Call for papers	Abstract submission
	14 October	Berlin, Germany	CC meeting
	1st November	Call for papers	Final selection by Committees
	15 November	Call for papers	Author notification
2015	1st February	Call for papers	Full paper + reports submission
	24 March	Cairo, Egypt	CC meeting
	1-5 June	Paris	26th World Gas Conference

The conference will, besides opening and closing ceremony and the keynote speeches, feature three types of events:

**Committee Session: “SG x.y Title”** (in relation with the SG in charge and the ToR of the Group)

Objectives: In 5 to 10 lines

Content: In 5 to 10 lines

Recommended size of the room: 1000 / 500 / 350 /250 /150

*Note: the presentations would be selected from the “call for abstracts”*

**Expert Forum: “Title”** (transversal topic different from the special panels and committee’s sessions)

Overview: In 10 to 15 lines

Recommended size of the room: 1000 / 500 / 350 /250 /150

**Special Panel: “Title”**

Overview: In 15 to 25 lines, linking with the 4 Pillars

Recommended size of the room: 1000 / 500 / 350

Mr. Liens informs that, according to the latest allocation plans, most of the WOC 4 sessions will take place in the “Concorde” room, seating 350.

## **Agenda item 8 - SG 4.1: Regulation of Third Party Access to Gas Distribution Networks – A Standard Approach**

**Mr. Broisler Oliver** explains the state of work progress of study group 4.1. He presents the study group's action plan for the fourth meeting.

The refined tasks for SG 4.1 are to:

- Review the frame of the study group report **Mr. Broisler Oliver** has developed:
  - **5.1 Introduction** (1-2 pages): drafted, needs to be discussed within the SG during the 4<sup>th</sup> meeting
  - **5.2 Background and Purpose** (1-2 pages): drafted, needs some improvements (inspirations!), to be discussed within the SG the 4<sup>th</sup> meeting
  - **5.3 - 5.n Report Text** (30-40 pages):
    - lots of material already written, about 100 pages,
    - the “basic” can be considered done,
    - it needs refinement and some alignments between parts of the text to make it a complete body, that makes sense.
    - It will be necessary more time (2 months – a good guess!).
    - Planed discussions and alignments during the 4<sup>th</sup> meeting
  - **5.m Conclusion** (1-2 pages): drafted, needs improvements, planed discussions during the 4<sup>th</sup> meeting, it will be necessary some additional time to be concluded (1 month is a good guess!)
  - **5.o Literature** (2-4 pages): done
- Examination of the development of regulation over the last decade in different countries
  - Access of gases other than natural gas
  - Development of marketing/charging areas
  - Change of energy balancing and transfer options for costs
  - Unbundling of distribution companies
  - Training and qualification of personnel
- Prepare “IGU guidelines” of TPA”
- Contribution to the IGU magazine, by the second semester 2014

## **Agenda item 9 - SG 4.2: Diversification of Gas Quality and Nonconventional Sources in a Carbon-free future**

**Mr. Flosbach** explains the state of progress of study group 4.2. He also presents the draft agenda for the IGU WG 4.2 meeting.

### ***Progress details:***

- Analysis of the initial status of the diversification of Gas Quality in selected countries (Europe, Russia, US and other markets would be appreciated)
- Opportunities to exploit the gas composition ranges more efficiently incl. recommended measures (hardware, software & system intelligence)
- Development of supra-regional standards to promote the implementation of new & innovative technologies
- Analyses of the individual renewable gases and evaluation of the impact on DNO\* infrastructures and consumer applications
- Determination of acceptable concentrations of renewable gases for the injection in distribution grids
- Development of a roadmap for the preferred evolutionary steps towards a carbon-free future from the DNO\* perspective
- Development of marketing concept to illustrate the added value by DNOs into a Carbon-free future

**Mr. Liens** asks a question about the session title of SG 4.2: Should it really read “carbon-free future” or rather “low carbon future”? However, in order to attract attendees for their sessions by a provocative title, **Mr. Flosbach** would rather stay with “carbon-free”.

## **Agenda item 10 - SG 4.3: Smart Grids in Gas Distribution**

**Mr. Vercamer** introduces the work progress of study group 4.3:

- Definition of high level functionalities of the Smart Gas Grids
- First set of assessment criteria / scoring matrix for functionalities
- Exchanges about national or continental approaches about smart gas grid
- Collection of examples from different countries
- Structure of SG 4.3 report
- Article for IGU Magazine
- Titles for SG 4.3 committee and expert forum sessions

- Call for papers about SG 4.3 topics

The report of study group 4.3 has the following objectives:

- 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 synergy with the other energies
- Smart is not the target- the target is to identify the best ways for the network of the future using new technologies
- Highlight some cases where smart gas grids are useful and efficient

For the report, the study group has developed the following structure:

- **1 Introduction:** Why a sub Group on SGG? - (1 page)
- **2 Definition of smart Gas grids** - *Daniel HEC* (1 page)
  - Connection with smart metering, with electricity 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, operation
- Remote monitoring : safety & continuity of supply - customer information - information management
  - support other energy systems for a more efficient and less expensive energy,
- *According to the contributions brought by the different countries*
- **4 Feedback – case studies – case for green and efficient networks** (10 pages)
- **5 Summary matrix** (2 pages)
- **6 Perspectives and keys for success** (2 pages)

## Agenda item 10 Presentation by Mr. Liens on the progress in preparing the 26<sup>th</sup> WGC

**Mr. Liens** presents the current status of preparation of the 26<sup>th</sup> World Gas Congress in June 2015 in Paris and current proceedings within the IGU organization.

- The IGU CC meeting in Sydney will be partially dedicated to the new IGU website portal.
- The fall meeting of the IGU council in October in Berlin will feature several decisions of high importance:
  - The election of the host and site of the IGU general secretariat for the years from 2016 to 2022. However, there is only one candidate, Spain.
  - The election of the IGU presidency 2018 – 2021, connected with the organisation of the 28<sup>th</sup> WGC. There are four very capable candidates: China, Norway, Russia and South Korea.
- The technical program 2015 will include 14 strategic panels and 43 thematic sessions which may feature invited speakers. This will be accomplished by 4 luncheon speeches and 20 keynote speeches.
- For the 1<sup>st</sup> June a gala dinner is planned to stage in the Grand Palais near the Eiffel tower.
- For opening the congress, the President of the French Republic, **Mr. F. Hollande** has been invited.
- The most of the technical program of IGU WOC 4 shall take place in the “Concorde” room, seating 350.
- The deadline for the submission of reports and papers has been set to 13 March 2015. Presentations can be either power point presentation, poster presentations including screens, or videos of up to 2 minutes length.
- Each committee will be granted to invite one or two external speakers. For those, a one-day admission ticket for the congress will be free. If they would like to attend more of the congress, a reduced special fee will be applied.
- Authors will benefit from attending the conference for the “early bird” admission fee, regardless their time of registration. This is set at € 2250. For other attendees, this tariff will apply from April 2014 until December 2014.
- The full admission fee to be paid from January 2015 on is set at € 2650. On-site registration will cost € 2850.
- The exhibition is limited to 20 000 m<sup>2</sup> which will entirely be in pavilion 1.

Finally, **Mr. Liens** reminds to attend the IGRC conference which will take place in Copenhagen/Denmark from 17 to 19 September 2014. **Mr. Spohn** thanks **Mr. Liens** for the extensive information.

### **Agenda item 11 – Presentation by Mrs. Wicquart on “Natural gas facts & figures”**

**Mrs. Wicquart** explains, supported by a presentation, the “natural gas facts & figures” project of the IGU which intends to gather also data on distribution issues as:

- Grids and networks (characteristics)
- Companies
- Gas quality
- Smart grids
- Third party access
- Regulation
- Number of customers
- ...

**Mr. Klaas** and **Mr. Vrancken** forward some questions on the issue. **Mr. Biederman** explains that in the United States and Canada most statistical data will be available at the respective IGU member organisations.

### **Agenda item 12 – Presentation for the next meeting**

The next meeting of IGU WOC 4 will take place between 30 September 2014 and 3 October 2014 in Vienna/Austria. **Mr. Pachernegg** and **Mr. Schicketmüller** present an informative movie about Vienna. **Mr. Spohn** thanks for the impressive introduction.

### **Agenda item 13 – Review Call for Contributions, Introduction selection procedure**

**Mr. Klaas** reminds at the procedure to be followed to organize the technical program of IGU WOC 4. **Mr. Liens** gives an update on the deadlines.

- Oral speakers and poster presentations should be selected according to the abstracts received. They must forward their proposals by 15 September 2014;

- The IGU-Cc will then perform a pre-selection by allocating the abstracts to the relevant IGU-WOC, -PGC or –TF.
- Upon receipt of the abstracts for IGU WOC 4 **Mr. Spohn** and **Mr. Klaas** will further allocate them to the three study groups of IGU WOC 4.
- **Mr. Klaas** will then mail the allocated abstracts to the three study leaders. Erroneous abstracts will be forwarded to the Committee for which they appear to be suitable.
- The study group leaders will distribute their abstracts to the study group members with the request to evaluate and return the result to them.
- In total, each study group will have to select 5 or 6 abstracts for oral presentations (SG 4.1 5, SG 4.2 and 4.3 6 each; the lesser number for SG 4.1 is due to the fact that it shares a session with the study group report presentation).
- Further, each study group should select 1 oral presentation as spare to fill in in case an author cannot attend on short notice. Care should be taken to enable the author of the “spare paper” to travel to Paris on relatively short notice.
- In total, WOC 4 will be granted 6 or 7 posters to be presented. Presentation time for each poster will be 10 minutes maximum. Video presentation will be limited to 2 minutes only.
- The report of IGU WOC 4 should be completed by the end of January 2015.
- It has to be forwarded to the IGU by 13 March 2015.
- **Mr. Spohn** and **Mr. Klaas** shall take care of the structure of the overall report as well as the contents of the introduction, the summary and the gratitude.
- **Mr. Almacellas** as incoming chairman is in charge to formulate the wording of the outlook.
- The panel parties for the sessions of IGU WOC 4 within the 26<sup>th</sup> WGC shall be nominated at the last meeting in Prague when it is evident who will be participating at the congress in Paris. The chair is normally for the leader of the study group which is presenting at the session. Either the chairman, vice-chairman or the secretary of IGU WOC 4 will also be in the panel to take care of any need or disturbance during the presentation.
- For the joint panel with IGU PGC F, **Mr. Klaas** is asked to contact **Mr. Lewnard**, Chairman of IGU PGC F. **Mr. Vercamer** will be one of the panellists of that joint session.
- Also at the last session, IGU WOC 4 will have to decide who will accompany the poster presentation session.

### **Agenda item 14 - Presentation of results SG 4.1**

**Mr. Broisler Oliver** presents the results of the meeting of study group 4.1. The presentation is embedded in the meeting's general presentation. The study group's objectives presented under agenda item 7 were met. As further results of the meeting, the following was achieved:

#### **Final Objectives & what needs to be done:**

- Present different experiences around the world regarding TPA legislations and regulation, stage of implementation and evolution,
  - Benefits
  - Problems
- Identify trends of TPA around the world
- Prepare a “World Map” of TPA
- Contribution to the IGU magazine, by the second semester 2014

#### **Key Inputs until now:**

- TPA is clearly associated with:
  - Privatization and liberalization
  - Vertical Integration x Unbundling
  - Open access
  - Intent to increase competition, secure supply and cost & price reduction
  - Requires a very rigorous & comprehensive regulatory framework
  - It takes time to be implemented
  - Not always the intended objectives are achieved
  - Huge variation amongst regions and countries
  - Different stages of implementation
  - Different sources of gas (competition on production) impacts TPA on transmission and distribution
  - There are cases of success and some of them are not so successful
    - Competition & Cost reduction & secure supply & transparency
    - North America vs EU
- Examples for all above items
- Future of TPA
  - Inevitable?
  - Requires modifications?

### Proposal for the SG 4.1 Report Structure:

- **Introduction:** terminology, definition, subject of the study, purpose of the report, overview about TPA models,
- **“TPA World Map”** according to the following regions & countries (basically considering the relevance of each one in terms of volumes of gas consumption, strategic position and market maturity):
  - European Union (UE): France, Germany, UK, Italy, Netherland and others
  - Russia
  - North America: mainly US
  - South America
  - East Asia: Japan and South Korea
  - Asia Pacific: Australia, Indonesia, Malaysia, Thailand
  - South Asia: India, Pakistan
  - North Africa: Algeria, Morocco, Tunisia, Egypt
  - Middle East: Saudi Arabia, Oman, Qatar, Emirates
  - Iran, Turkey
- **TPA on Distribution** (for each of the above regions included in the TPA World Map)
  - Model adopted – regulation and legislation
  - Objectives – explicit and implicit
  - What was done
  - Implementation timescale
  - Maturity level
  - Future tendencies
  - What was successful and unsuccessful x critical evaluation (quantitative and qualitative)
  - Political regime x networks infra-structure x regulatory framework
- **Description about the different models**
- **Conclusions**

### Sequence of the contents within the SG 4.1 report:

- **Subject of Study**
- Terms & definitions
- Historical aspects
- Aims & tasks of TPA

- **Country & Region**
  - Brief figures
  - Gas distributed volumes
  - Number of costumers
  - Scope of distribution network, lengths, pressure regimes, ages, etc.
  - Number of operators (distribution companies)
  - Etc.
- Principles of gas price calculation
- Unbundling characteristics for distribution
- TPA regulation
- Tendencies, Problems, transparency

**What IGU SG 4.1 did during the 2 days:**

- WGC dates of the sessions for WOC 4 including the Special Panel
- Discussion of the “Call for Papers” presented – compromise of the members of SG 4.1 to submit papers
- Discussion of the content of the slides for the IGU-CC meeting in Sydney
- Very rich and insightful presentations
  - Nick Biederman presenting on:
    - Canada
    - India
    - Indonesia
    - Pakistan
  - Benoit Chaintreuil presenting on:
    - France – real benefits of TPA
    - Turkey
    - SG paper draft discussions

**Summary of the SG 4.1 “Call for Papers”**

- **Title:** Third Party Access to Distribution Networks: could it bring benefits to the parties involved in the gas chain?
- **Objectives:** Discuss the following issues:

- TPA to Distribution Networks experiences around the world
- The application for distribution often does not occur as effectively as in transmission
- Regulation for distribution is many times a copy of the rules for transmission, not considering differences that could be applicable to distribution.
- TPA a wide variety of concepts and stages of development
- The level of implementation is directly related to the maturity of the gas industry. U.S. and the European Community presents the greatest experiences on TPA
- Increasing the supply of gas and reducing the costs to consumers are the pillars that usually justify the TPA, but not always these objectives are effectively achieved
- The session is addressing a discussion on TPA to distribution, the benefits that can be achieved, the problems and difficulties that may arise, the main regulatory frameworks, and technical issues that can be associated with its implementation.
- **Examples of Topics and Key Words**
- **Third Party Access on Distribution**
  - Identified key experiences around the world regarding TPA legislations and regulation, stage of implementation and its evolution, especially for
    - United States & Canada
    - European Union, detailed evaluation of France, Italy, Portugal, and UK
    - Russia
    - Asia
    - Latin America
  - Identified trends of TPA & unbundling around the world
  - A “World Map” of TPA & unbundling is being prepared
  - Benefits and Problems are identified and being discussed within the study group
  - Final Report is already drafted and it is under discussion within the group
    - Focus on the key regions (North America, EU, Russia)
    - Reference for the ones who want to know about TPA experiences
    - Goal: conclude it by June 2014
- Contribution to the IGU magazine, by the second semester 2014 (November), is being prepared

**Proposal of SG 4.1 for natural gas facts & data project – questionnaire content:**

- Number of distribution companies
- Number of customers
  - Residential
  - Commercial
  - Industrial

- Power
- CHP
- Etc.
- Volume distributed
  - Residential
  - Commercial
  - Industrial
  - Power
  - Etc
- Length of the pipelines
  - Material
  - Pressure
  - Age
  - Range of diameters
- Satellite distribution networks
  - Number
  - Volumes distributed
  - % market attended
- Penetration rates
- Number of meters
  - Manual
  - AMR
- Number of suppliers
- TPA Yes or No
- Utilization:
  - Water heating
  - Space heating
  - Cooking
- Expansion & Renewal
  - Km constructed / year
  - Number of customers connected / year
  - Km of replacement / year
  - % of replacement / year
- Number of employees
  - Direct

- Contractors
- Lost and unaccounted for gas (LUAG)

### **Agenda item 15 - Presentation of results SG 4.2**

**Mr. Flosbach** presents the results of the meeting of SG 4.2 (Presentation slides embedded in meeting's general presentation).

#### **Progress detail at 6<sup>th</sup> of March 2014:**

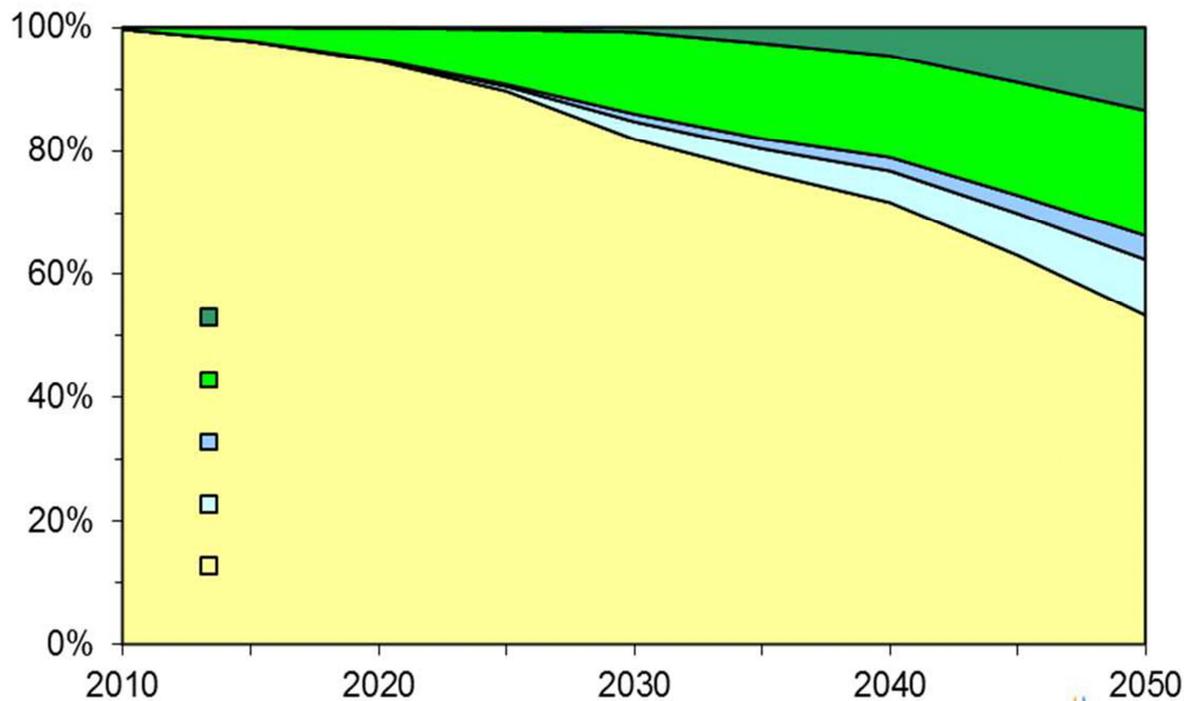
- The integration of renewable production does heavily impact gas markets (reduction of CCGT, gas quality fluctuation, etc.)
- Gas quality tracking in gas transmission and distribution networks (example of polish system - Maciej Chaczykowski)
  - software tool development for nominations, tracking and billing
  - simulation of the impact of renewable gas injection is highly challenging
  - good opportunity as tool to manage future shale gas, LNG and hydrogen and bio-methane injection into the NG grid, but needs to be further developed as industry standard in future
  - could be a “game changer” on billing standards
- Proposal for Call for Papers for SG 4.2 “Evolution into a Carbon-free gas future” concluded
- Analysis of the initial status of the diversification of Gas Quality in selected countries incl. determination of acceptable concentrations of renewable gases for the injection in distribution grids
- Decision on structure, responsibilities and timeline for the preparation of the “Report of Study Group 4.2” for the WGC

#### **Draft structure of the report of SG 4.2 "Diversification of Gas Quality and Non-conventional Sources into a Carbon-free Future“ with task allocation:**

- 0 Abstract (1/2 page)
- 1 Introduction (1 page)
- 2 Committee members (2 – 3 pages)
- 3 Committee Meetings (list, 1 page)
- 4 Topics of the Committee Report (brief introduction of study group topics, max. 3 pages)
- 5 Report of Study Group 4.2 (1 page header)
  - 5.1 Introduction (1 – 2 pages)
  - 5.2 Background and Purpose (1 – 2 pages)
    - (1) Bio-methane to grid in Austria (4 pages, *Christian Schicketmüller*)
    - (2) Bio-methane to grid in Germany (4 pages, *Uwe Klaas*)

- (3) Biomethane incl. compressing & deodorization; survey on hydrogen tolerance in gas infrastructures in Germany, experiences in Germany in “power to gas” und further R&D projects (4 pages, *Peter Flosbach*)
  - (4) Experience on bio-methane introduction in Japan (2 pages, *Tohru Takahashi*)
  - (5) Long term LNG experiences in Spain on gas composition (3-4 pages, *José Maria Almacellas*)
  - (6) French case change between pipeline based and LNG-based supplies
  - (7) LNG plans and future solutions in Russia (3 pages, *Vladimir Klimenko*)
  - (8) Effects of shale gas on distribution markets in the US and management of liquids (4 pages, *Paul Wehnert*)
  - (9) Variation of gas qualities in Denmark (5 pages, *Flemming Jensen*)
  - (10) ISO/ CEN standards framework on gas quality (2 pages, *Rory Somers*)
  - (11) Gas quality tracking (3 pages, *Maciej Chazykowsky*)
- 6 Conclusion & Perspectives (1 – 2 pages)
- 7 Literature (2 – 4 pages)

**Mr. Flosbach** presented the following example for Germany: Renewable gases will strongly contribute to reduce the CO<sub>2</sub> emissions (draft only):



He further introduced as task for all members of IGU WOC 4:

Scenario assessment & evaluation as a global approach per country:

**Estimation of the introduction of renewable gases** (Draft only – to be done for each country)

	Today	2020	2025	2040
<b>NG</b>	<b>99.5 %</b>	<b>98 %</b>	<b>95 %</b>	<b>90 %</b>
<b>Biogas/ Bio-Methane</b>	<b>0.5 %</b>	<b>2 %</b>	<b>3 %</b>	<b>5 %</b>
<b>Hydrogen</b>	-	-	<b>1 %</b>	<b>2 %</b>
<b>SNG</b>	-	-	<b>1 %</b>	<b>3 %</b>

### Agenda item 16 - Presentation of results SG 4.3

Mr. Vercamer presents the results of the SG 4.3 meeting.

Smart gas grids cover multiple functionalities regarding networks safety, reliability, surveillance or maintenance, the ability of integrating new gases in the natural gas system and their possibilities of positive interaction with electricity network

#### **Objectives of WOC4 – SG4.3 – to be exposed in the WOC4 Report at WGC2015:**

- Clarify the aims and drivers of smart gas grids
- Help DNO managers to build a road map for the network of the future
- Give arguments to face public authorities regarding the design and the performance of future gas networks
- Show that gas can be as smart as electricity and interact with other energies in the aim of more efficient and sustainable energy system
- Smart is not the target- the target is to identify the best ways, both technical and economical, for the network of the future using new technologies
- Highlight examples of smart gas grids already operating today or identified as promising

#### **Smart grids in gas distribution - highlights of the SG 4.3 session:**

- First draft of the report that should cover about 20 use cases of smart gas grids such as earthquake prevention, injection of biomethane, pressure monitoring and control, remote control and monitoring of CNG equipment ... covering different needs encountered on gas distribution grids throughout the world

- Call for papers sent to IGU executive committee (*Towards smart distribution gas grids: why and how?*)
- Contribution for IGU Newsletter: ***Towards smart distribution gas grids?*** (for edition of mid - 2014)
- WOC SG4.3 called to participate actively to the preparation of the Strategic Panel “**Smart energy systems**” together with PGCF

### **Agenda item 17 - Wrap-Up of today's results**

**Mr. Spohn** thanks the presenters of the reports and all the study group members for their ambitious participation. He thanks also for the good progress made in each working group.

He will present the key issues to the IGU-CC at its next meeting on 1<sup>st</sup> April 2014 in Sydney, Australia.

### **Agenda item 18 - Any Other Business**

#### **▪ Contributions for the IGU Newsletter**

The first contribution for the IGU newsletter has been published

**Mr. Spohn** reminds the members of the other study group leaders to regard the time lines set for the delivery of their articles:

- June 2014: Vercamer/Vallender on SG 4.3 issues
- December 2014: Broisler Oliver on SG 4.1 issues

### **Agenda item 19 – End of Meeting**

**Mr. Spohn** thanks the participants for their undivided attention and contributions to the meetings of both, the study groups and the plenary, thanks again the Spanish hosts, in particular **Mrs. Llata Rebolledo** for the perfect organization of the meeting including the stylish evening invitations, and declares the meeting as closed.