

European Biogas Association

The present status and future prospects of the European biogas/biomethane industry

Dr. Attila Kovacs

Lisbon, 12th November, 2014



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What is EBA?

- ❖ **Non-profit organisation** founded in 2009
- ❖ Well-established **network and communication platform** for exchanging information and expertise in biogas and biomethane
- ❖ **Member of** AEBIOM, EREF and EUFORES, co-operation with EREC, ECN, NGVA etc.
- ❖ Based in Brussels, **Renewable Energy House (REH)**

Present status of the European biogas/biomethane industry

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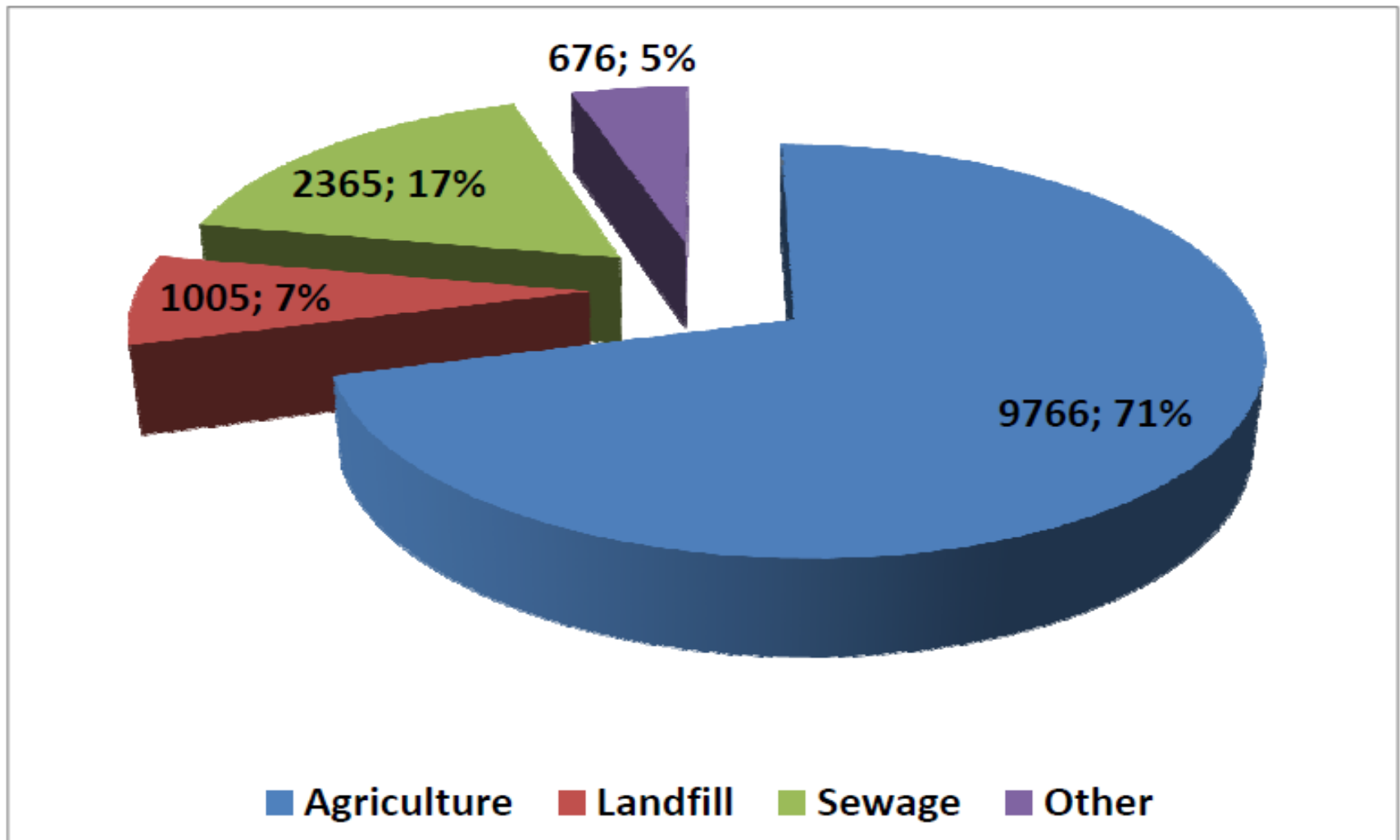
Biogas industry in Europe



- **Biogas production (2012):**
 - ~ 12,0 M tons oil equivalent
 - ~ 14,0 Mrd m³ methane,
 - ~ 3% of CH₄ consumption
- **53,4% produced in Germany**
- **Average numbers:**
 - 28,4 m³ CH₄/citizen (with DE),
 - 15,9 m³ CH₄/citizen (without DE)
- **14.200 biogas plants (end 2013)**

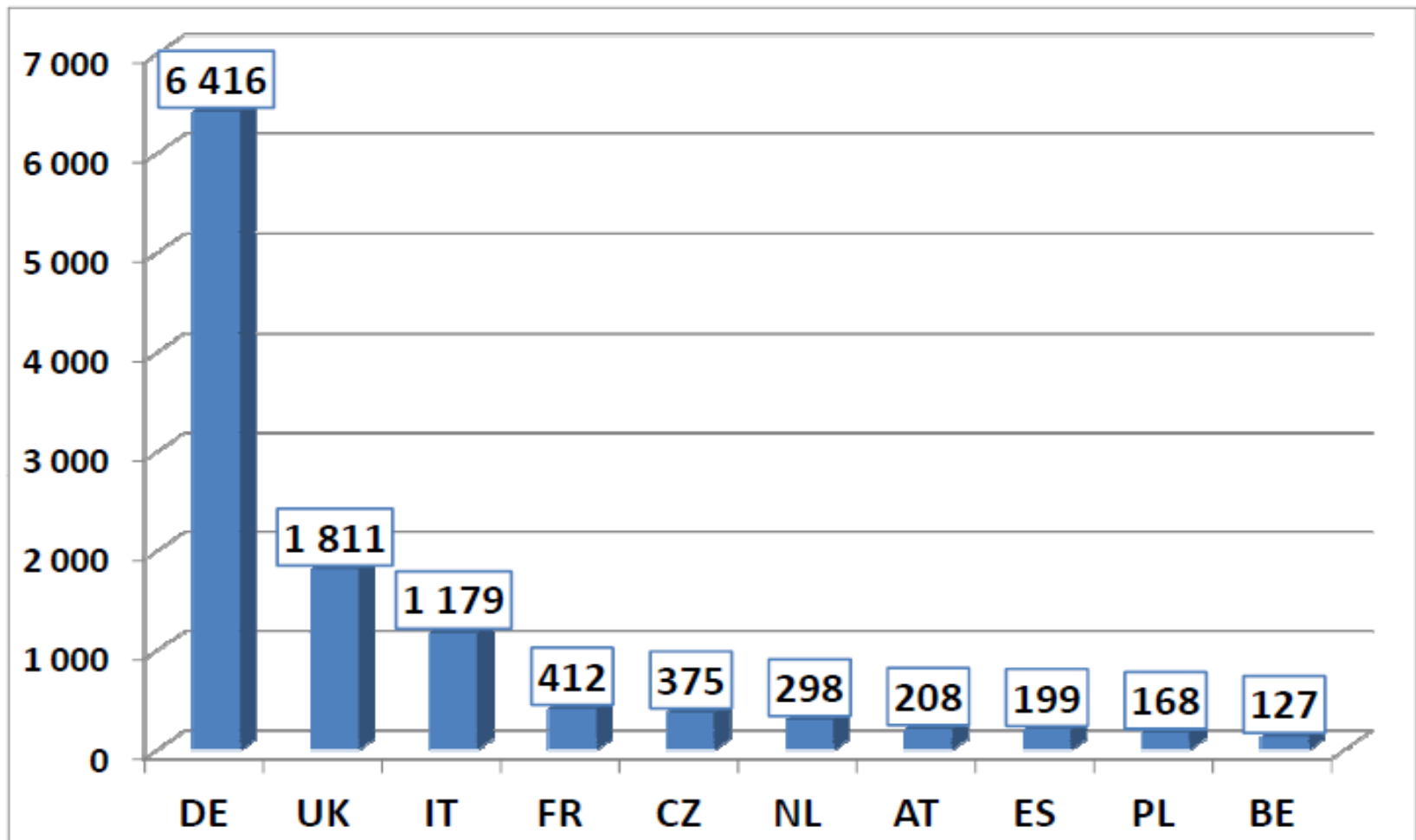


European biogas plants by sources



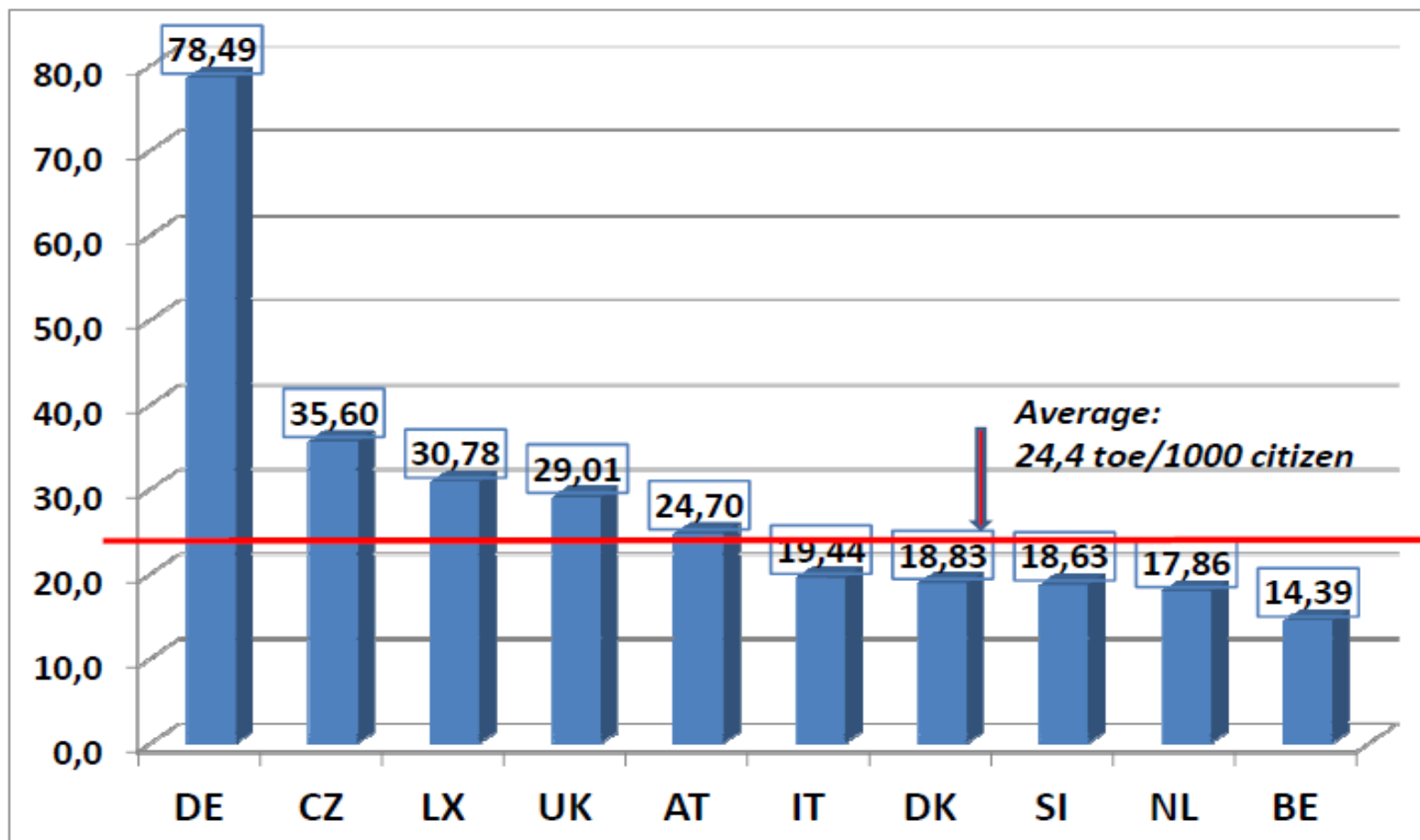
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Top 10 biogas producers (2012) - ktoe



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2012 biogas production per capita – toe/1000 citizen



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Lessons learned

1. The development of the biogas industry in individual European countries is in direct correlation with the government's support policies in the given country.
2. *The system of feed-in-tariff is much more efficient than the system of green certificates.*
3. The support system must be stable and reliable, retroactive changes should never occur.
4. *The biogas technology is mature, safe and efficient, BUT*
5. the precondition of a successful biogas investment is the professional approach to engineering, construction and operation.
6. *It is advisable to consult the independent biogas experts, rely on their knowledge and experience.*

Biomethane

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Biomethane

- Benefits of upgrading biogas to bioCH₄ -
 - multiply use, including motor biofuel
 - use of natural gas distribution and storage systems
 - new geographical and commercial dimensions
 - possibility of cross-border transactions
- Value of biomethane:
 - physical** (in use) value + **intrinsic** („bio“) value
- Intrinsic value: „green“, renewable, sustainable
- The physical flow does not carry the intrinsic value
- Condition for sustainable biomethane production:
 - costs of production are above natural gas prices
 - > intrinsic value must be realised on the market

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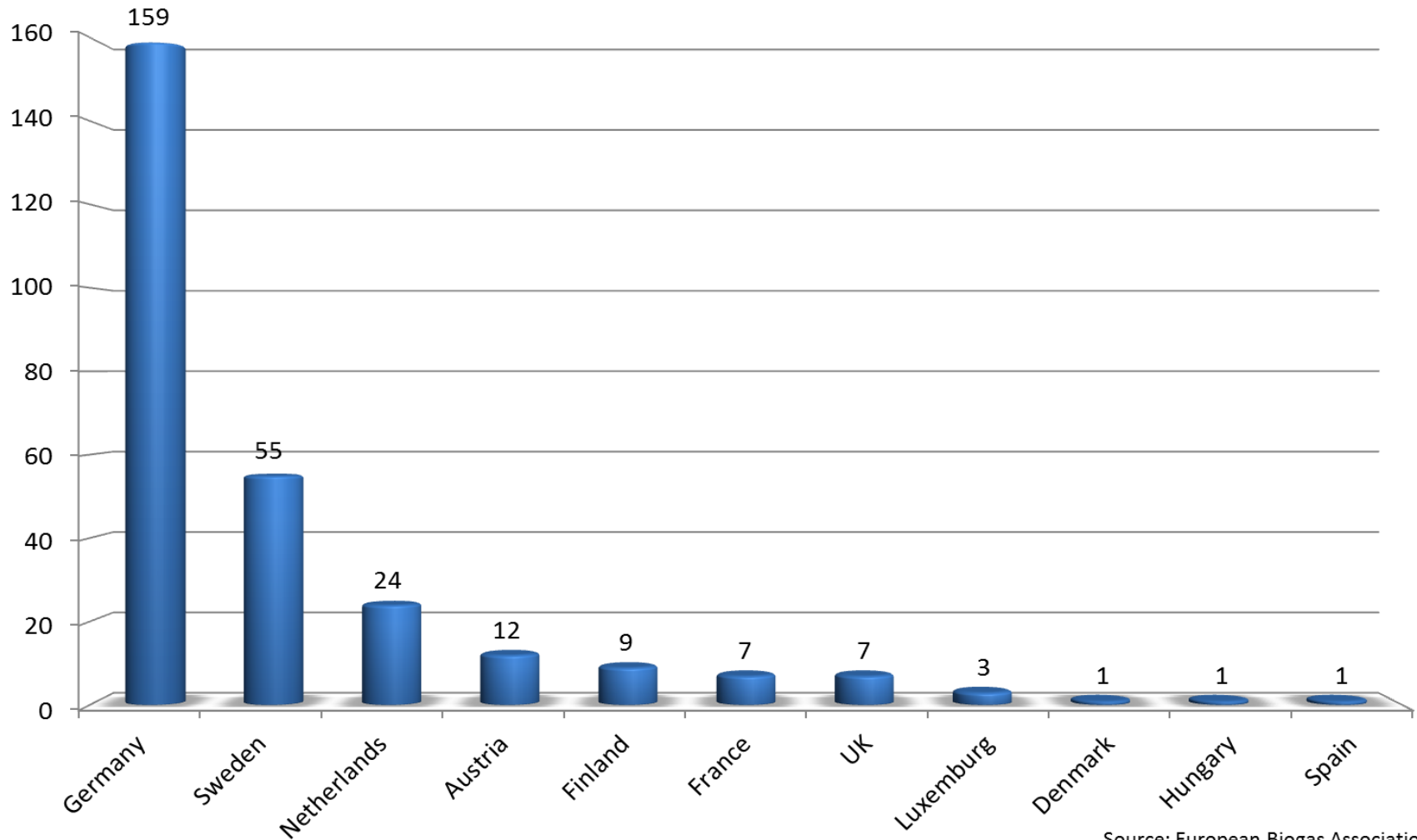
Biomethane production in Europe

- Approx. 280 upgrading units (2014)
- Grid injection in countries:
AT, CH, DE, DK, ES, FR, FI, LX,
NL, NO, SE, UK
- Transportation fuel use in:
AT, CH, DE, DK, ES, FR, FI, HU,
IS, IT, NL, SE, UK
- Quick technology development
 - *improved efficiency,*
 - *lower operational costs,*
 - *higher CH₄ contents,*
 - *smaller capacity units becoming feasible*



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Number of biomethane plants in the EU28 in 2014



Source: European Biogas Association

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Biomethane quality will be regulated by CEN standards elaborated in TC 408

a) for grid injection

b) for vehicle fuel use

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Prospects for biogas/biomethane in Europe

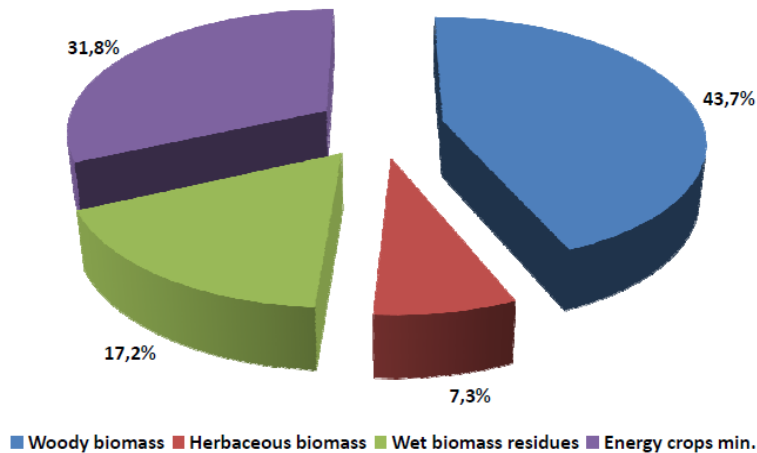
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Biogas potential

Source: Daniela Thrän - GGG Workshop
21. February 2012 in Brussels

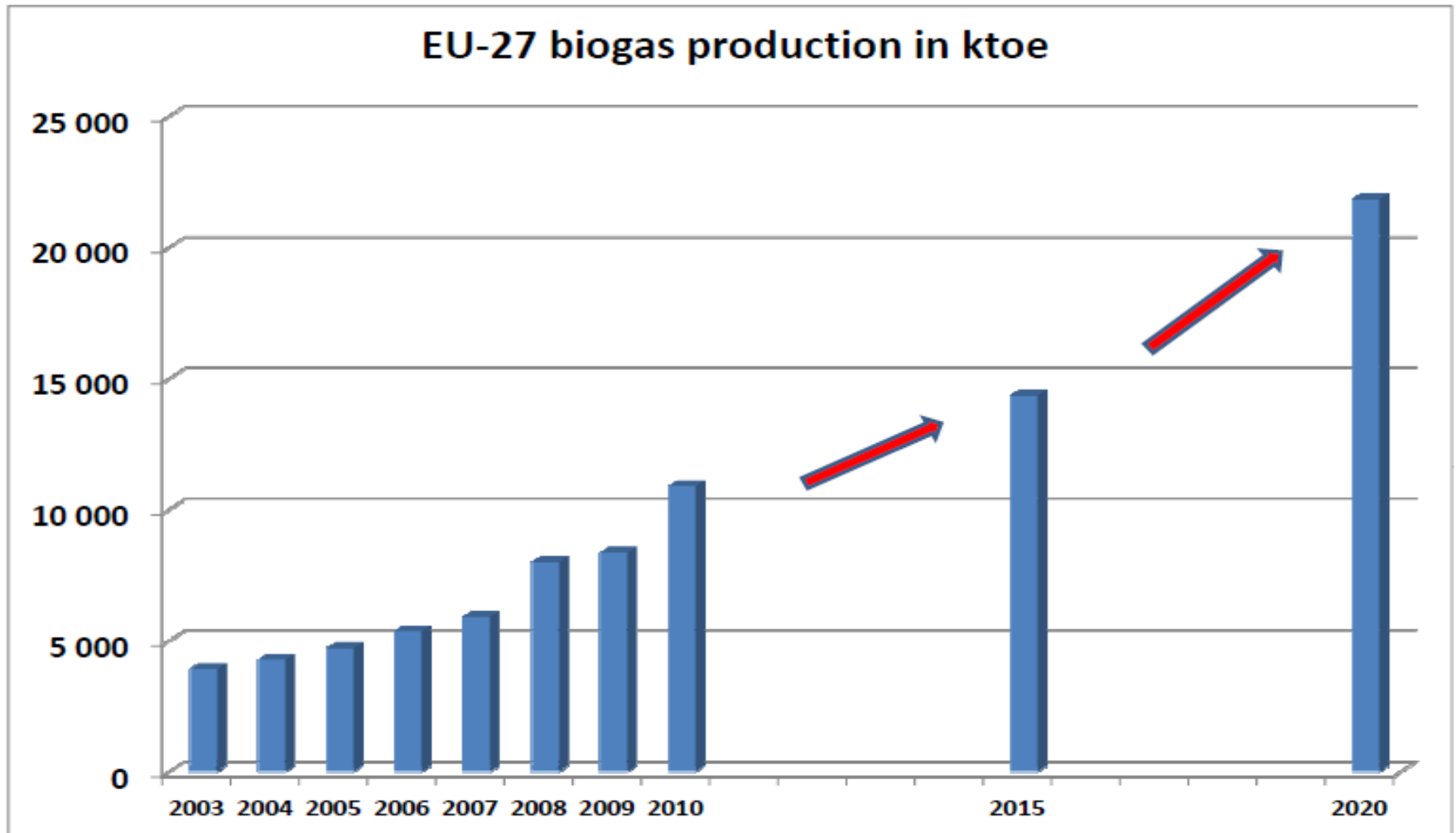
Graph 1. Biogas/biomethane technical potential - sources



Source	Billion Nm ³	%
Woody biomass	66	43,7 - 26,8
Herbaceous biomass	11	7,3 - 4,5
Wet biomass residues	26	17,2 - 10,6
Energy crops	48 - 143	31,8 - 58,1
Total	151 - 246	100,0

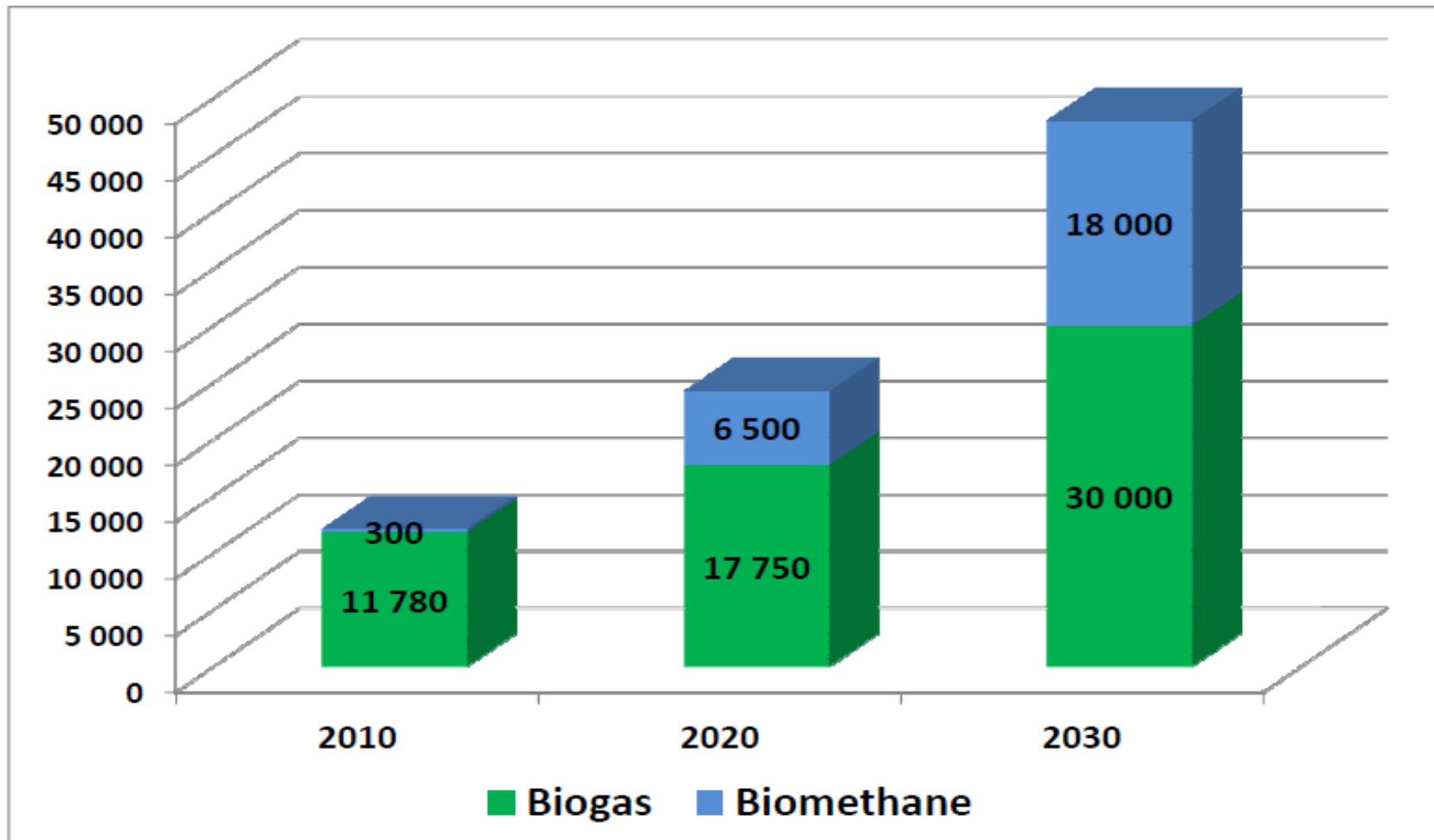
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Biogas production in NREAP's



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Biogas/biomethane potential $10^6 \text{ Nm}^3/\text{year}$



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Main challenges, key future roles

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Main challenges for the biogas industry

- a) EU energy and climate policies after 2020**
- b) Competitiveness with other renewable energy sources**
 - Unit costs of generating „green“ electricity
- c) Political discussions limiting raw material base**
 - e.g. ILUC/sustainability debate
- d) Costs of biomethane production vs. natural gas prices**
 - „green“ value to be recognized on the market
- e) Monetizing the value of digestate**
 - End-of-Waste status

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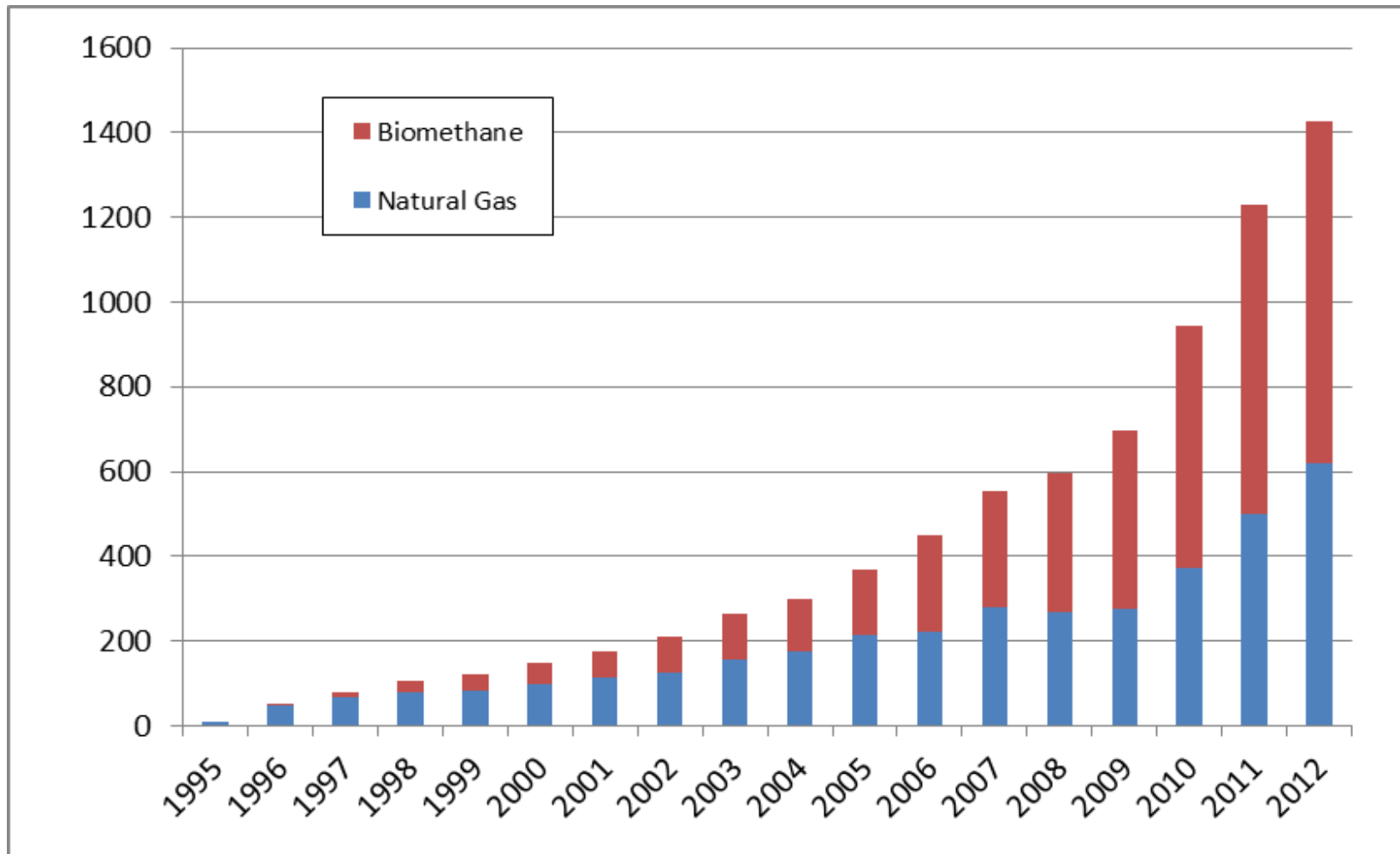
The key future roles of the biogas industry

- 1. Need-based electricity production and marketing**
Balancing power (combined power plants)
System services: frequency stability, voltage maintenance, supply restoration, bottleneck management, etc.
- 2. GHG emission reduction in agriculture**
Treatment of manure, waste and by-products;
nutrient recycling; local energy supplies
- 3. Management of industrial and municipal organic waste**
- 4. Utilisation of set-aside land, landscape maintenance**
- 5. Biomethane for grid injection and for vehicle fuel**

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Methane as Vehicle Fuel in Sweden (TWh/year)



Quelle: Swedish Gas Center

„Waste to Wheel“ is REALITY (in certain countries)



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Biogas Highway Göteborg - Stockholm



- 500 km
- 12 biomethane fuelling stations



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Role of national biogas associations

- Non-governmental organisation independent from political parties and political movements
- *Coordinated representation of the interests of the industry towards the government and policy makers*
- Influence on biogas related legislation (support systems, standards, technical requirements)
- *Coordination and cooperation with other renewable energy organisations (domestic and international)*
- Distribution of information (conferences, publications, trainings, etc.)
- *Setting professional standards*
- Publicity work – acceptance of biogas technology by the public

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Cross-border biomethane trade: chances and difficulties

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Key conditions for cross-border biomethane trade

Conditions for biomethane export/import:

- The „bio“ quality must be certified in the producing country
- The „bio“ qualification from the producing country must be acknowledged in the consuming country
- The mass-balancing requirement must be met
- Double-counting must be excluded

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National biomethane registries

- Independent, neutral, professional organisations
- Established through government actions *or* voluntary cooperation of market players
- Track, confirm and document the biomethane transactions along the contractual chain
- Administrative support in meeting regulative requirements
- Independent audit controls
- Assisting trade development through building market confidence

Guarantees of Origin

Guarantees of Sustainability

- BUT: the issued documents are not trade-able certificates

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Biomethane registries

- AT: Biomethan Register Austria
- CH: VSG (Federation of Swiss Gas Industry)
- DE: Biogasregister
- DK: Energinet
- FR: Gaz Réseau Distribution
- FI: Gasum
- NL: Vertogas
- UK: Green Gas Certification Scheme
Biomethane Certification Scheme

„Naturemade biomethane“ – label in CH

„SWAN“ label in Scandinavia

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Conclusions

1. The European biogas/biomethane industry has tremendous potential for further development
2. Due to the changing environment the industry is facing major challenges
3. In order to realise the growth potential the industry must respond with intensifying its efforts aimed at
 - increasing efficiency and flexibility,
 - reducing investment and operational costs,
 - improving political and public acceptance.
4. It is in the primary interest of all stakeholders of the industry to provide maximum support to the national biogas associations and to EBA

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Thanks for your attention!

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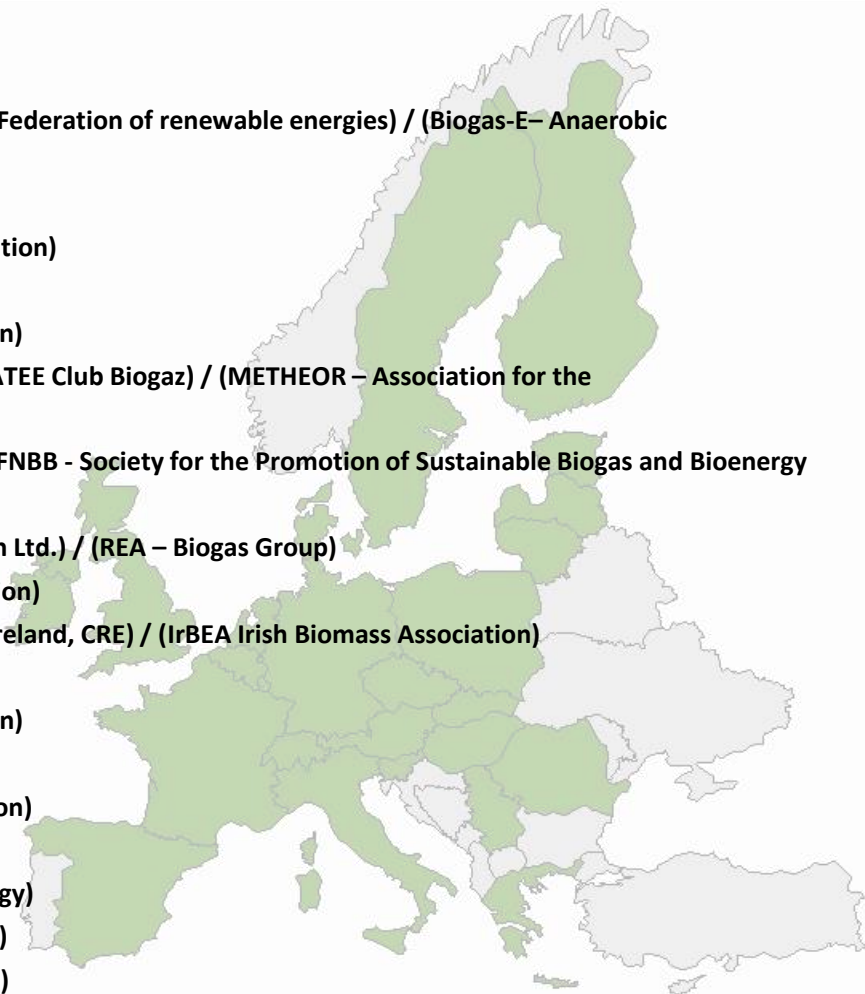
Back-up slides

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Full members

<u>Austria</u>	(ARGE Kompost & Biogas)
<u>Belgium</u>	(ValBiom – Wallonian Biogas Association) / (EDORA – Federation of renewable energies) / (Biogas-E– Anaerobic digestion platform of Flanders)
<u>Czech Republic</u>	(CzBA - Czech Biogas Association)
<u>Denmark</u>	(Brancheforeningen for Biogas - Danish Biogas Association)
<u>Estonia</u>	(MTÜ – Estonian Biogas Association)
<u>Finland</u>	(Suomen Biokaasuyhdistys – Finnish Biogas Association)
<u>France</u>	(AAMF – Association of Biogas Farmers of France) / (ATEE Club Biogaz) / (METHEOR – Association for the Ecological Anaerobic Digestion of Waste)
<u>Germany</u>	(Fachverband Biogas – German Biogas Association) / (FNBB - Society for the Promotion of Sustainable Biogas and Bioenergy)
<u>Greece</u>	(HEL.BI.O. - Hellenic Biogas Association)
<u>Great Britain</u>	(ADBA The Anaerobic Digestion and Biogas Association Ltd.) / (REA – Biogas Group)
<u>Hungary</u>	(Magyar Biogáz Egyesület - Hungarian Biogas Association)
<u>Ireland</u>	(Composting and Anaerobic Digestion Association of Ireland, CRE) / (IrBEA Irish Biomass Association)
<u>Italy</u>	(CIB Consorzio Italiano Biogas)
<u>Latvia</u>	(Latvijas Bigazes Asociacija – Latvian Biogas Association)
<u>Lithuania</u>	(Bioduju Asociacija - Lithuanian Biogas Association)
<u>Luxemburg</u>	(Biogasvereenegung - Luxembourg Biogas Association)
<u>Netherlands</u>	(VGGP - Association of Green Gas Producers)
<u>Poland</u>	(PIGEO - Polish Economic Chamber of Renewable Energy)
<u>Romania</u>	(ARBIO - Romanian Association of Biomass and Biogas)
<u>Serbia</u>	(Udruženje Biogas Srbija - Biogas Association of Serbia)
<u>Slovakia</u>	(AVEOZ - Association of producers of renewable energies)
<u>Slovenia</u>	(Sekcija bioplinarjev pri GZS-Zbornici kmetijskih in živilskih podjetij - Biogas section of the Chamber of Commerce and Industry of Food and Agriculture)
<u>Spain</u>	(AEBIG - Spanish Biogas Association)
<u>Sweden</u>	(Energigas Sverige - Swedish Gas Association)
<u>Switzerland</u>	(Biomasse Schweiz - Biomass Switzerland)
<u>United Kingdom</u>	(ADBA – The Anaerobic Digestion and Biogas Association - The Anaerobic Digestion and Biogas Association)/ REA Biogas Group - UK Renewable Energy Association



CAC members (associated members)



Prof. Dr. Michael Nelles



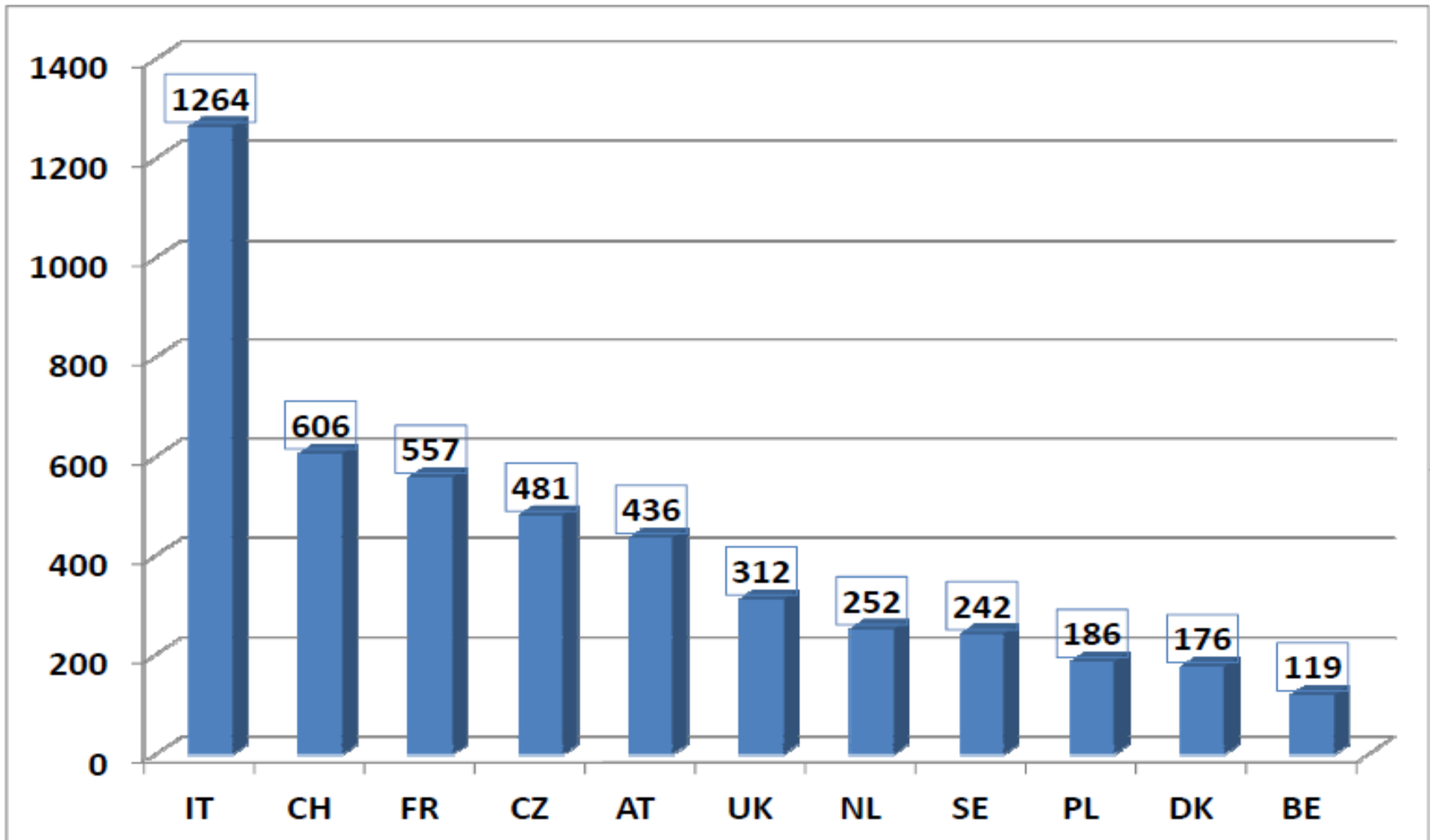
HAFFMANS



Seeding the future since 1956



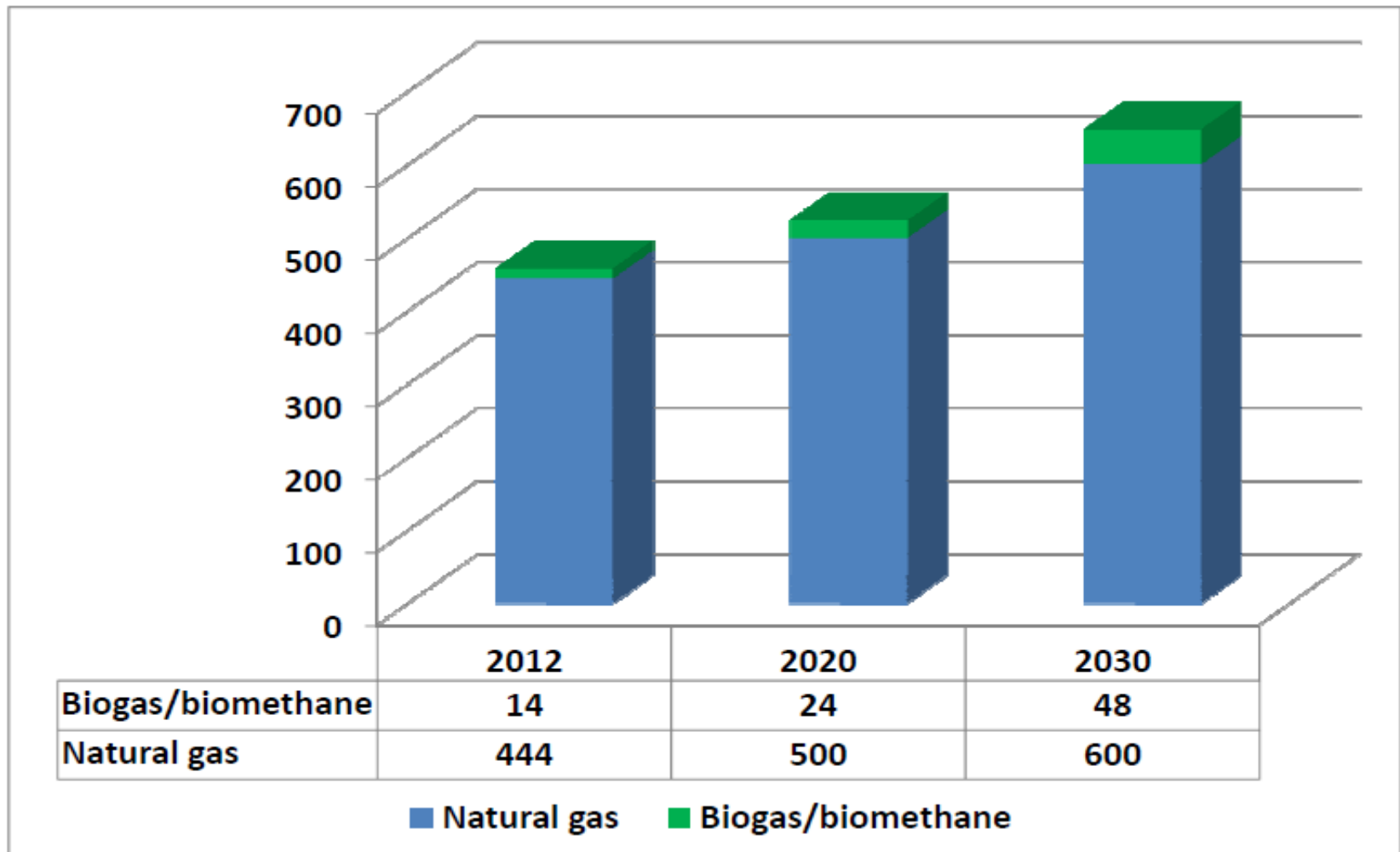
European countries with > 100 biogas plants (DE: ~ 8.700)



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Biogas/biomethane vs. Natural Gas

10⁹ Nm³/year



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Biomethane – national markets

- **UK:** Fixed FIT + gas market value ~ 11,0 €Cent/kWh
- **FR:** Fixed FIT 6,4 – 9,5 €Cent/kWh + bonus
depending on capacity (350 m³/h– 50 m³/h) and substrates
example: 150 m³/h, 50% manure+50% org. waste > 9,38 €Cent/kWh
- **NL:** SDE+ scheme, „biotickets“ for vehicle fuel use
- **AT:** „Technologiebonus“ at green electricity generation
- **DE:** Biofuel certificates
- **DK:** Guaranteed biomethane feed-in-bonus
- **IT:** FIT set by law, implementation regulations pending
- **SE:** Complex support system
- **FI:** Tax relief, (high taxes for fossile vehicle fuels)
- **NO:** Tax relief till 2015

The way forward

1. **National registries** to be established in every biomethane producing country
2. Connection/cooperation/harmonisation among national registries - **compatibility of individual registries** to be addressed at early stage
3. **Common criteria/attributes** applied by all participating registries for mutual acceptance of Guarantees of Origin
4. Proposal directed at the EU Commission for declaring the interlinked EEA natural gas network as a **single, closed mass balance system (circle)**
5. **Unified principles** of counting exported/imported biomethane towards national targets

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