



AGGM Austrian Gas Grid Management AG

Sector coupling, hydrogen and biomethan Competence Center Training

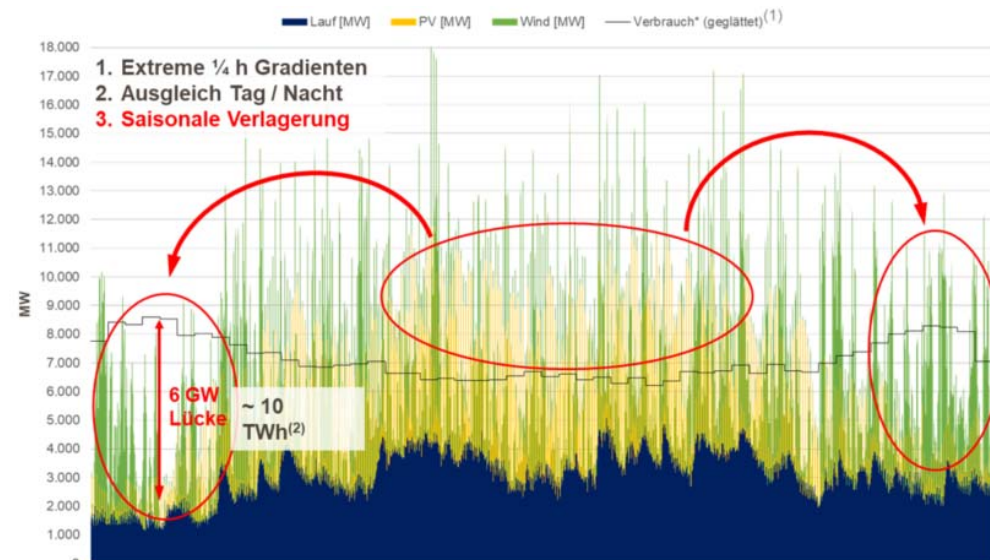
Joint Information Day
Vienna, 05.12.2019

- ▶ Sector coupling
 - ▶ Why do we need it?
- ▶ What contribution does AGGM make?
 - ▶ Hydrogen map
 - ▶ Biogas map

- ▶ Competence Center Training

Sector coupling

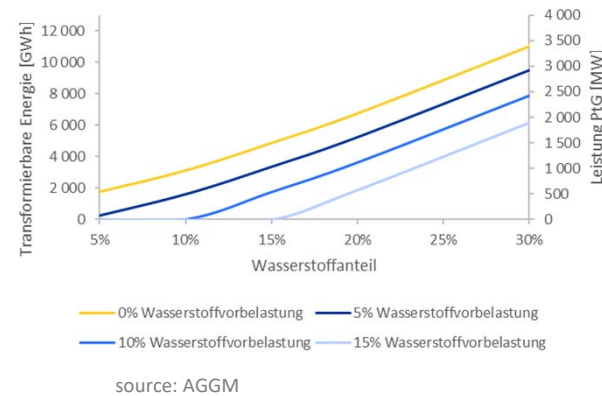
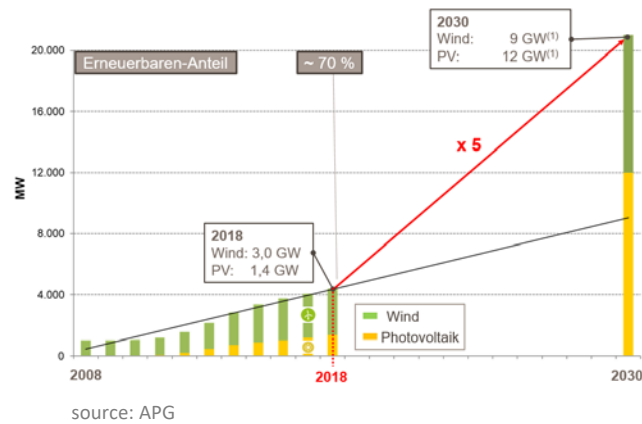
- ▶ Joint consideration of all energy systems: electricity, gas, heat, mobility
- ▶ Central element of #mission2030 to achieve the 2030 climate goals
 - ▶ 100% electricity production from renewable energy sources, national, balanced
 - ▶ GHG reduction: minus 36% compared to 1990 by 2030



(1) Mittelwert aus den wöchentlichen Minima und Maxima
(2) Notwendigkeit zur saisonale Verlagerung

Quelle: APG

Renewable gases für seasonal storage



- ▶ Necessary expansion of installed capacity by 2030: (source: APG)
 - ▶ wind x 3
 - ▶ PV x 9
- ▶ Seasonal storage in the TWh range only possible with power-to-gas
- ▶ Necessary installed power-to-gas capacity 2030: approx. 2 GW (Source: APG)
- ▶ transformable energy potential in the gas distribution network: up to 11 TWh per year as hydrogen
- ▶ With additional methanisation, all available (surplus) electricity could be fully utilized at all times.
- ▶ In combination with the biogas plants as CO₂ source, methanisation would double the biomethane output!

What contribution does AGGM make?

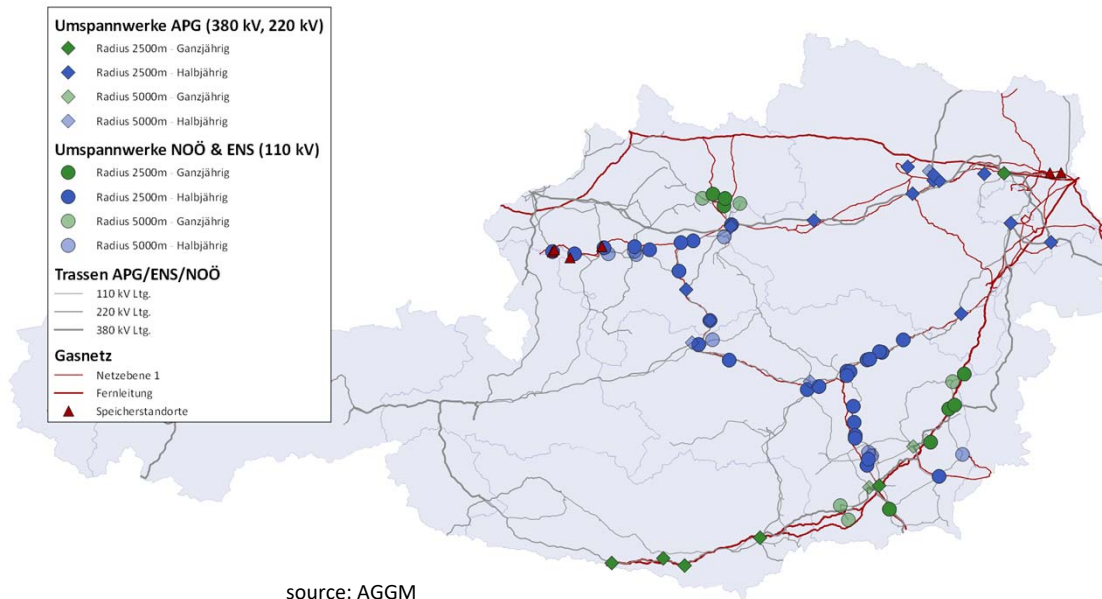
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Out of our tasks for infrastructure planning:

- ▶ **Hydrogen map**
 - ▶ Locate the best sites for hydrogen injection in the gas network

- ▶ **Biogas map**
 - ▶ Locate the best sites for biomethan injection in the gas network

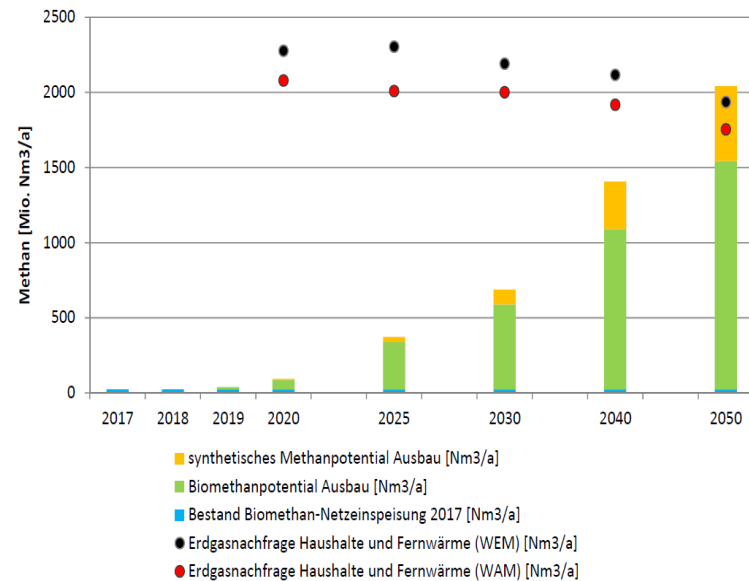
Draft of the hydrogen map



- ▶ **Objective:**
 - ▶ determination of optimal sites for hydrogen injection into the gas grid
- ▶ **Analysis of:**
 - ▶ Power grid data (220 + 380 kV grid, 110 kV grid - selection)
 - ▶ Gas network data (transmission and distribution network)
 - ▶ Seasonal flow profiles in the gas networks
- ▶ **Result:**
 - ▶ sites with firm / interruptible injection of hydrogen in the gas grid by electrolysis

Biogas potential in Austria

- ▶ Study by the Johannes Kepler University Linz: "Increasing the use of renewable methane in the heating sector"
 - ▶ First stage: until 2030:
 - 600 million Nm³/a biomethane
 - ▶ Second stage: 2030 to 2050
 - 1.5 billion Nm³/a biomethane + 0.5 billion Nm³/a synthetic methane
- ▶ Other studies indicate a biomethane potential of 1.5 to 4 billion Nm³/a



Quelle: Energieinstitut an der JKU Linz

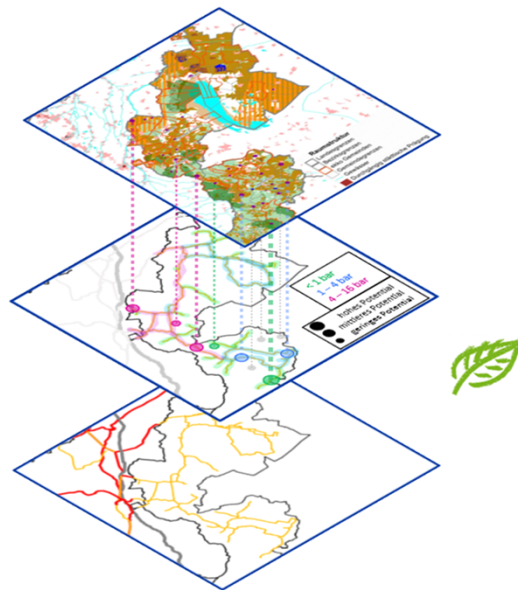
Costs for connecting existing biogas plants

- ▶ Study commissioned by ÖVGW
- ▶ The study looked at 187 out of about 301 plants

Present value of CAPEX + OPEX over 20 years [million EUR]	Number of plants	Power [Nm ³ /h biomethan]	Energy per year [approx. million Nm ³ /a]
100	74	16.813	140
200	133	23.119	184
313	187	25.991	204

- ▶ The cost of connecting existing biogas plants to the gas grid is approximately 5 - 10% of the total cost of biomethane generation
- ▶ The cost of gas treatment is approximately 17% of the total cost of biomethane generation

source: Kienberger et.al., 2019, Greening the Gas, Kostenbetrachtung der Einbindung existierender Biogasanlagen in das österreichische Gasnetz



Quelle: AGGM

- ▶ Development of additional potential
- ▶ Project AGGM:
 - ▶ Creation of a biogas map
 - ▶ Identification of suitable zones for the connection of biogas plants to the gas network
- ▶ Pilot project with Netz Burgenland
 - ▶ Analysis to identify the best connecting points

- ▶ Training objectives
 - ▶ Description of the Austrian gas market model
 - ▶ regulatory framework for trading within the Austrian gas market
- ▶ Dates:
 - ▶ 02.03.2020 in german
 - ▶ 13.10.2020 in english
- ▶ Registration:
 - ▶ www.aggm.at by February 2020
- ▶ Solo AGGM CCT
 - 22.4. 2020 DE
 - 12.11.2020 DE
- ▶ 1st day: AGGM topics
 - ▶ Modul 1: Austrian gas market model - introduction
 - ▶ Modul 2: Capacities and third party access
 - ▶ Modul 3: Infrastructure planning
 - ▶ Modul 4: Balance group registration and data publication
 - ▶ Modul 5: Schedule management, balancing, gas flow management
 - ▶ Modul 6: Congestion management
- ▶ 2nd day: CEGH topics
 - ▶ Austrian Market model
 - ▶ CEGH at a glance
 - ▶ Virtual trading point
 - ▶ PEGAS CEGH Gas Exchange
 - ▶ Legal topics

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