

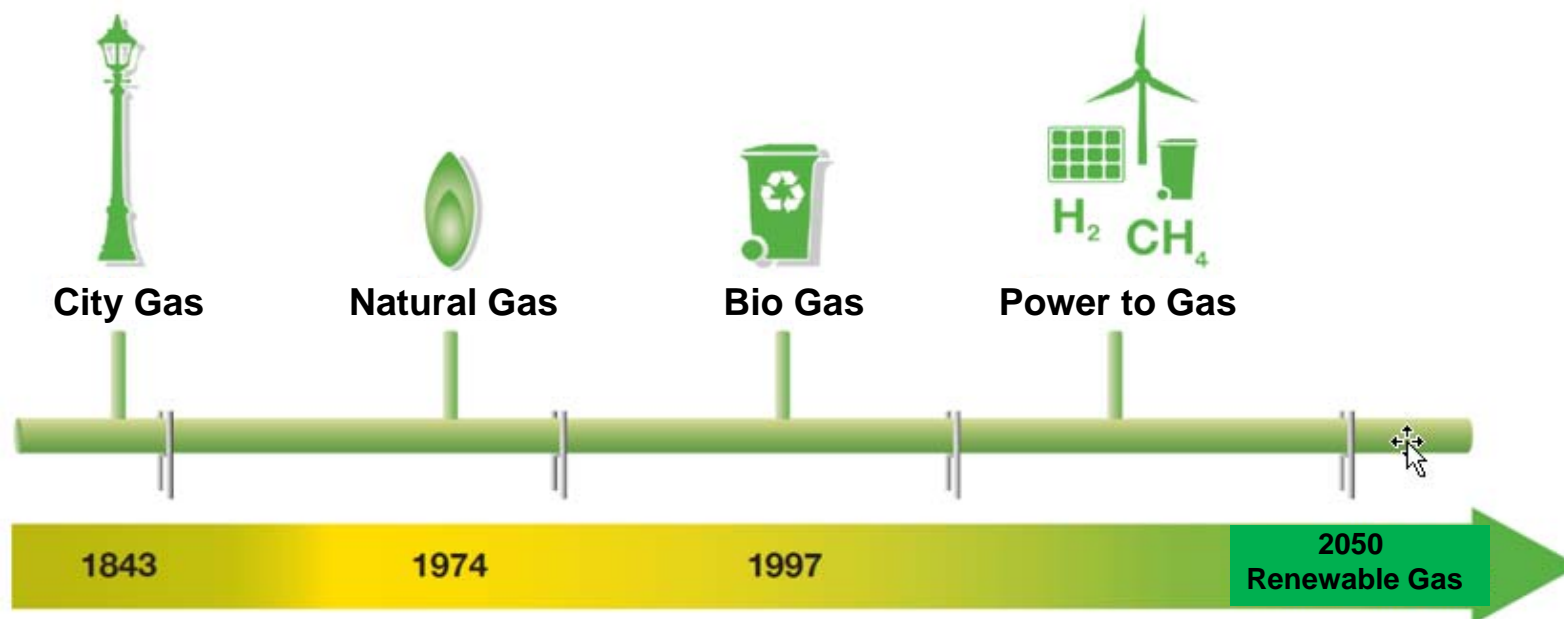
STRATEGIC INTEGRATION OF BIOMETHANE IN THE GAS GRID



Andreas Kunz
Leiter Realisierung Erneuerbare Energien
19.10.2017

DEVELOPMENT OF AN ENERGY CARRIER

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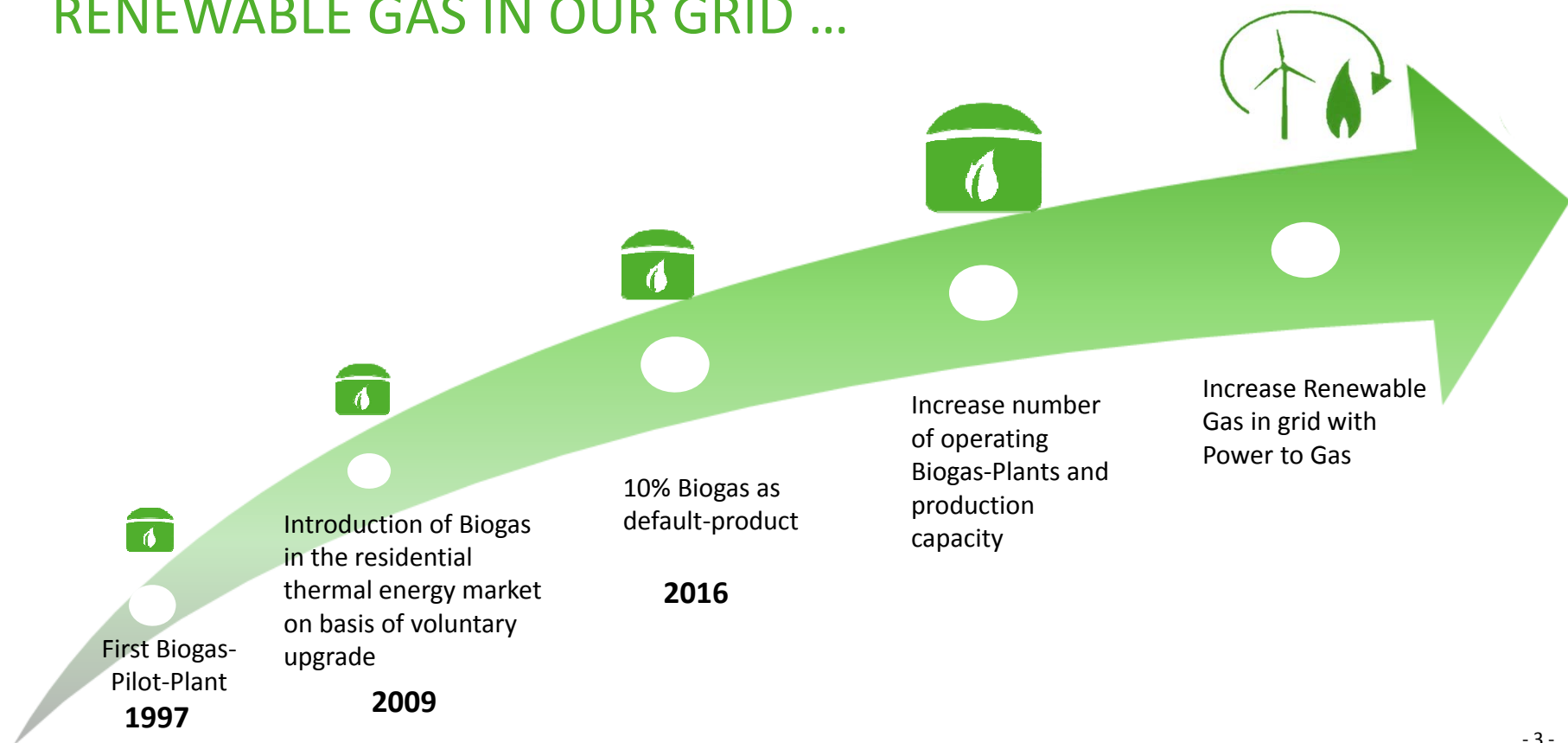


Primary energy development from:

Wood, Coal, Petrol, Natural Gas to Biomass and Renewable Electrical Power

WE CONTINUOUSLY INCREASE THE CONTENT OF RENEWABLE GAS IN OUR GRID ...

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OUR BIOGAS UPGRADING PLANTS

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Meilen

- 2010
- 3 GWh/a
- Sewage sludge



Buchs (SG)

- 2015
- 2.3 GWh/a
- Sewage sludge



Niedergösgen

- 2017
- 13 GWh/a
- Industrial sewage sludge



Volketswil

- 2011
- 10 GWh/a
- Organic waste



Biogas Zürich

- 2013
- 65 GWh/a
- Organic waste + sewage sludge



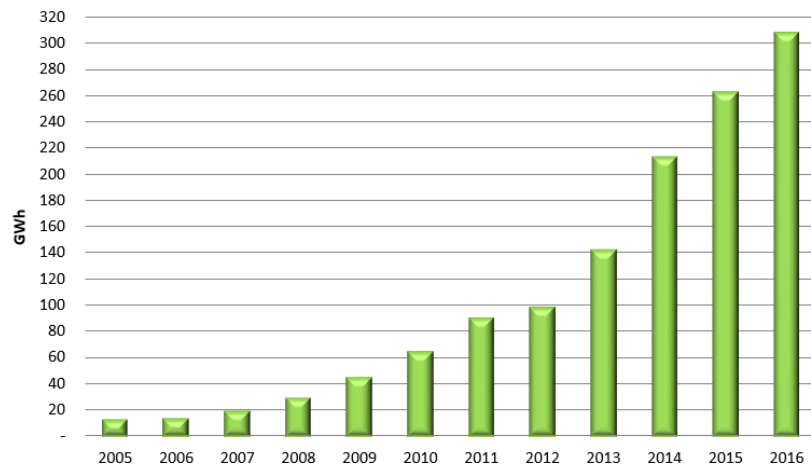
Uzwil

- 2017
- 11 GWh/a
- Organic waste



SWISS BIOGAS INJECTION INTO THE GAS GRID

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Biogas Production CH (2016) : 308 GWh
Total Gas demand CH (2016) : 39'029 GWh

TARGET:
2030, 30% OF THE GAS IN THE RESIDENTIAL
THERMAL SECTOR SHALL BE RENEWABLE

HOW TO INCREASE THE AMOUNT OF BIOGAS IN THE GRID

- Injection of Biogas into the gas grid instead of using it to produce electrical power
- Development of future biomass sources
- Increase production capacity of Renewable Gas with Power to Gas technology

WHY DO WE WANT TO INJECT BIOGAS INTO THE GAS GRID

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Use of the entire energy in the biogas

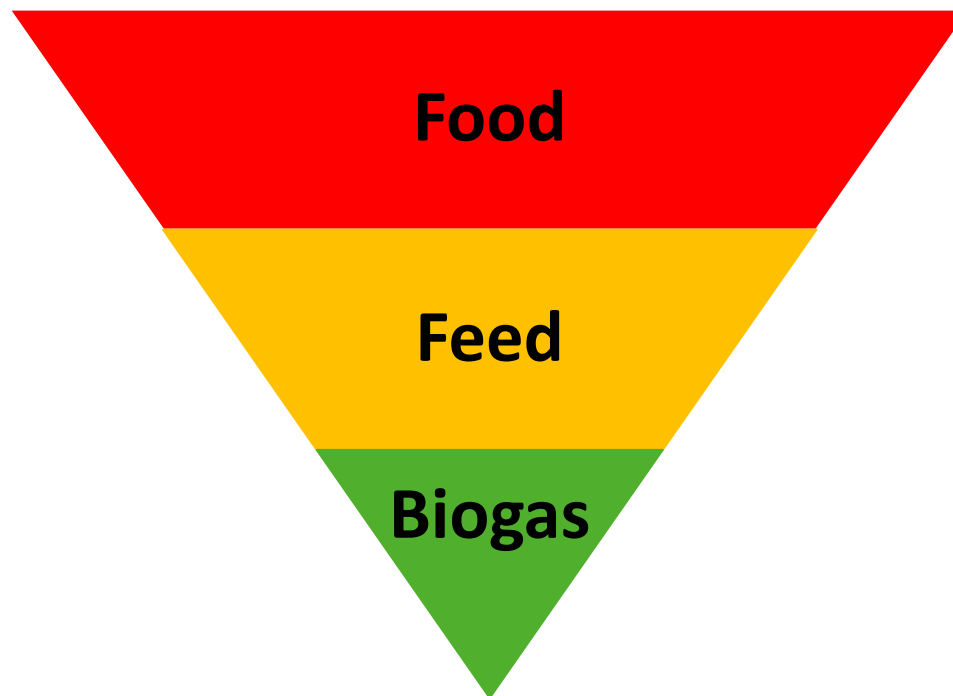
- Only one third of the energy is transferred to electrical power. The remaining amount is available as heat, which is often not fully used, especially in the summer months
- With an injection into the gas grid the entire amount of energy is stored and can be transferred case by case to heat, electricity or fuel for mobility at the time of use throughout the year

Impact on CO₂ reduction

- The Swiss electrical energy mix has already a low CO₂ footprint and therefore the impact of the additional power is low or could in time of excessive power in the grid even worsen the situation
- High impact if biogas substitutes natural gas or if it is used in the transport sector and substitutes petrol.

THE ETHICS OF BIOGAS IS IMPORTANT

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- First: Biomass shall be used for food production
- Secend: Biomass shall be used to feed the livestock
- Biogas shall only be produced from residual material and waste

OUR VISION: FROM CO₂ REMOVAL TO POWER TO GAS

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CO₂ is currently separated in a CO₂ Separation Plant

CO₂ shall be used with renewable H₂ and convert to additional methane

More renewable Gas can be produced with the Power to Gas Technology

Injectable Biogas CH₄

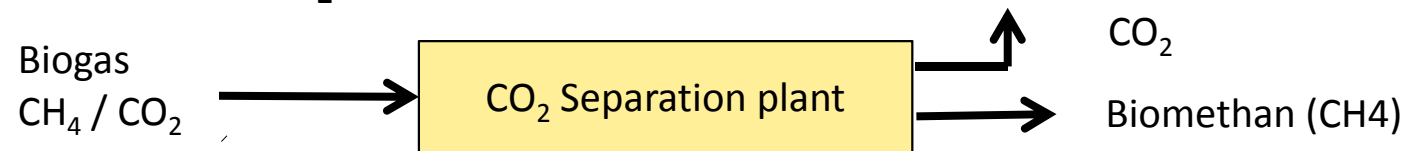


Situation Biogas-Upgrading-Plant Werdhölzli Zürich

MORE RENEWABLE GAS WITH POWER TO GAS

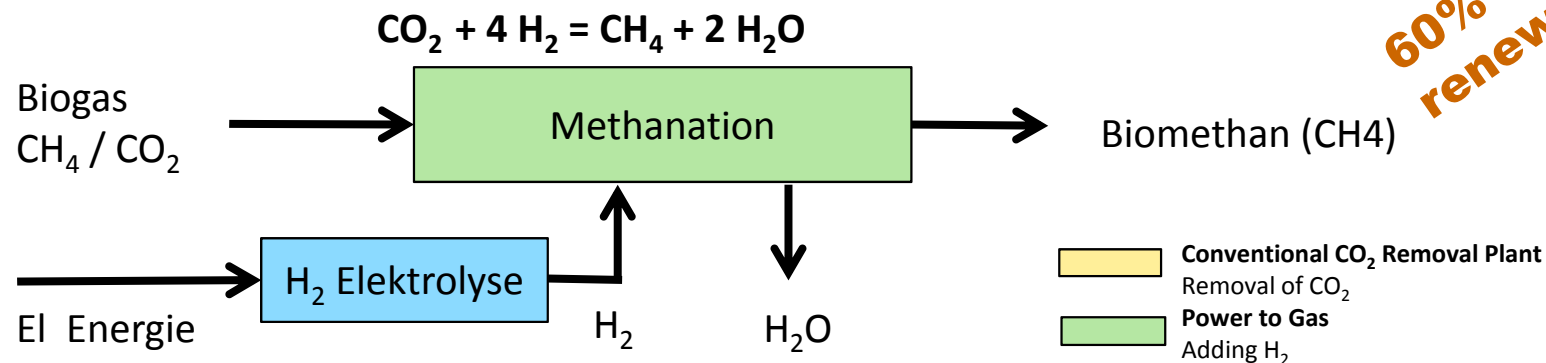
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Conventional CO₂ Removal Plant



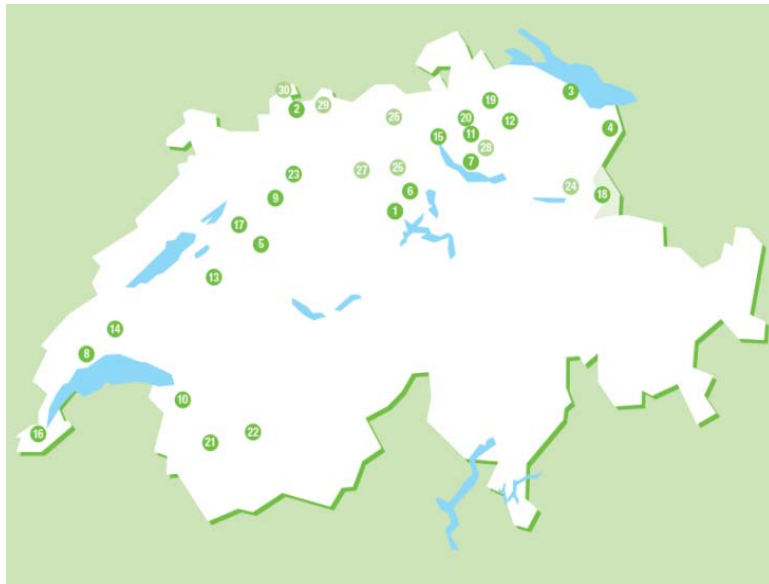
Power to Gas Technology

substitution of a conventional CO₂ removal plant



**60% more
renewable gas**

Large Potential in Switzerland



Biogasplants with injection into the gas grid (2015)

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Number of plants	Existing biogas grid injection	Potential biogas injected to grid
WWTP	15	64
Biowaste-Digestion	8	9
Total	23	73

- 600 GWh: Transformation of biogasplants in the vicinity of a gas grid from electrical power production to gas injection
- 540 GWh: Application of the power to gas technology instead of CO₂ separation for existing and new biogas plants

Renewable Gas production could be increased from 308 GWh to 1.5 TWh

THANK YOU!



Andreas Kunz

Leiter Projektrealisierung Erneuerbare Energien

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