

Country Report Austria

Presented by

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1. Introduction:

Key-messages “Austria and Biorefinery”

➤ Country of Bioenergy:

- ✓ 11% of primary energy supply
- ✓ 1.10. 2007: 4.3% Biofuels on the market

➤ Country of Wood: P&P industry and wood industry

➤ Ambitious policy goals:

- ✓ 10% Biofuels in 2010
- ✓ 13% GHG reduction Kyoto-Target (2010 – 2012)

➤ Technology development and R&D expertise:

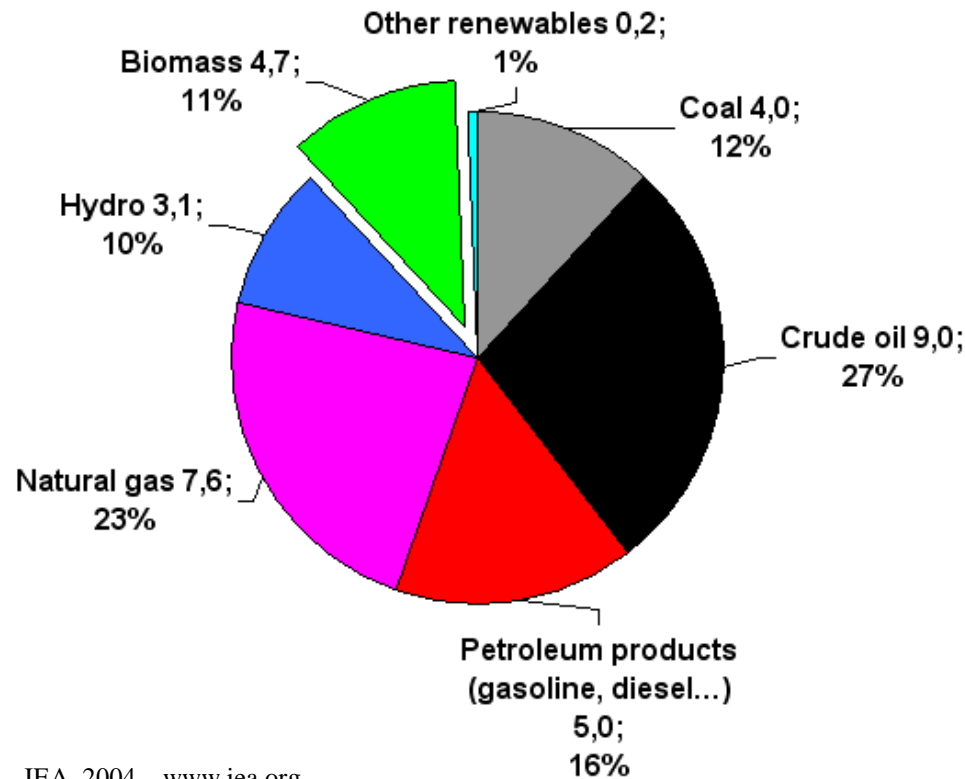
- ✓ small scale biomass combustion
- ✓ biodiesel
- ✓ gasification
- ✓ Green Biorefinery
- ✓ environmental assessment

Country Report “Identification Current Processing Potential and Mapping Existing Biorefineries”

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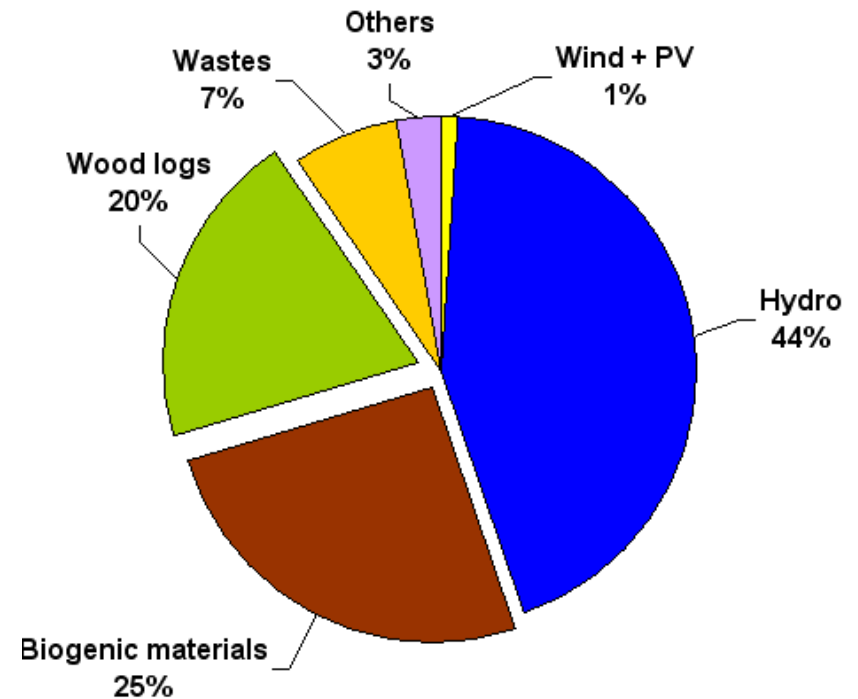
2. Current primary energy demand

Total Primary Energy Supply of Austria (Mtoe)



IEA, 2004 – www.iea.org

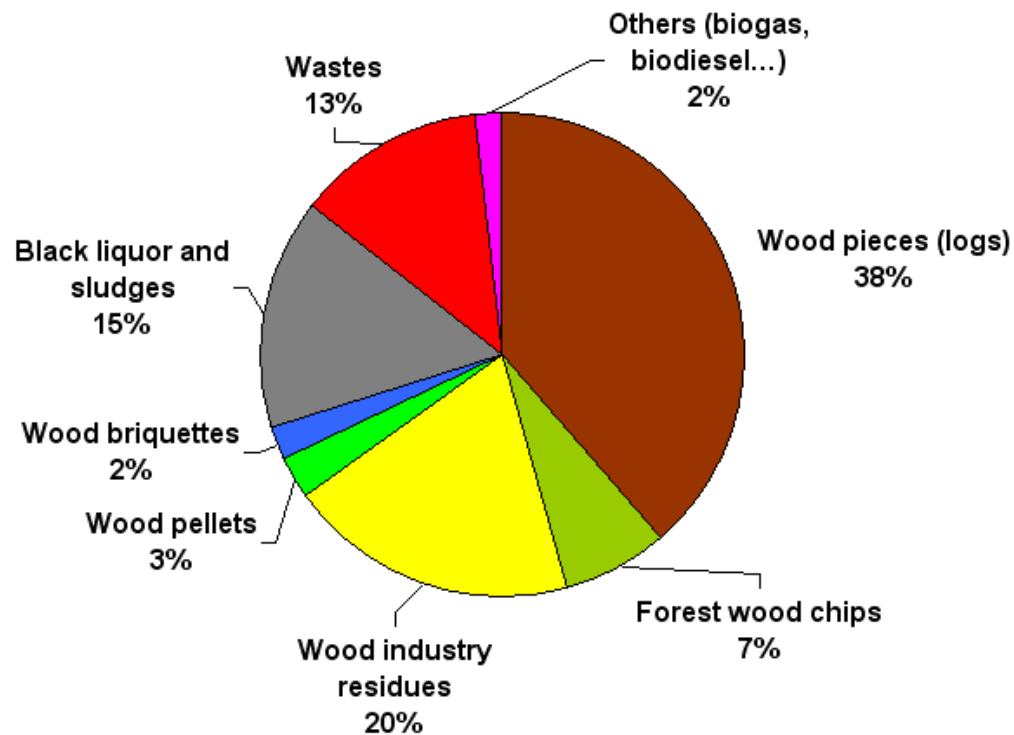
Total Renewable Energy Consumption in Austria



Daten über erneuerbare Energieträger in Österreich, 2006 – data: 2004

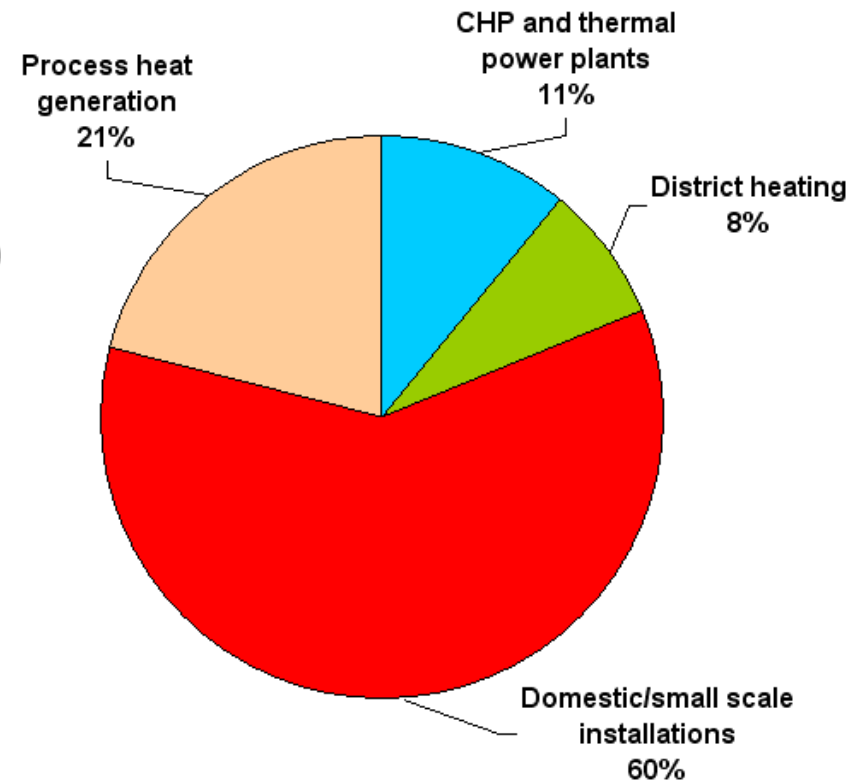
2. Current national biomass use - Total

Origin of the Biomass Energy Sources in Austria



Basisdaten Bioenergie Österreich, 2006; data: 2004

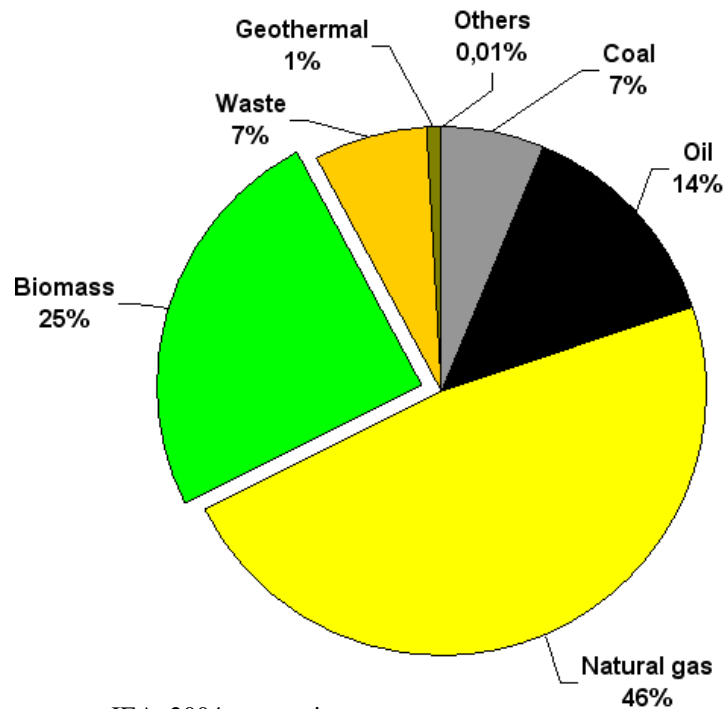
Biomass broken down by type of application



BMWA, 2004

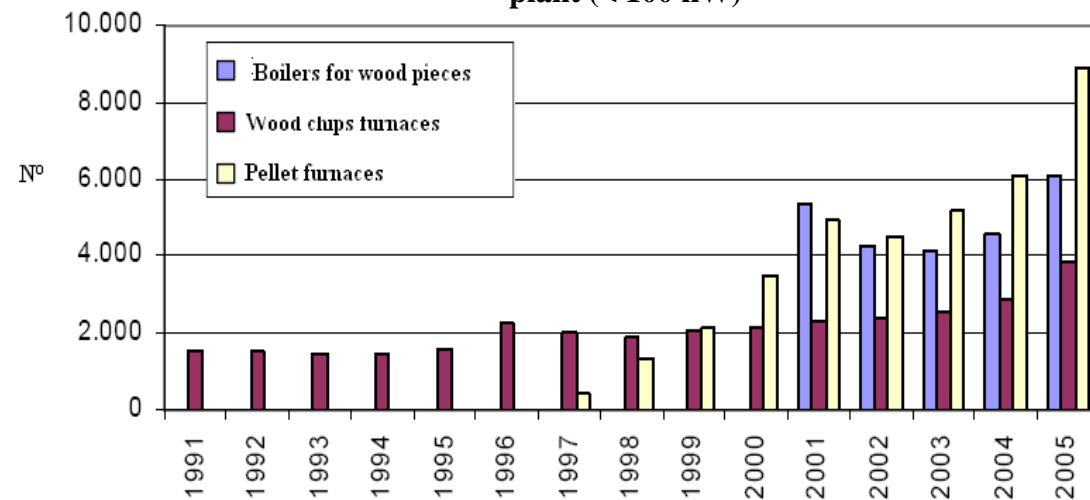
2. Current national biomass use – Heat

Sources of the Heat Production in Austria



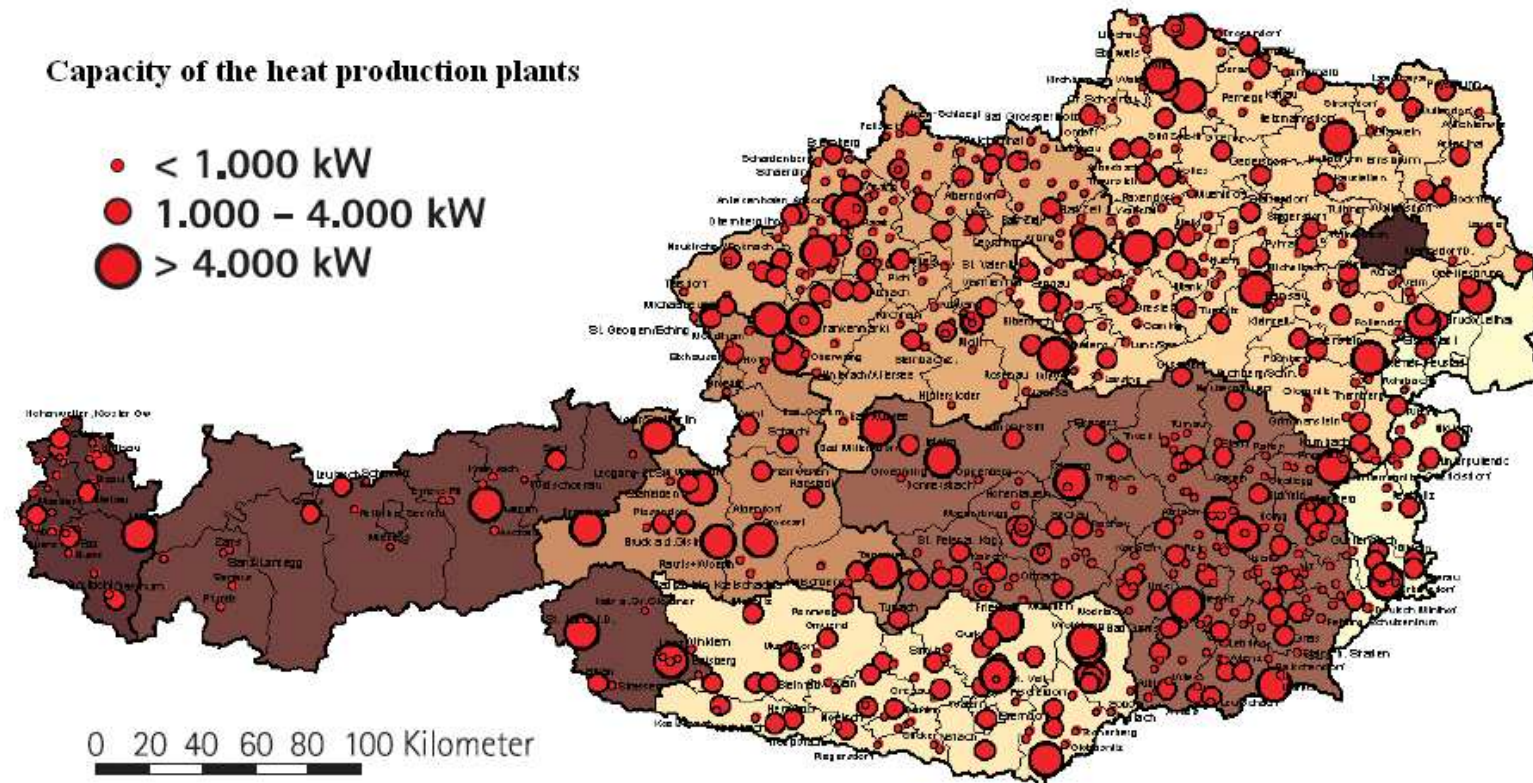
IEA, 2004 – www.iea.org

Trend of installation for small combustion plant (< 100 kW)



Daten über erneuerbare Energieträger in Österreich, 2006

2. Current national biomass use – Heat



Basisdaten Bioenergie Österreich, 2006

2. Current national biomass use – Biogas

Operational biogas plants in Austria: 231

Installed capacity: 50,67 MW

Electricity production: 207,15 GWh

Landfill gas plants in Austria: 15

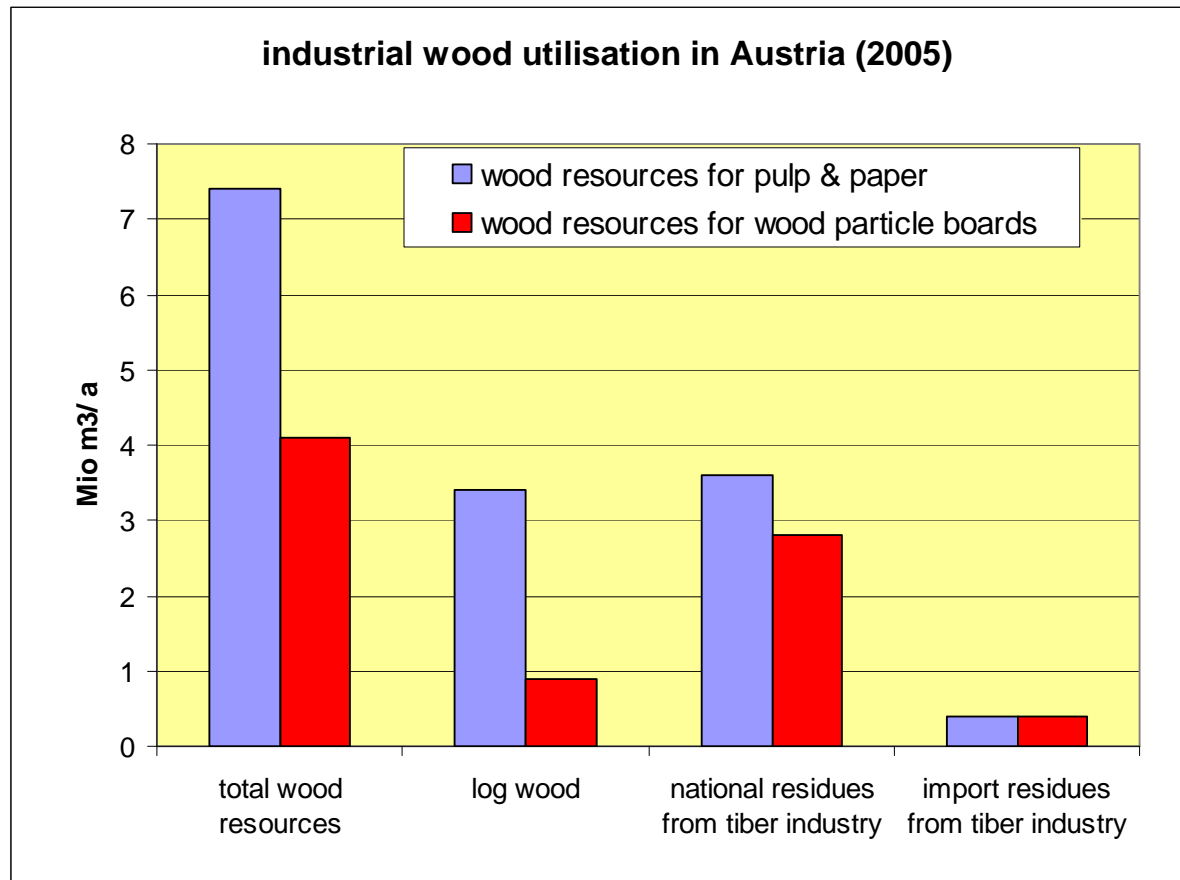
Installed capacity: 16 MW

Electricity production: 100 GWh

Source: Basisdaten Bioenergie Österreich,
2006

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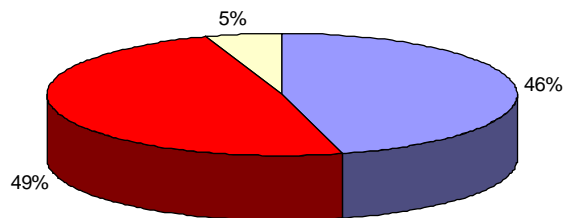
2. Current national biomass use – Wood for Pulp and paper and wooden products



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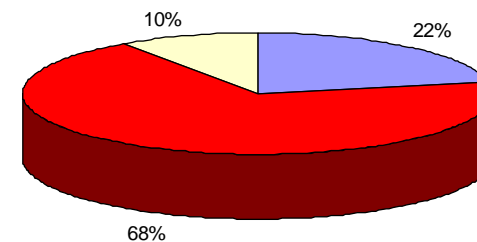
wood resources for pulp & paper (2005)



■ log wood
■ national residues from timber industry
■ import residues from timber industry

source: Austropapier

wood resources for particle boards (2005)



■ log wood
■ national wood residues from timber industry
■ wood import residues from timber industry

source: Fachverband der Holzindustrie

3. Biomass-related national policy goals I

	2005	Estimate 2010	Estimate 2020
Bioenergy	125 PJ ^a	Double	
Biofuels	2,50% ^c	10% (5,75% from 2008) ^{d, e}	20% (EU:10%)
Electricity from biomass	2,8%	10% ^b	85% from renewable
Renewable energy	22%	Double: 6% (1990) to 12%	45% (EU: 20%)

^a Without waste and sludges from paper industries

^b Moreover: 78,1% from renewable (basis = 56,1 TWh); 80% from renewable

^c since 1.10.2007: 4,3%

^d (Nation-wide) implementation of E-85 filling stations in Austria until 2010.

^e Establishment of methane based fuel with bio-methane content of at least 20% until 2010.

Source:

ÖBR: Regierungserklärung der österreichische Bundesregierung 2006.

ÖSG: Ökostromgesetz 2002, Ökostromgesetz-Novelle 2006.

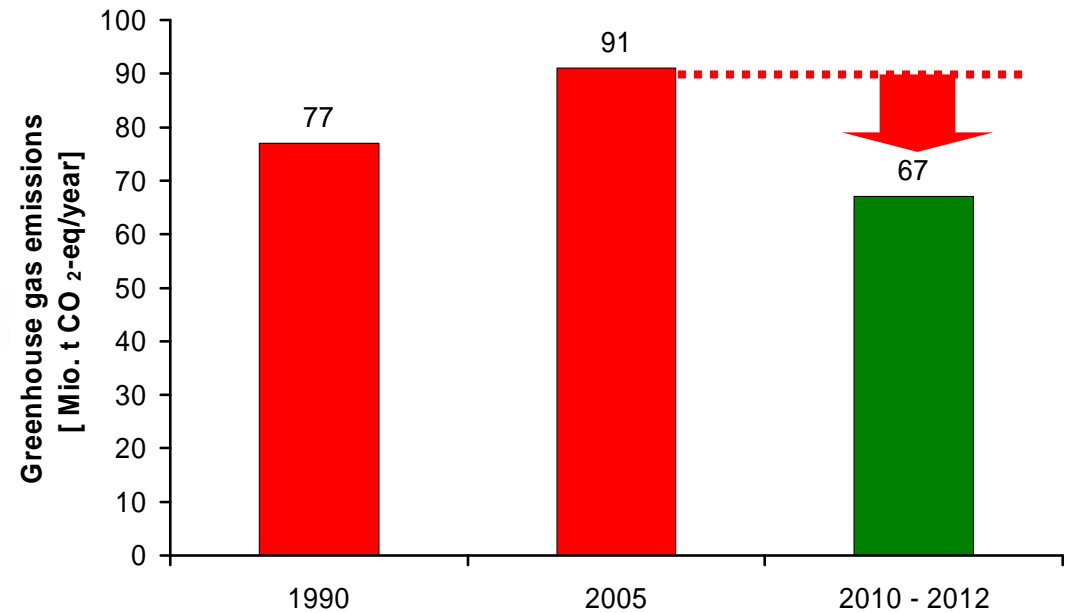
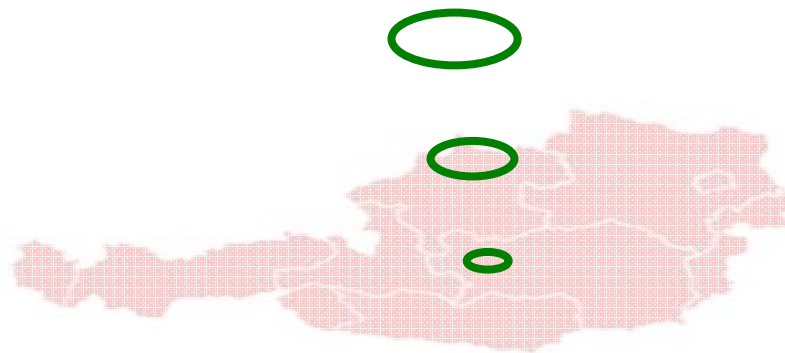
Country Report "Identification Current Processing Potential and Mapping Existing Biorefineries"

Austrian Participation
financed by

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3. Biomass-related national policy goals II

13% GHG
reduction Kyoto
target



3. Biomass-related national policy goals III

in Austria there exists no strategic policy goals for renewable materials or chemicals today

4. Mapping of Existing Biorefineries

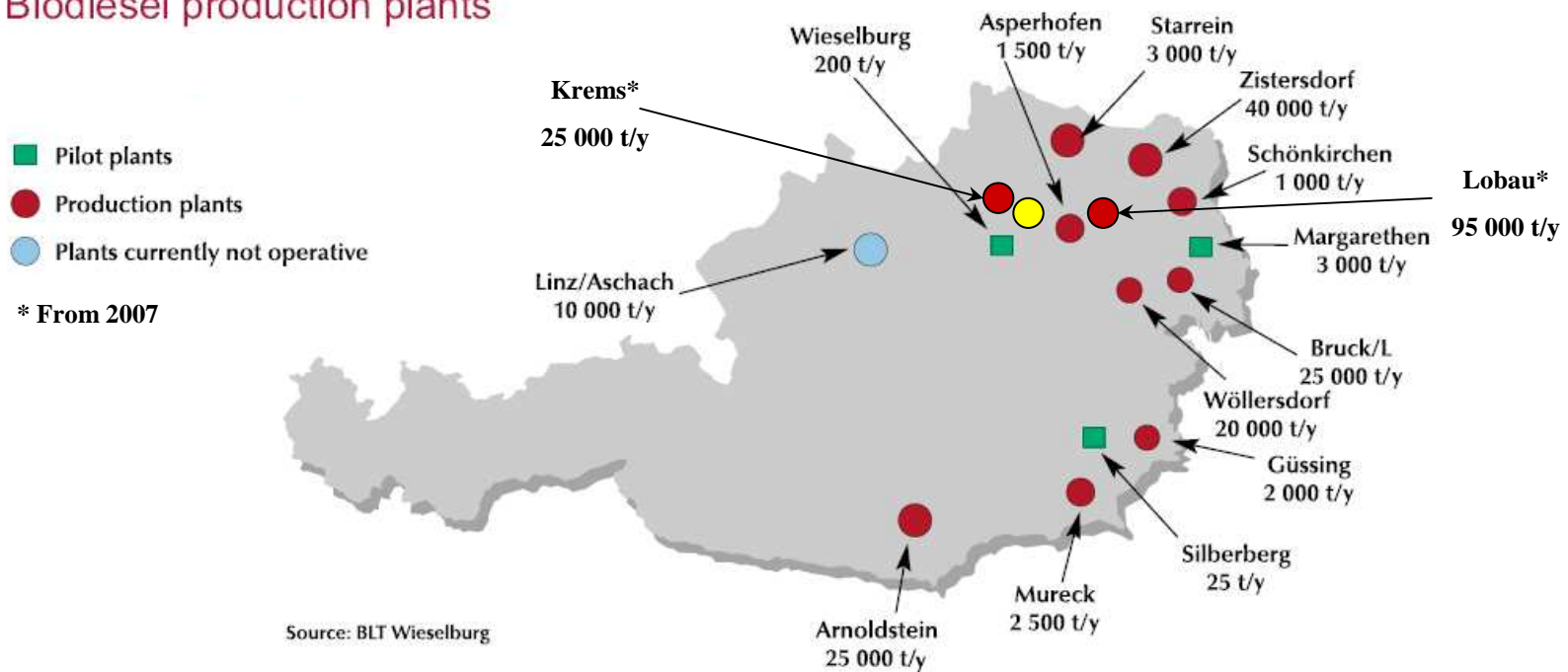
Primary agricultural sector (small-scale initiatives)

- **Small scale activities for separating functional chemicals out of wine pomace (R&D status)**

- **Introducing oil seed press cake or other biogenous industrial wastes into biogas digester is getting more popular and frequent**

4. Mapping of Existing Biorefineries – Biofuels

Biodiesel production plants

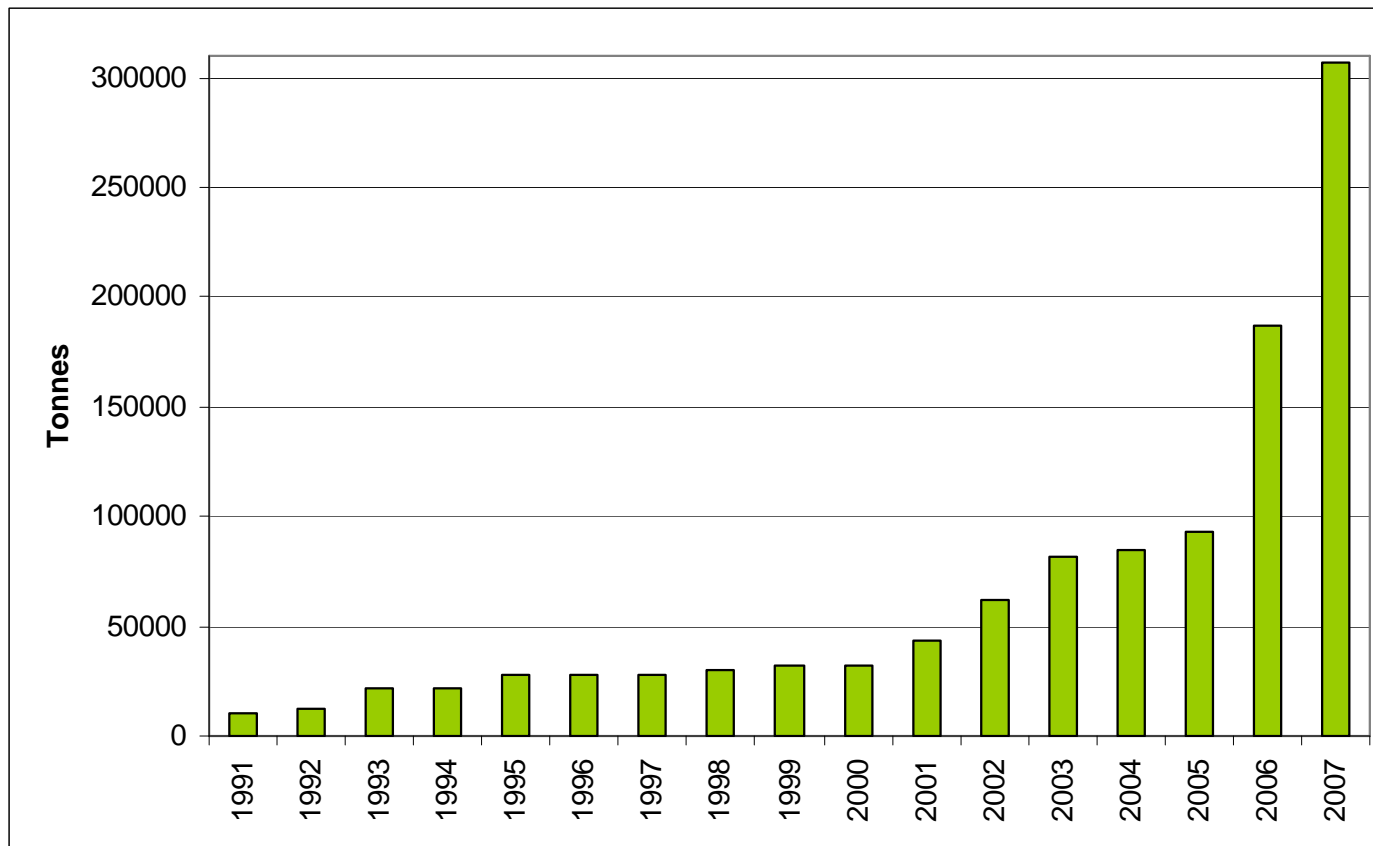


● Pischelsdorf, Bioethanol production plant – 158,000 t/y

Source: based on BMwA, 2004, own additions

4. Mapping of Existing Biorefineries – Biofuels

Trend of biodiesel production in Austria



Basisdaten Bioenergie Österreich, 2006; updated

4. Mapping of Existing Biorefineries

Food industry (sugar, starch, oleochemistry, bioethanol, biodiesel, ...)

- **No existing biorefinery in the food sector**
- **AGRANA: sugar and starch industry; multiple products but no “real” biorefinery as such**
- **Integration of waste streams of food industry into biogas production is mostly standard**
- **Using residues of biodiesel and bioethanol processes for biogas production is on the way**

4. Mapping of Existing Biorefineries

Non-food Industry (materials, products, ...)

- **No existing biorefinery in the non-food sector**
- **Pilot plant Green Biorefinery:**
 - ✓ **in upper Austria will clearly fit into this segment (spring 2008)**
 - ✓ **products: amino acid, lactic acid and biogas;**
 - ✓ **future options: real fibre products or linking press cake to liquid fuels technology**

4. Mapping of Existing Biorefineries

Feed Industry

- **No existing biorefinery in this sector**
- **General overlap with the green biorefinery (low grade amino acids or protein products)**
- **Separating components out of oil seed press-cake has been tested (R&D status)**
- **Introducing oil seed press cake into biogas is getting frequent**

4. Mapping of Existing Biorefineries

Pulp/paper Industry

➤ Lenzing AG (Upper Austria, Lenzing)

- ✓ Separation of chemicals as a co-product of fibre and pulp & paper processes
- ✓ products: furfural, acetic acid, sodium sulfate, potassium-lignin- sulfate

➤ Danisco Sweeteners GmbH (Upper Austria, Lenzing)

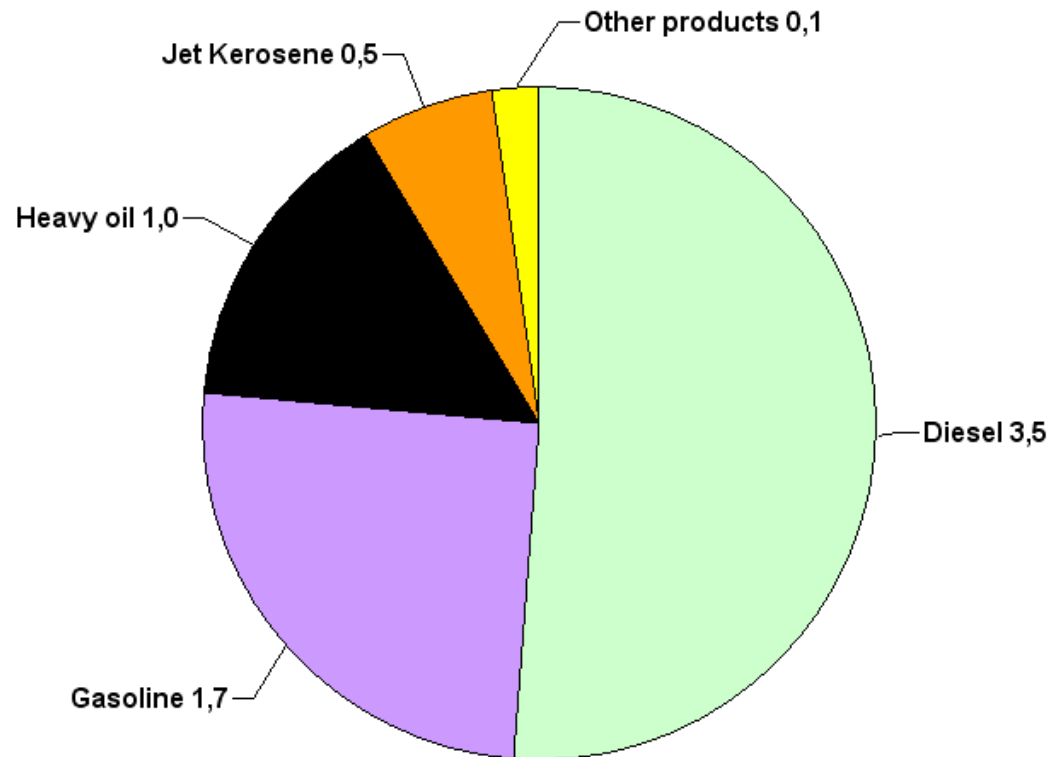
- ✓ Separation of Xylose out of waste water of pulp & paper (established 1996)

4. Mapping of Existing Biorefineries – Oil refinery

Austria has one refinery, the Schwechat facility outside Vienna (entirely owned and operated by OMV).

Next to the refinery in Schwechat there is *Borealis Polyolefine GmbH* with an annual output of 1,0 Mt polymers (mostly PP and PE)

Production of petroleum refined product in Austria (Mt)

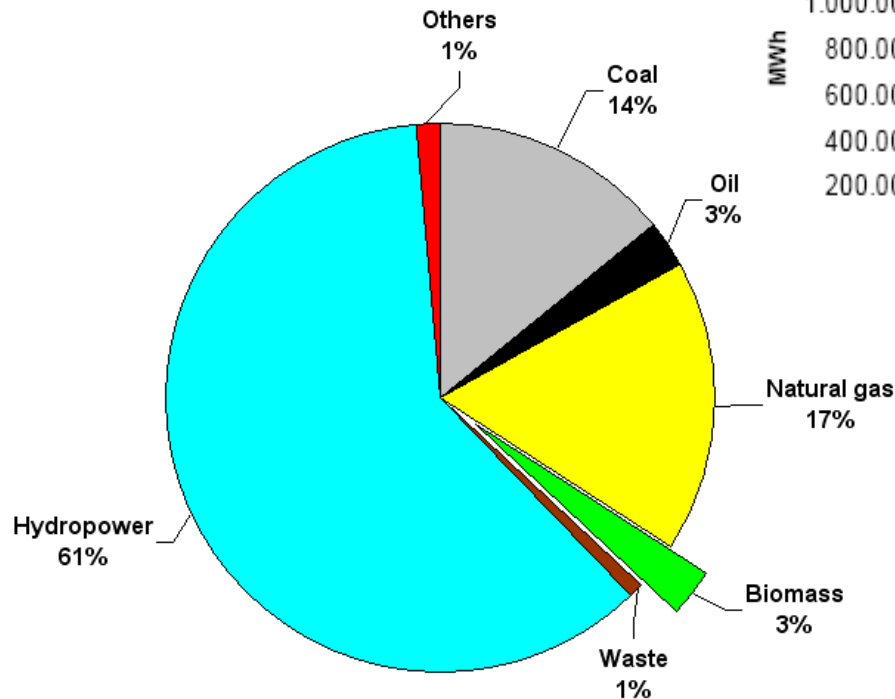


IEA, 2004 – www.iea.org

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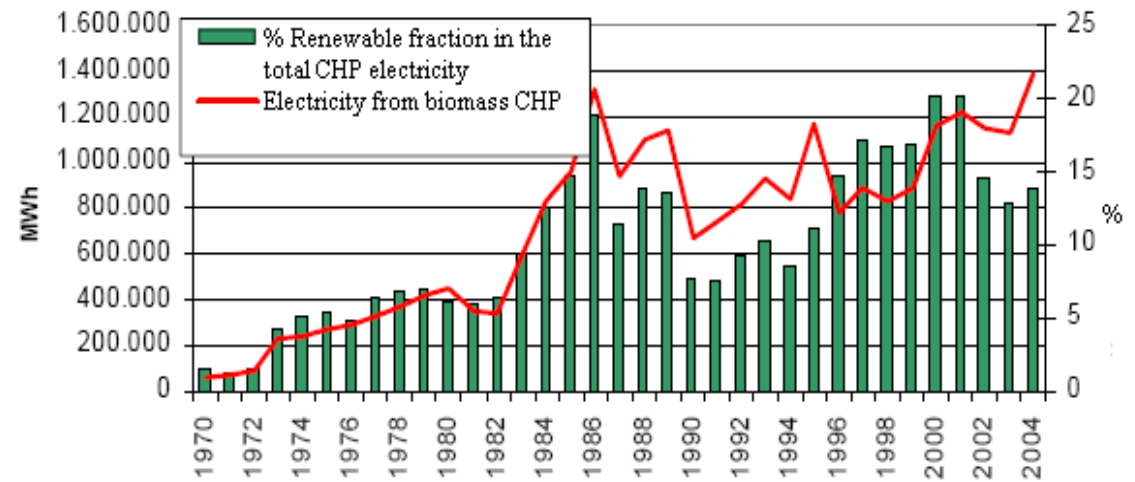
4. Mapping of Existing Biorefineries – Electricity and CHP

Electric generation mix for Austria



IEA, 2004 – www.iea.org

Electricity from biomass CHP and renewable fraction of the total CHP electricity



Daten über erneuerbare Energieträger in Österreich, 2006

4. Mapping of Existing Biorefineries

Others

None

5. RTD-activities

National and EC Projects

- BIOSYNERGY – EU IP
- Bioenergy NoE – Network of Excellence
- RENEW: EU project
- REFUEL: EU project
- Austrian Green Biorefinery Initiative (Fabrik der Zukunft)
- Green Biorefinery (SUSPRISE Programme, AUT- NL co-operation)

-to be completed

5. RTD-activities

National Programs

➤ (Main) National Programs

1. **“Sustainable economy”** (2002 – 2007)
 - Factory of tomorrow
 - House of tomorrow
 - Energy of tomorrow
2. **“Energy of the Future”** (1st call Sept 07): Biorefinery subtopic
3. **“Material use of biomass”** (1st call expected in 2008)

5. RTD-activities

Pilot Plants

- Gasification plant Güssing for FT-Biofuel and SNG testing
- Green Biorefinery in Utzenaich (Upper Austria)

Optimisation of processes for amino acid,
lactic acid and biogas on the basis of grass silage

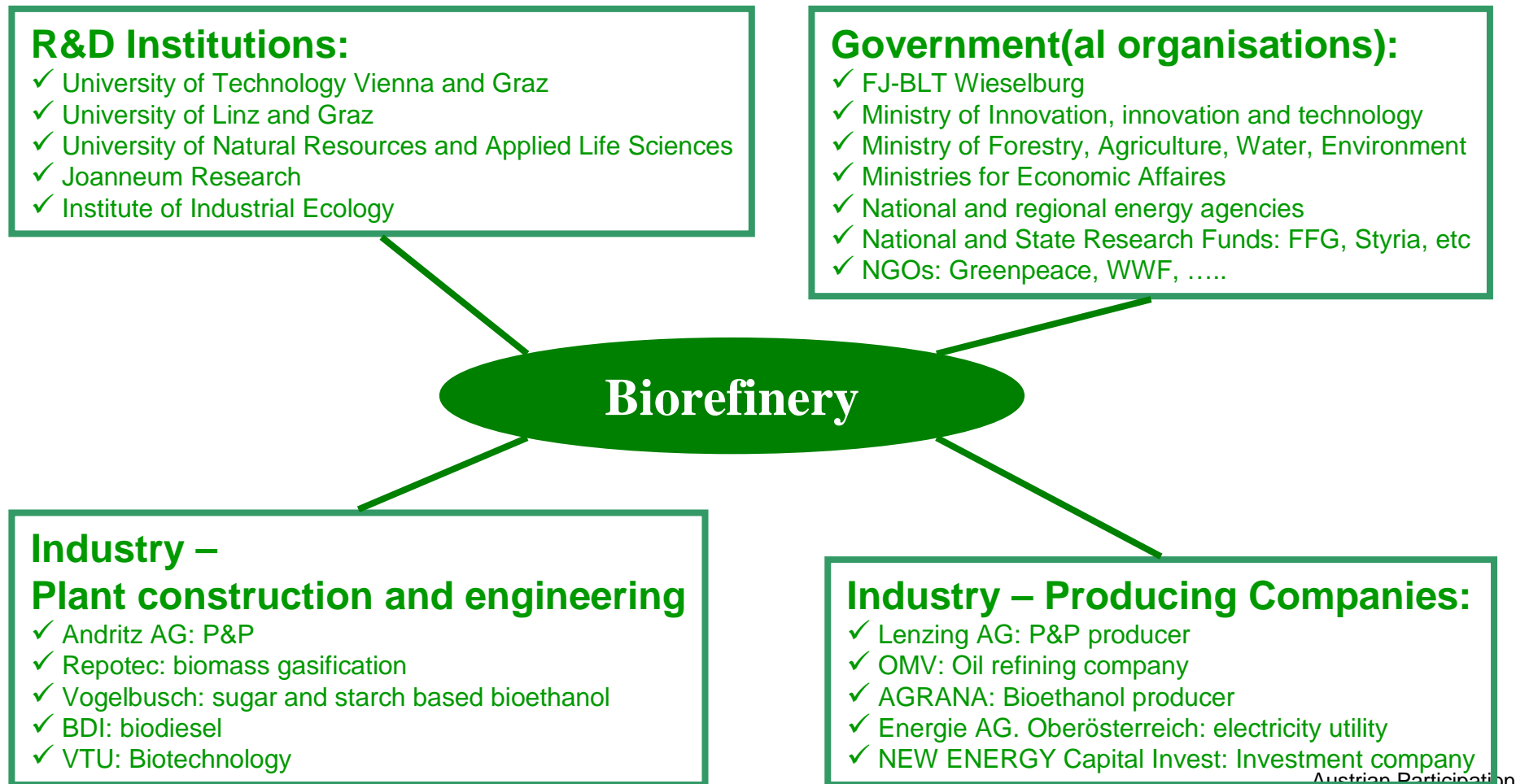
5. RTD-activities

Demonstration Plants

- NExBTL- Demo-Plant planned: Capacity 200 kt/a
OMV jointly owned plant with NesteOil (Finland)

- Improving processes for co-products on pulp & paper

6. Major National Stakeholders - Overview



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7. Summary

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