



# Plans and policies for biofuels of the Land Salzburg



# Status of Biofuels in Salzburg

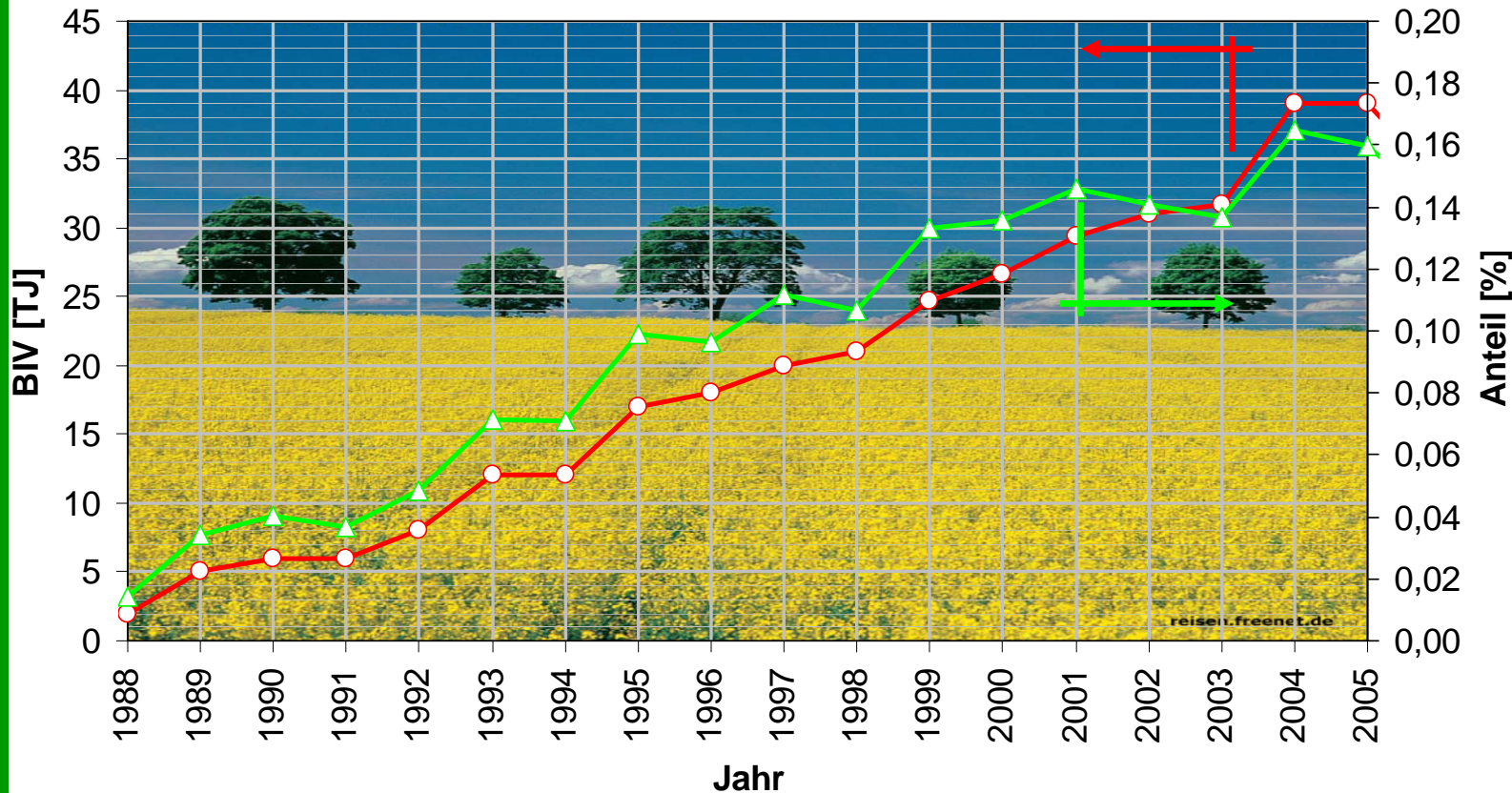
Status of biofuels

Mobility and Environment

Biomass Resources

Plans and Projects

Conclusions

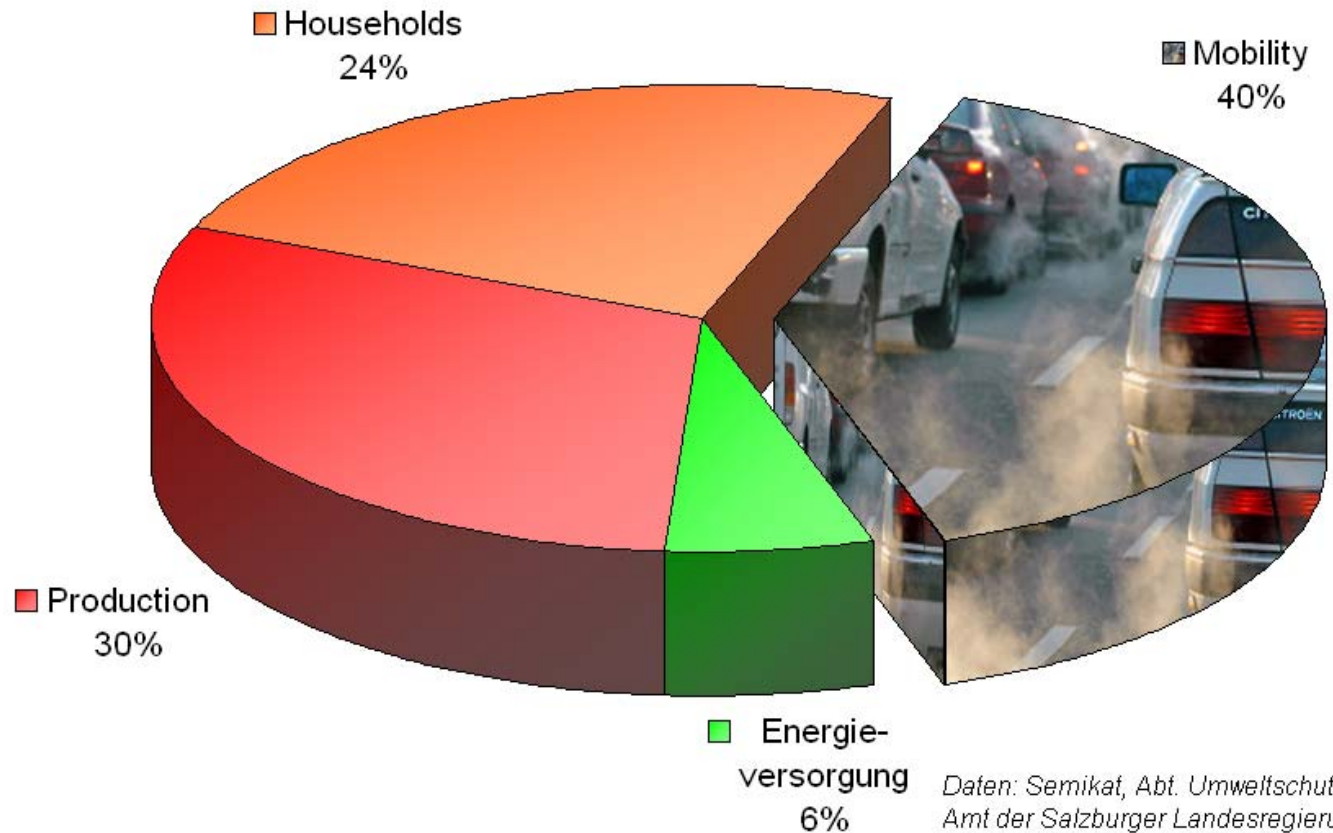






# Mobility and Environment

CO<sub>2</sub> (2003)



Daten: Semikat, Abt. Umweltschutz,  
Amt der Salzburger Landesregierung, 2004

**Gerhard Löffler,**  
**20422 Bioenergie**

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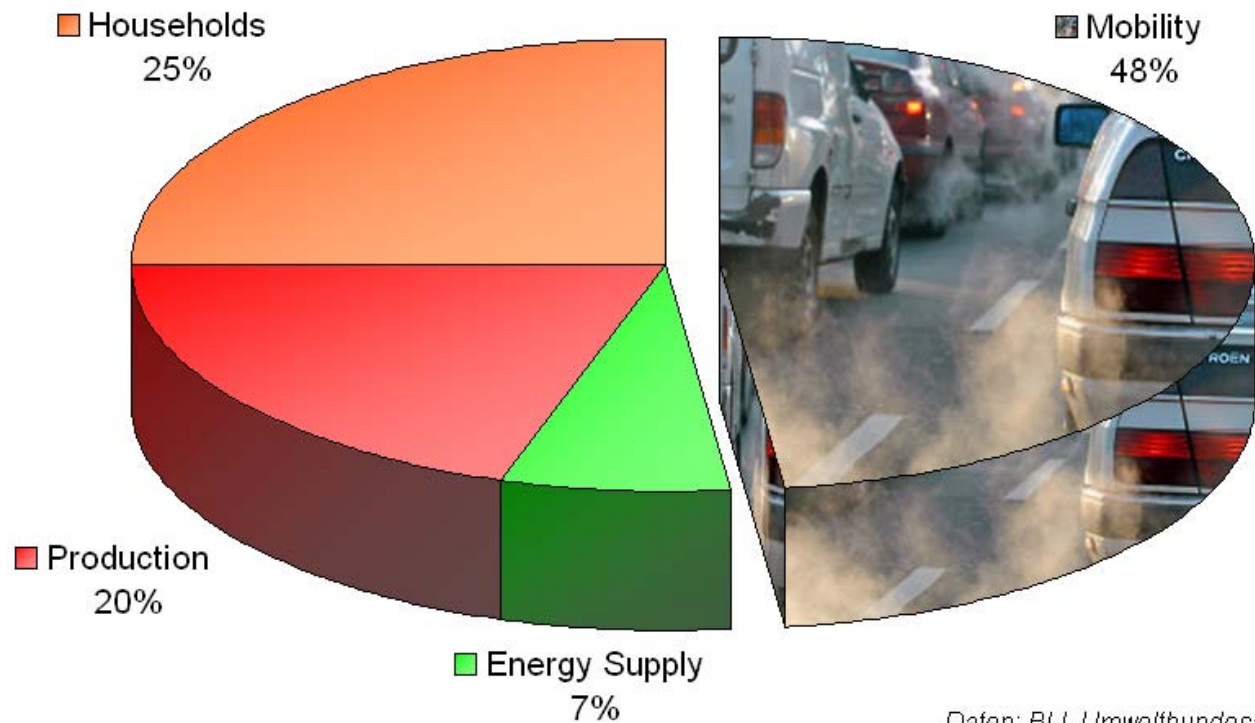
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# Mobility and Environment

CO<sub>2</sub> (2004)



Daten: BLI, Umweltbundesamt (2006)

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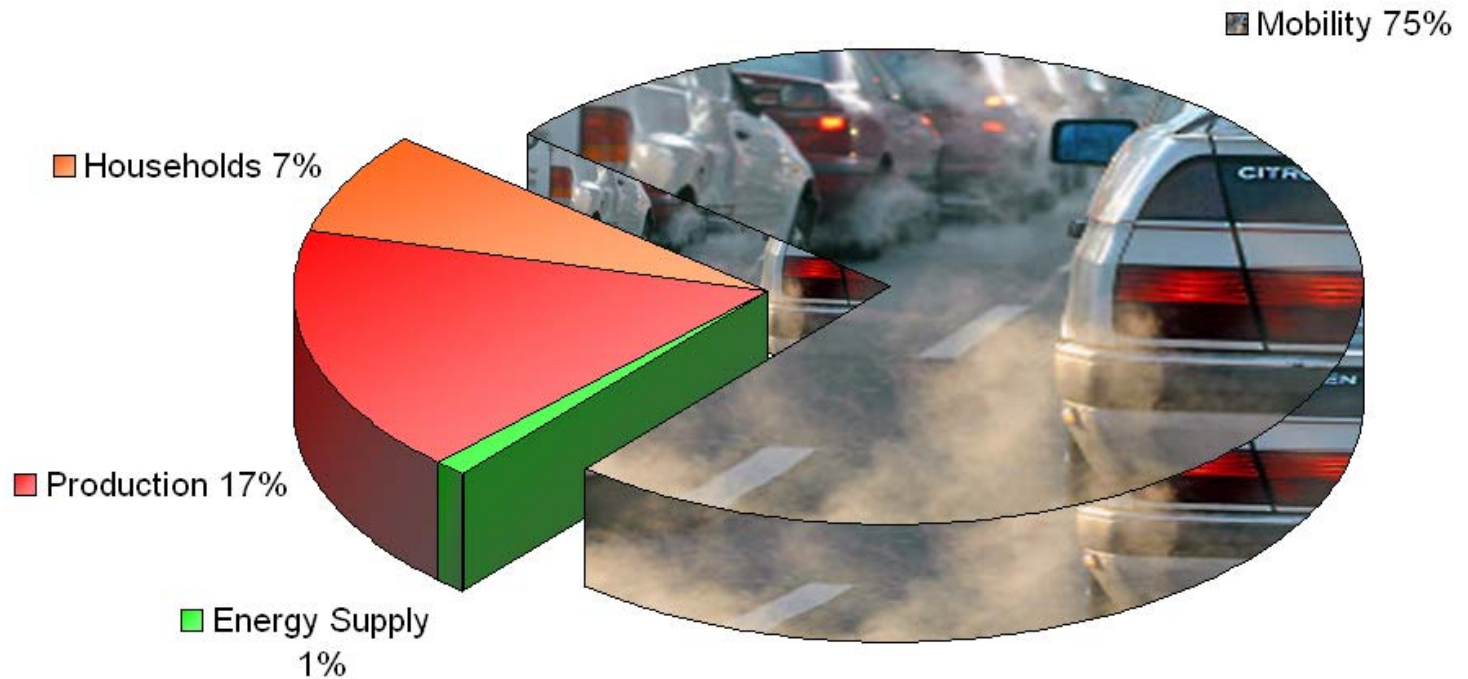
Conclusions





# Mobility and Environment

NO<sub>x</sub> (2003)



Daten: Semikat, Abt. Umweltschutz,  
Amt der Salzburger Landesregierung, 2004

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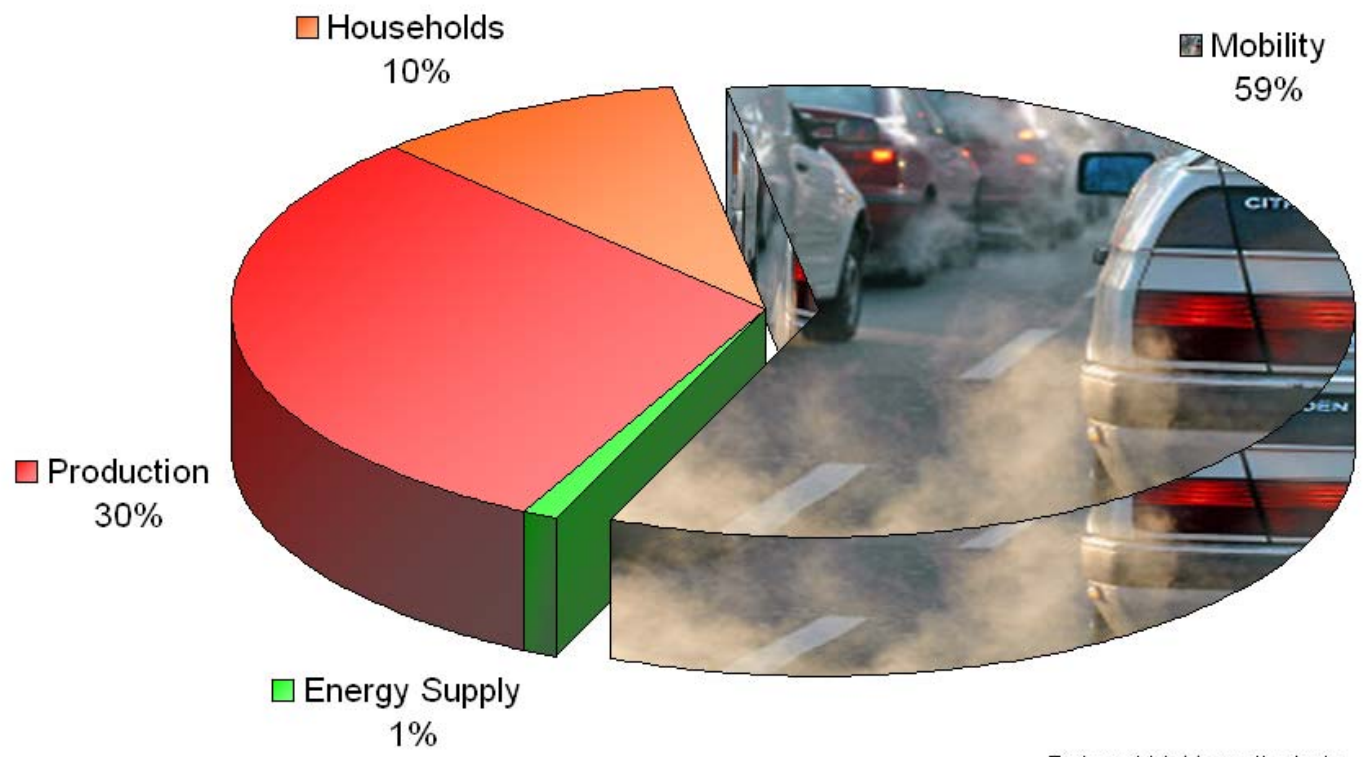
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# Mobility and Environment

PM 10 "Zentralraum" (2005)



Daten: Abt. Umweltschutz,  
Amt der Salzburger Landesregierung 2005

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# Biomass Resources

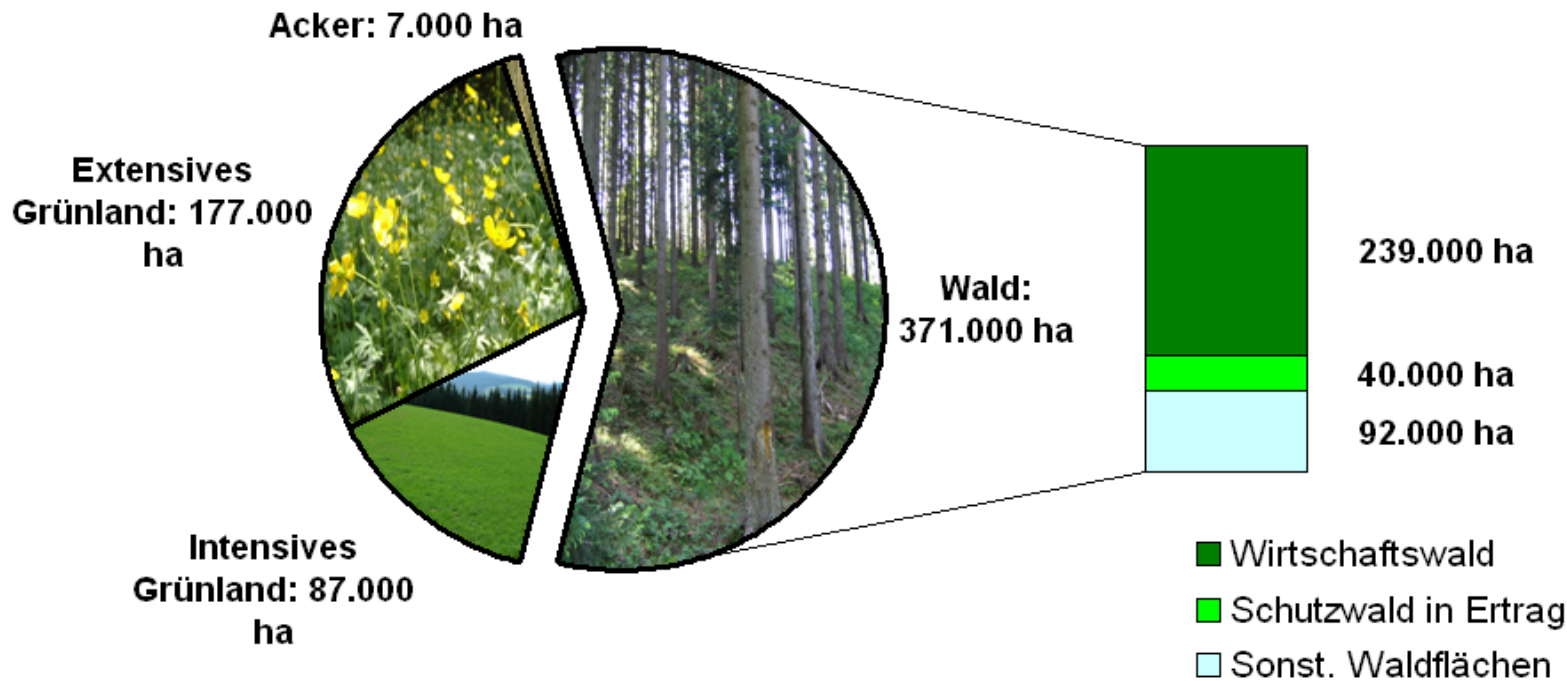
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# Biomass Resources - Wood

Status of biofuels

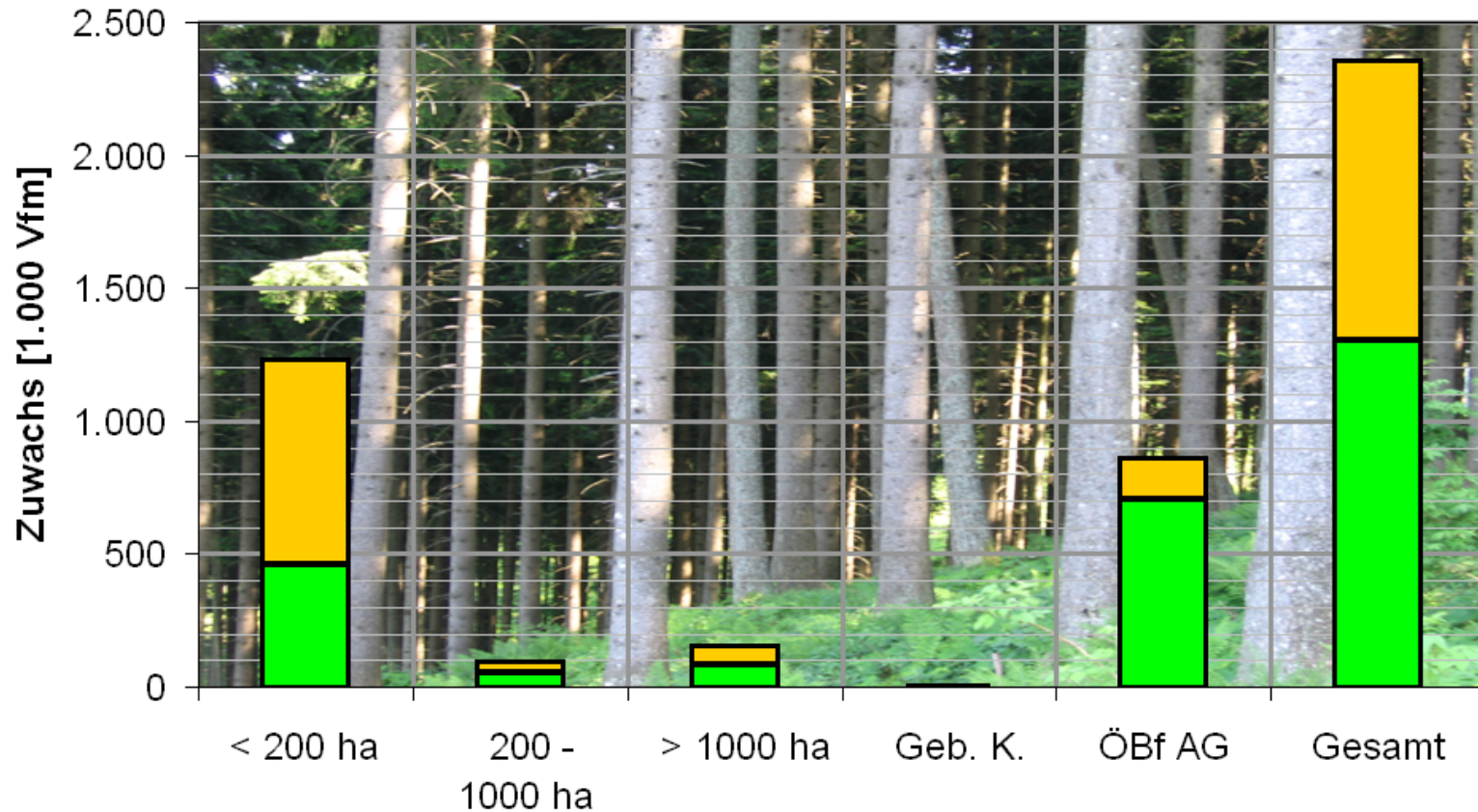
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■ Nutzung ■ ungen. Zuwachs







# Biomass Resources - Grassland

Status of biofuels

Mobility and Environment

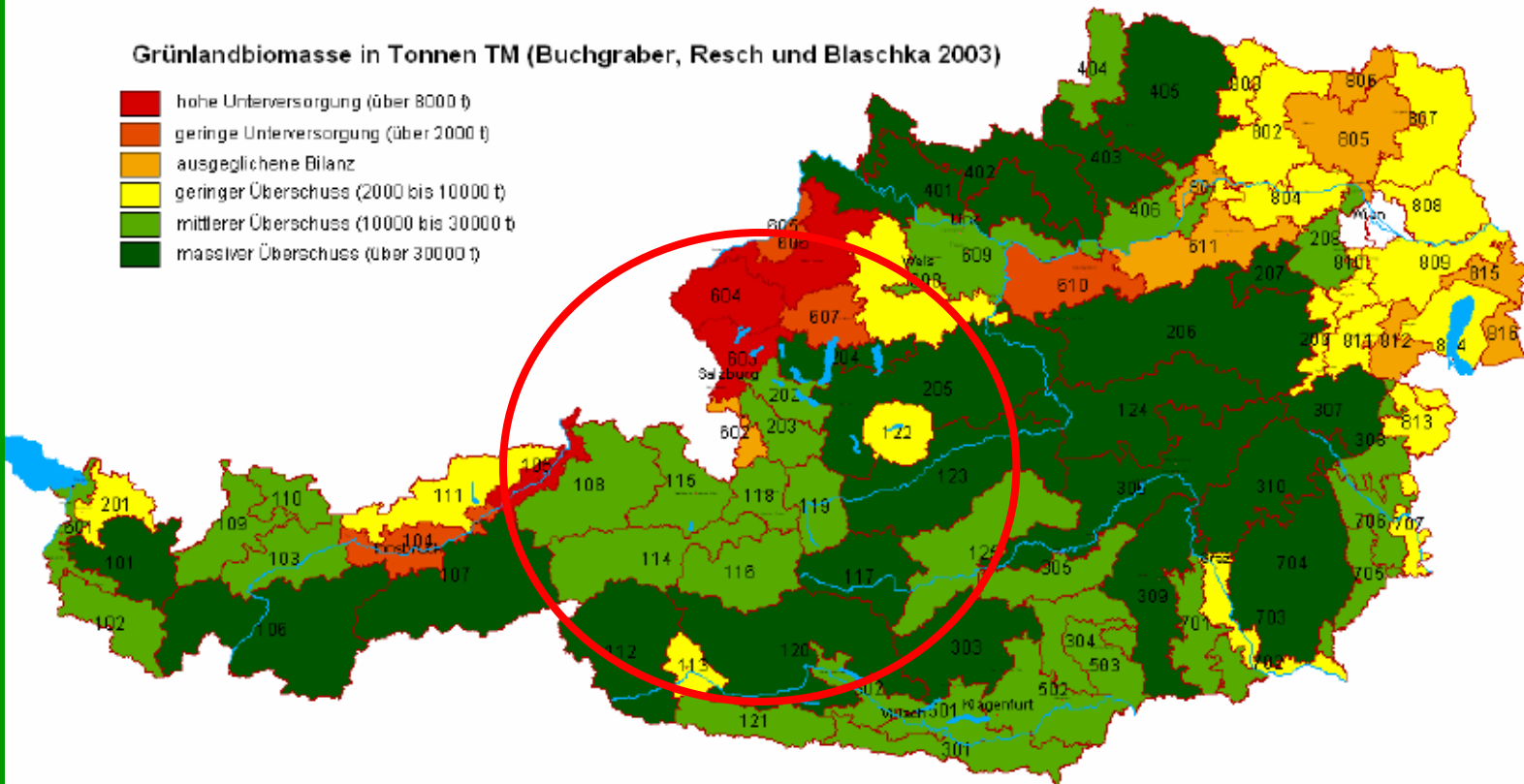
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Grünlandbiomasse in Tonnen TM (Buchgraber, Resch und Blaschka 2003)

- hohe Unterversorgung (über 8000 t)
- geringe Unterversorgung (über 2000 t)
- ausgeglichene Bilanz
- geringer Überschuss (2000 bis 10000 t)
- mittlerer Überschuss (10000 bis 30000 t)
- massiver Überschuss (über 30000 t)





# Biomass Resources - Grassland

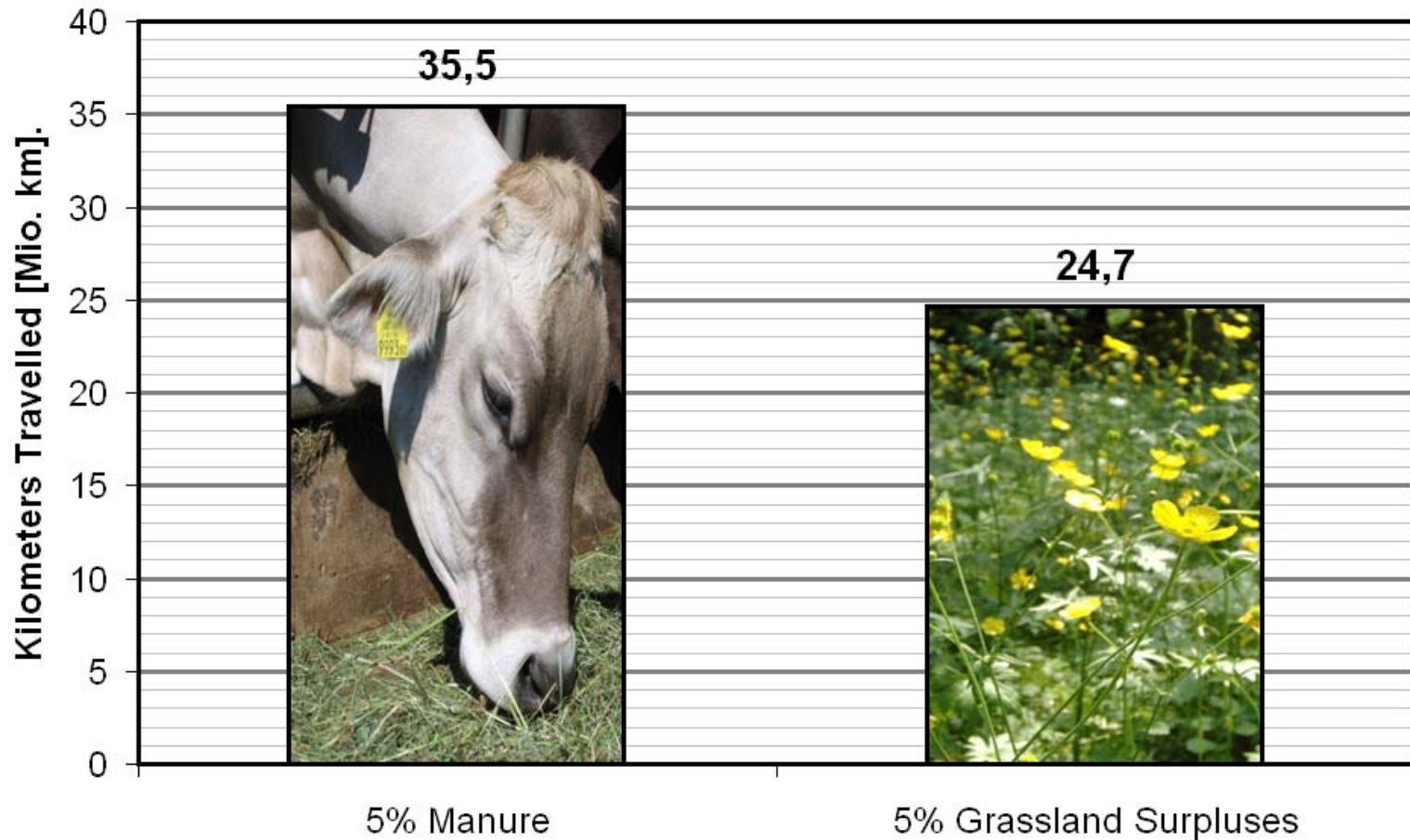
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# Plans und Projects

- Resources are limited
  - ◆ Grassland
  - ◆ Manure
  - ◆ Residues
  - ◆ (Wood)
- Very efficient paths of renewable fuels are necessary
  - ◆ Efficient land use
  - ◆ Energy efficient
  - ◆ Efficient in reduction of Greenhouse Gases



Status of  
biofuels

# Plans und Projects

Mobility and  
Environment

- Biogas Upgrading and adding to grid
  - ◆ 20% biogas in natural gas for mobility
  - ◆ First Project started 2007 in Eugendorf
- Ethanol Production from Liquor
  - ◆ Pulp und Paper Production of M-Real in Hallein
  - ◆ Feasibility study in Progress
- Interest in BTL
  - ◆ Problem heat utilization due to expected Plant Power

Biomass  
Resources

Plans and  
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# Plans und Projects Biogas Upgrading Eugendorf

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- Erected 2004
- 100 kWel Power Production
- Small Heat utilization (heating of 4 houses)
- 2007 Extension of Plant for 80 Nm<sup>3</sup>/h biogas
- 2007 Biogas Upgrading (PSA: 40 Nm<sup>3</sup>/h), grid injection, local biogas fuel station
- 2008 district heating grid





# Plans und Projects Biogas Upgrading Eugendorf

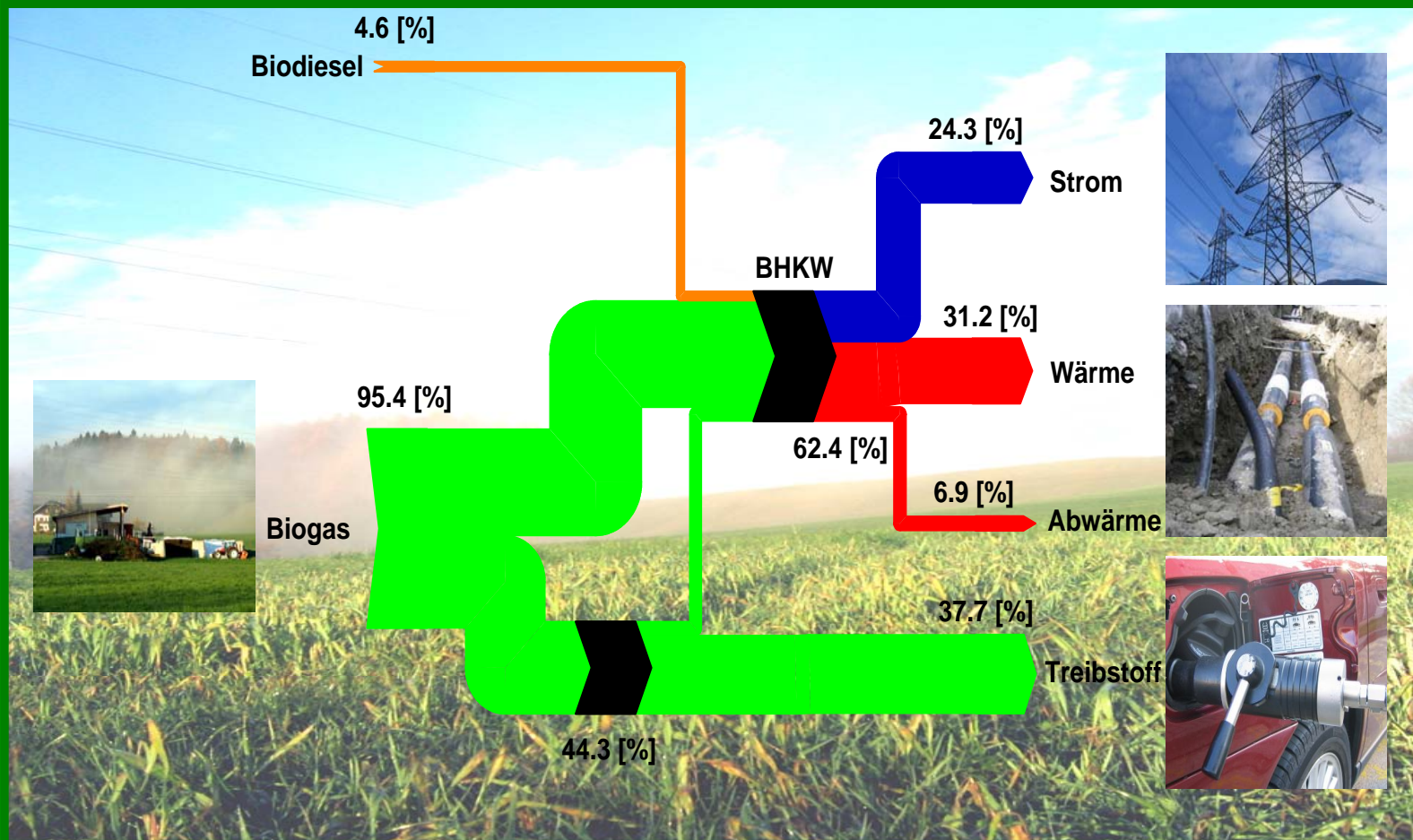
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# Plans und Projects Biogas Upgrading Eugendorf

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- System very efficient
  - ◆ Closed nutrients circle
  - ◆ No fertilizers
  - ◆ Grass land binds CO<sub>2</sub>
  - ◆ Approx. 2,5\* % energy consumption for silage production
  - ◆ Approx. 3%\* energy consumption for biogas plant
  - ◆ Approx. 2,5 %\* energy consumption for biogas upgrading
- Biogas as fuel reduces also emissions of NOx and particles

\*based on biogas heating value



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# Conclusions

- Potential for biofuels in Salzburg limited
  - ◆ Wood: increase for energy purposes ~ 15 %
    - Alternative utilization as raw material in wood plate and pulp production
    - Alternative utilization in heat and power production
    - BTL: Heat utilization due to large plant capacities problematic
  - ◆ Farmland: Only grassland is at disposal
    - Grassland is efficient in several ways
    - Economics problematic
  - ◆ Manure
    - No competition to traditional agriculture
    - Collective plants of a lot of farmers necessary (small structured agriculture in Austria)





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# Conclusions

- First issue should be reduction in energy demand!
- Biofuels must be efficient
- Classical emissions must be kept in mind!
- Resources are limited: therefore targets for biofuels should be set in absolute values, not as relative numbers (market share).
- Potential in Salzburg is at the maximum 10% of an already reduced energy demand.