SGA / SSE - Jahrestagung 2008

„Agrarwirtschaftliche Aspekte zu Ursachen und Folgen von Veränderungen in Umwelt und Klima“

Rapperswil, 3./4. April 2008

“Climate Change Mitigation by Biomass”

Core Statements in a Special Report prepared by the German Federal Advisory Council on the Environment (Sachverständigenrat für Umweltfragen – SRU)

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The Federal Advisory Council (SRU)

- Independent scientific advisory council to and appointed by the German, established in 1971 cabinet
- Seven full university professors from the disciplines of environmental sciences, technology, economy, law, ethics and political sciences
- Mission: To report on and analyze the state on the environment, to identify new trends, developments and “political aberrations“ in Germany

Overview

Climate Protection & Energy Demand

Ecological Impacts of Bioenergy Crop Production

Conclusions & Recommendations

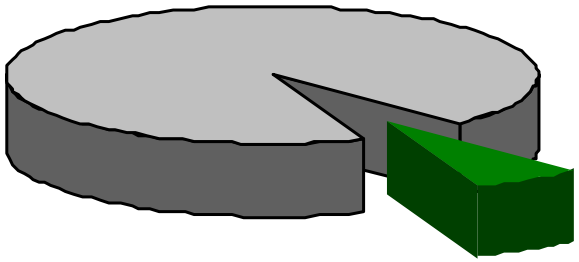
Climate Protection

Objectives on Germany's Political Agenda until 2020

Main Objective: 40% cut in CO_2 emissions

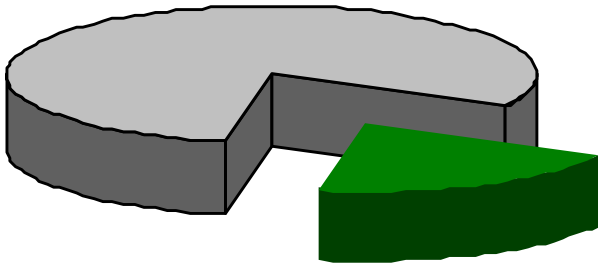
Share of renewable energies in primary energy demand

Status Quo 2006



5,3%

Target 2020



20%

Meseberg objectives

Electricity
25 - 30%

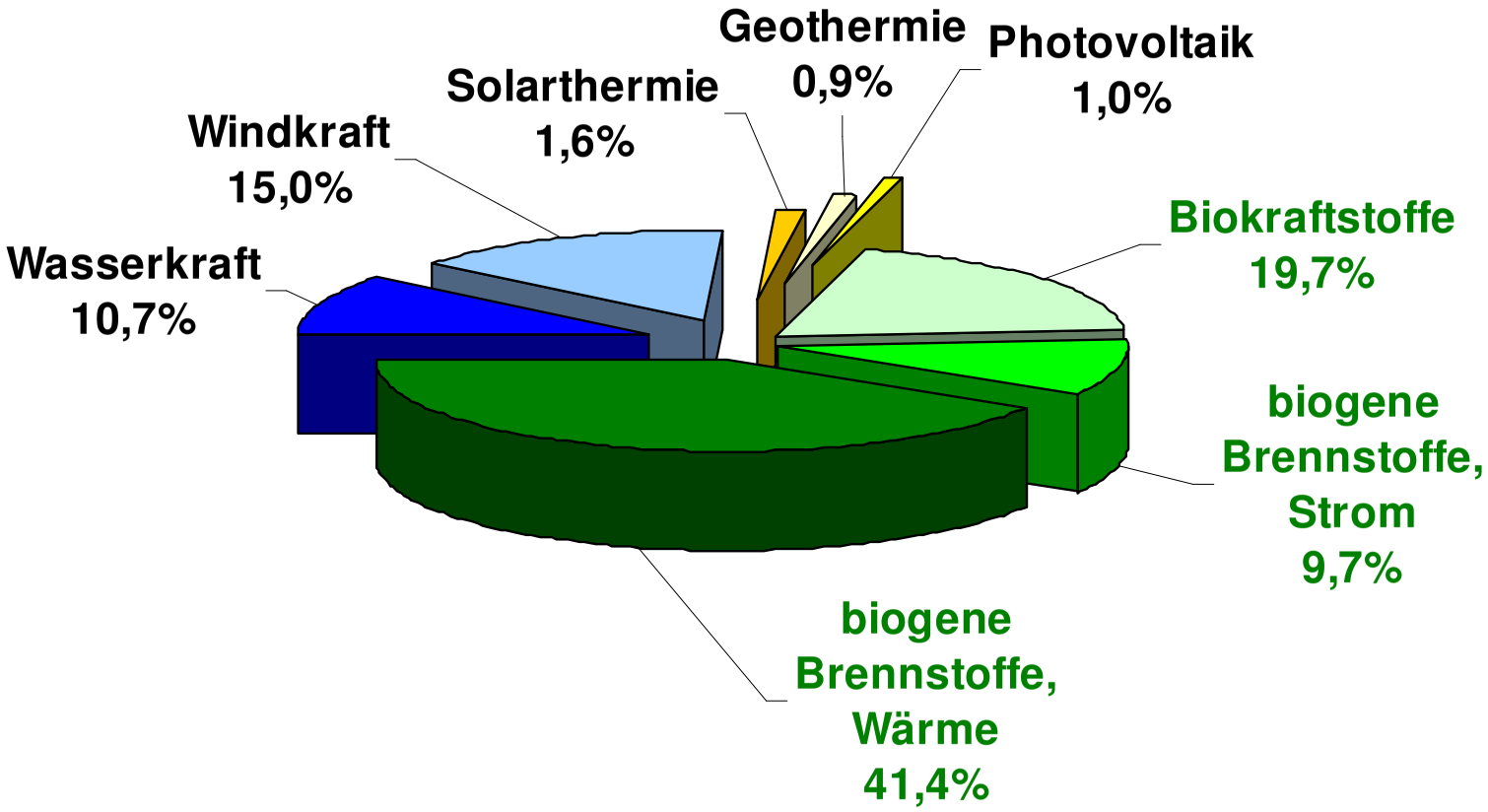
Fuels
17% (20%vol.)

Heat
14%

Biogas
6%

Renewable Energies in Germany (2005)

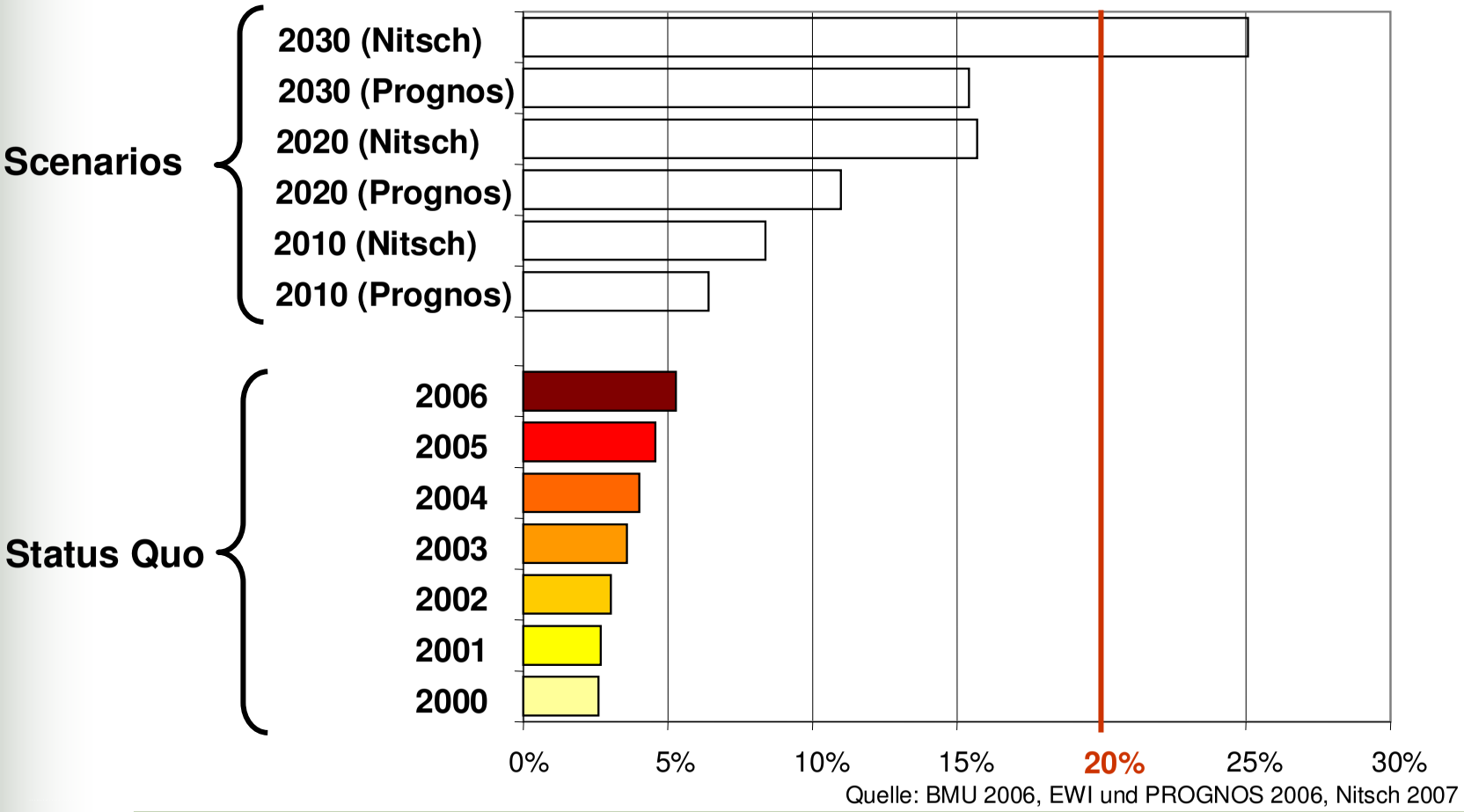
Share of biomass in renewable energies: 71 %



Quelle: BMU 2007

Renewable Energies: Status Quo and Scenarios

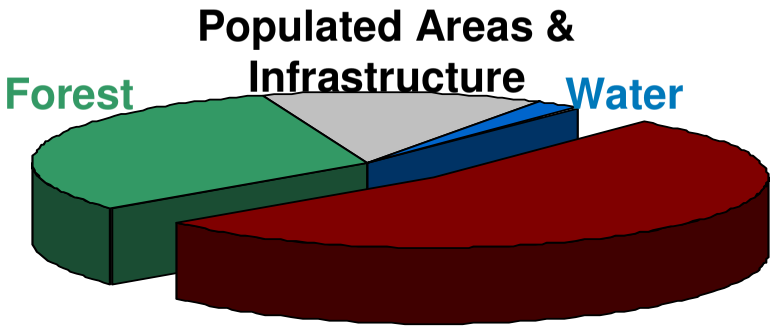
Share of Renewables in Primary Energy Demand



Quelle: BMU 2006, EWI und PROGNOS 2006, Nitsch 2007

Resource Potential

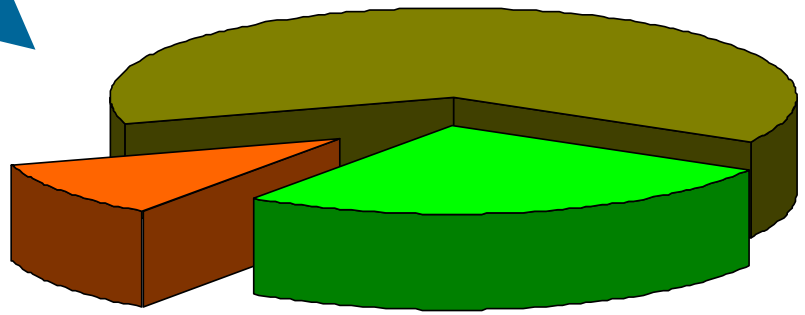
Land Use in Germany (2006)



17 million hectares usable agricultural area

10 million hectares without renewables

2 million hectares for renewable energies (17%)



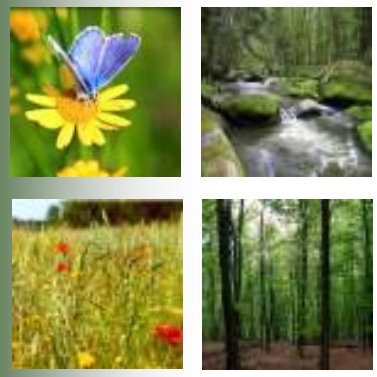
5 million hectares of grassland

Climate Protection & Energy Demand

Ecological Impacts of Bioenergy Crop Production

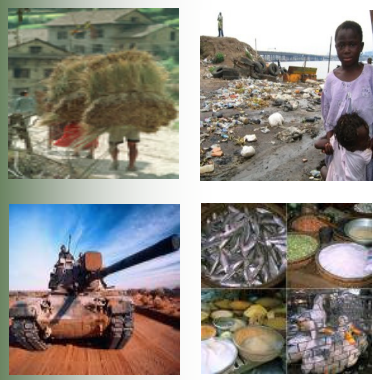
Conclusions & Recommendations

Ecological, Economical and Social Conflicts



Environmental Impacts

biodiversity, water, soils, grassland, forest ecosystems…



Socio-Economic Impacts

food security, labor conditions, land ownership…

Socio-Economic Impacts

- **Pressure of competition among different crops / uses**
- **Increase of land prices / leases, resulting in higher production costs**

  Rotenburg, Bentheim, Soltau-Fallingbostel: up to threefold increase of land leases between 2003 - 2006
- **Crowding-out effect at the expense of food production**

instead of

?

Conflicts Between Biomass and Nature Conservation





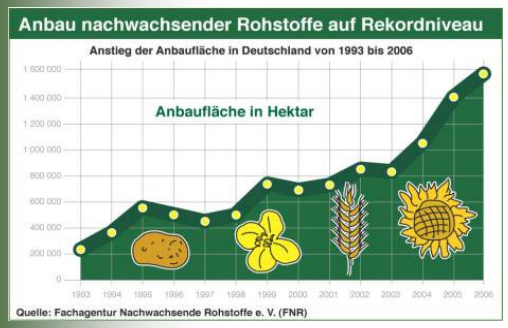
Current Trends

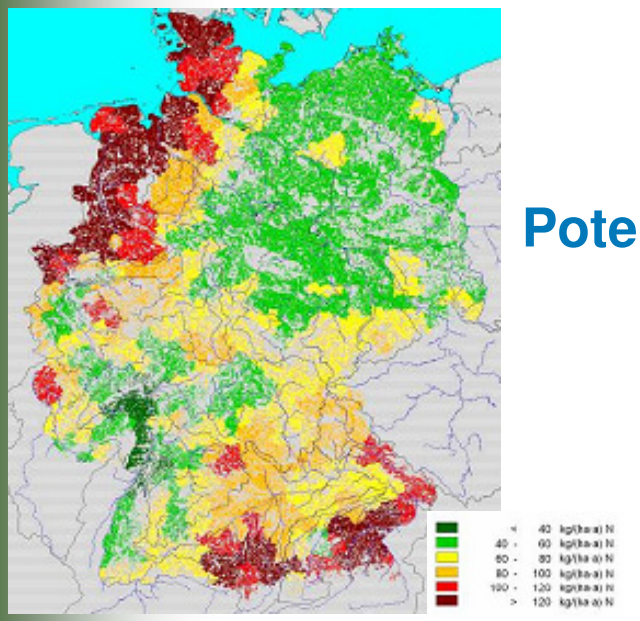
- ⇨ Increased competition for different land uses

Potential Consequences:

- ⇨ Increased application of fertilizers and pesticides
- ⇨ Land use changes
- ⇨ Reduced crop rotation
- ⇨ Complete removal of organic materials (deadwood/straw)
- ⇨ Use of GMO

Conflicts Between Biomass and Nature Conservation





Current Trends:

- ⇨ Increasing demand for arable land
- ⇨ Aggrevated by current market prices and abolishment of obligatory set-asides
- ⇨ Increase of monocultures, especially rape and (on a more regional level) corn/maize

Potential Risks:

- ⇨ Higher pesticide run-off
- ⇨ Continuously high nitrogen loads
- ⇨ Increased erosion

Conflicts Between Biomass and Nature Conservation

Potential Risks:

- ⇨ Loss of biodiversity
- ⇨ Land use changes: increased ploughing of grassland, even in NATURA 2000 sites or other protected areas

Dauergrünlandumbruch in FFH-Gebieten in der Eifel. Fotos: NABU, Gerd Ostermann

Conflicts Between Biomass & Nature Conservation

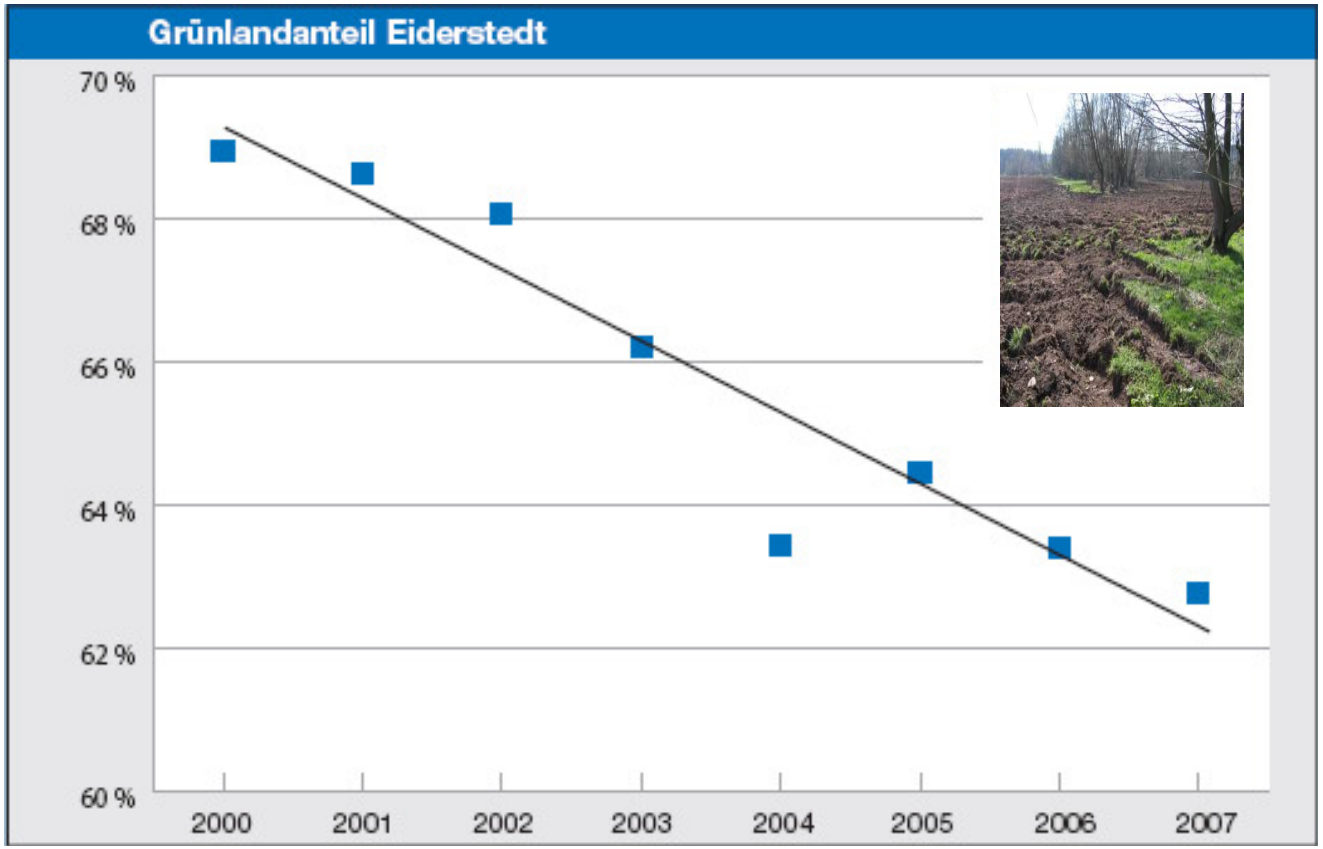
Veränderungen des Grünlandanteils von 2003 bis 2006

Bundesland	2003	2006	Veränderung
Mecklenburg-Vorpommern	20,32 %	19,54 %	**-3,8 %**
Nordrhein-Westfalen	29,90 %	28,80 %	**-3,7 %**
Sachsen-Anhalt	14,81 %	14,43 %	**-2,6 %**
Schleswig-Holstein/Hamburg	34,95 %	34,08 %	**-2,5 %**
Rheinland-Pfalz	37,57 %	36,68 %	**-2,4 %**
Brandenburg/Berlin	21,99 %	21,48 %	**-2,3 %**
Niedersachsen/Bremen	29,02 %	28,51 %	**-1,8 %**
Thüringen	22,39 %	22,17 %	**-1,0 %**
Sachsen	20,91 %	20,74 %	**-0,8 %**
Bayern	35,67 %	35,55 %	**-0,3 %**
Baden-Württemberg	39,69 %	39,65 %	**-0,1 %**
Hessen	36,92 %	37,46 %	**1,5 %**
Saarland	51,12 %	k.A.	k.A.

Quelle: eigene Zusammenstellung, SRU. Datengrundlage: Deutscher Bundestag (2007).

Veränderungen des Grünlandanteils in den Bundesländern 2003 bis 2006

Conflicts Between Biomass & Nature Conservation



Quelle: Natur aktuell (NABU Schleswig-Holstein Ausgabe 4/2007)

Abnahme des Grünlandanteils auf Eiderstedt 2000 - 2007

Conflicts Between Biomass & Nature Conservation

Most of these environmental impacts are not reflected in current life cycle analyses of bioenergy or biofuels

Many cultivation methods – especially land use changes – do have an impact that is relevant to climate change (ploughed grassland changes from a carbon sink to a carbon source)

In some cases, the GHG emission reduction potential is questionable or non-existent

SRU

Climate Protection & Energy Demand

Environmental Impacts of Bioenergy Crop Production

Conclusions & Recommendations

Sustainability Criteria: Synergies with Conservation

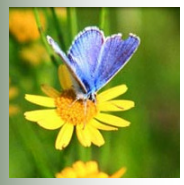
Potential Synergies Between Bioenergy Crop Production and Nature Conservation:

Diversification of crops and cultivation methods

- ⇨ Preservation of genetic diversity

Utilization of landscape conservation

- ⇨ Incentive for upkeeping grasslands and open range
- ⇨ Promotion of habitat networks



Rehabilitation of ecosystems

- ⇨ extensive use of marginal yield locations where agriculture would be otherwise phased out

Minimization of pesticide and fertilizer use

- ⇨ extensive agricultural uses adapted to site conditions

Recommendations by the Federal Advisory Council

Existing Instruments (Good Farming Practice or Cross Compliance): consistent implementation and further development / adaptation

Landscape and Rural Planning: Designation of priority or non-use areas for bioenergy production

Emphasizing the Utilization of Synergies with Nature Conservation

Research Funding to improve knowledge about alternatve cultivation methods and opportunities to further develop steering tools

Recommendations by the Federal Advisory Council

Reduction of nitrogen loads; if necessary, introduction of **nitrogen excess fee** (SRU 2004)

Making **integrated pest management** a legally binding standard for the cultivation of arable land

Stipulating a **tripartite crop rotation** as a minimum standard for cultivation

Total **embargo on grassland ploughing**

Specification of existing protected area ordinances in regards to bioenergy crop production

Thank you very much for your attention!

The report and further information can be accessed at:

http://www.umweltrat.de