

# Shell's interest in biomass for biofuels

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# Why is Shell interested in biomass upstream?

- Commitment to sustainable development
- Biomass is sustainable energy resource
- Biofuels are biomass based blending components for diesel and gasoline
- Fit of liquid biofuels with own fuels business

We need to understand biomass issues  
to secure successful biofuels business



# Biomass as feedstock

## Short term strategy

- Vegetable oils from agricultural products (rape seed, sunflower etc.) as methyl esters for diesel
- Starch / sugar containing agricultural plants as ethanol for gasoline

## Medium to long term strategy

- Lignocellulosic material
- Cascaded biomass



Photos: Ernst Bode

# Challenging aspects of biomass use

Competition with food chain

Large scale availability in specific locations

Harvesting, transportation, storage

Variability of composition, contaminants

Competition with traditional use of biomass?

Sustainability aspects

- Life cycle analysis required
- involve stakeholders for permission to operate



# Why Shell takes part in the BUS

Shell has

- limited experience with biomass as feedstock
- broad interest: no choices are made at this stage

The idea is therefore that the BUS enables to

- Identify opportunities and threats of biomass use
- Learn more about sustainability and public acceptability
- Make the right choices

And more generally:

- Knowledge exchange
- Creative approach

# Activities of Shell

- Shell has no biomass business
- Collect key-information on lignocellulosic biomass
- Screen different biomass types for suitability as bio-fuel feedstock
- Screen biomass pre-treatments
- Participate in sustainability discussion



# Shell's criteria for the ranking of biomass

- Availability
- Seasonality / storability
- Price delivered
- Process related parameters: energy content (dry, wet), content of cellulose, hemi-cellulose, starch, oil, fat
- Quality: ash, harmful inorganics\*, consistency\*
- External factors: “no competitive use\*”, public acceptance\*
- General issues: sustainability\* / Live cycle analysis

\* On a qualitative basis

→ Weight factors

→ Ranking credits: basis for discussion



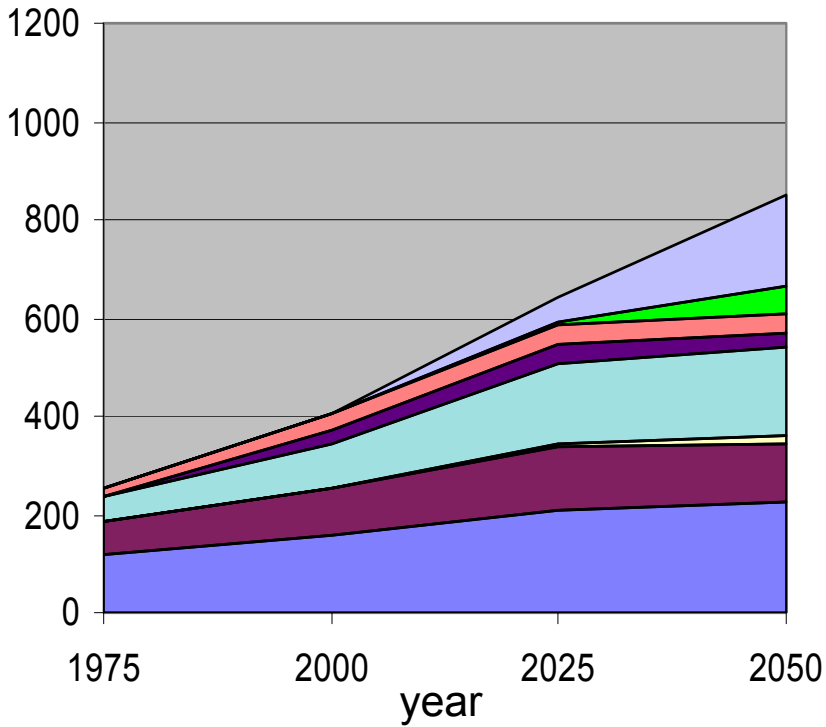
**Shell Global Solutions**

# Backup slides



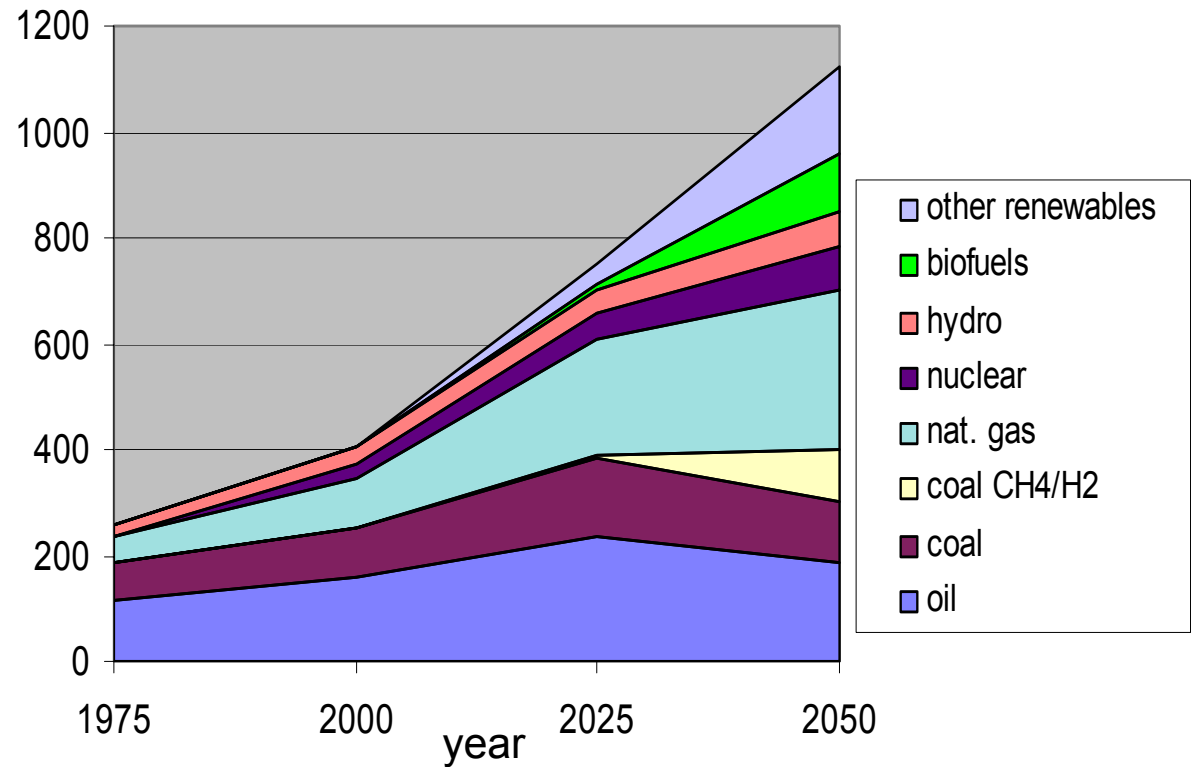


Primary energy demand [EJ]



**Dynamics as Usual Scenario**

Primary energy demand [EJ]



**Spirit of the Coming Age Scenario**