Past, current and future developments of modern forest fuel systems

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Bio fuels…

... represents 22-32 % of energy demand in Sweden

By-products from industry is dominating
Around 10 % are primary forest fuels
Demands for bio-energy in Sweden
Utilization of forest biomass in Sweden

~45% of annual felling is used for energy

Annual felling: 94 M m³

Source: Skogsindustrierna, 2003 och SCB/SKS
Low fruits are already taken
So, what do we do?
Technical development – stump lifter

In 30 years we have changed colour!
Reduce transport costs
Net cost comparison

€/ton dry

Normal vs New

- Soil handling
- Transport
- Decomposition
- Lifting
Cost reduction of unrefined wood residues in Sweden 1975-2003

Source: M.Junginger & Björheden 2005
Environmental benefit

Input/output ratio – fossil vs. forest fuel

Percent of output

- Soil handling
- Transport
- Decomposition
- Lifting

North sea oil

Normal

New
Surplus and shortage areas

- Railways?
- Logistic structure
  - Terminals
  - Organization
Railway terminals
Logistics – what goes where and when

Need for optimization software
Logistics on site – GPS can help
Conclusion from Sweden

- High and increasing demand for forest fuels
- Necessity for primary forest fuels
- Harvest residues are almost fully utilized
- Stumps and small dimension trees possible
- Technical, methodological and logistic development needed

With stable rules & regulations as well as firm political vision, this is possible to achieve
Thank you!

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