Potential Wood Supply in Swiss Forests

4th Meeting of the Team of Specialists on Forest Sector Outlook

Geneva 30.3.2012
Agenda

• Priority of the Swiss forestry policy objectives 2020
• Target of the Study Sustainable wood supply
• Methodology and Definition of the Scenarios
• The onion Model: Sustainability check
• Results of the Sustainable wood supply over the next 30 years
• Conclusions and Work in progress
Overview of the Swiss Forest

- Three field surveys
  - NFI 1 1983-1985
  - NFI 2 1993-1995
  - NFI 3 2004-2007
  - NFI 4a 2009-2011

- Forest surface: 1'300'000 ha
- Growing stock: 405 Mio. m$^3$
- Biomass increment: 9.1 Mio. m$^3$/a
- Exploitation and mortality: 8.6 Mio. m$^3$/a
  - Only exploitation: 7.2 Mio. m$^3$/a

Data from NFI3
Priorities of Swiss Forest Policy 2020

1. The potential of Swiss wood supply sustainably exploited
2. Climate change adaptation and mitigation
3. Protective functions of the forest are ensured
4. Protection and promotion of biodiversity
5. Conservation of the forest surface area
Objectives of the Study Potential Wood Supply

• Update data on Increment and Potential Wood Supply for the next 30 years based on the national forest inventory

• Build scientific background for policy decisions on the mobilizing of wood resources
Methodology

National Forest Inventory → Growth Model „MASSIMO“ → Working group Definition of the scenarios → Sustainability check

Potential Wood Supply in Swiss Forests
Paolo Camin
Definition of the Scenarios

A: Baseline scenario
   constant growing stock

B: Longterm maximised increment
   With reduced growing stock

C: Kyoto-optimized (high C-stock)
   With high growing stock

D: High demand for wood (market-based)
   Increased harvesting during 20 years, after reduction and finally level of
   scenario A
   With reduced growing stock
Growth Model "MASSIMO"

- Growth (individual tree)
- Mortality
- Definition of the Scenarios
- Harvesting
- Regeneration

Total biomass potential
"Onion Model": Analysis of scenarios to ensure sustainable wood supply

- Total biomass potential of each scenario

- Available ecological potential of wood:
  - Stumps not used
  - 5-15% bark and branches not used
  - 50% twigs not used

- Potential after socio-economic negotiation process:
  - Promotion of biodiversity
  - Protective functions / social function
  - Standards for close-to-nature silviculture

- Proportion that can be used economically and sustainably:
  Remaining 69% for use of total annually biomass potential
Frameconditions for analysis of the scenarios

• Only biomass from forest land
• Wood above ground from the base to the top of the stem, including branches and bark without foliage
• Legal requirements and standards for close-to-nature silviculture, all forest functions are guaranteed
• No stump extraction, no fertilisers
Frameconditions for analysis of the scenarios

- Increase of forest area 3% till 2036
- Increase of Protected Areas to 10% in 2030 (presently ≈4%)
- Forest biodiversity promotion (managed to achieve specific conservation objectives)
- Social functions of forests (e.g. recreation)
- Protective function of forests (against natural hazards)
- Economic limits for extraction of wood
Sustainable potential wood supply

Scenario D with high market demand for next 20 years

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Resulting growing stock

![Graph showing resulting growing stock from 1996-2006 to 2097-2106. The graph compares high growing stock and low growing stock across different scenarios: Basis (A), Opt. Increment (B), Kyoto (C), and High Demand (D).]
Sustainable Potential Wood Supply cumulated for 30/100 years

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Conclusions

- The potential wood supply (± 8 Mil. m3 annually) exceeds the present supply (± 7 Mil. m3).
- All forest functions are guaranteed for all scenarios.
- The assumptions made for the ecological potential need to be verified and confirmed in further studies.
- The potential varies for the different regions and for different ownership categories.
- The wood demand and supply is not an absolute value, but depending on timber price fluctuations.
Conclusions

• The basis scenario A has the advantage of a continuous stable wood supply.

• Scenario B: the expected increase of increment was not confirmed within a period of 100 years.

• Scenario C delivers the smallest potential wood supply cumulated for 100 years. The others are ± equal if cumulated.

• Scenario D: The considerable harvesting during the first 30 years resulted in reduced supply afterwards.
Work in progress

• The results of this project are the basis for consolidating the wood mobilization policy of the Federal Office for the Environment

• Regional differentiation and verification of the scenarios

• Analysis of calculated potential supply and actually demand for wood

• Verify the assumptions in the definition of the scenarios and the onion model

• Prepare for the update of the study in 2015
Thank you for your interest!

For further information:
www.environment-switzerland.ch