



Wise use of forests as a renewable natural resource: torn between protection and intensified use

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1. Introduction
2. Increase of growing stocks in European forests
3. Limitations for production of timber for bio-energy
4. Linking or separating bio-energy with other forest uses





1. Introduction

EU aims to increase the share of renewable energies.

Categories of biomass:

- (1) industrial wood residues and recycled wood
- (2) forest residues
- (3) complementary fellings
- (4) woody biomass from new forests
- (5) biomass from short-rotation forestry





1. Introduction

European forests:

- favorable indicators => expansion of forest area, increment, growing stocks
- unfavorable indicators => health, old-growth forests (< 2%)
- frame conditions => population density, fine-grained settlement mosaic, long impact on environment, fragile regions
- uses, functions and threats on forests => multipurpose forest management





1. Introduction

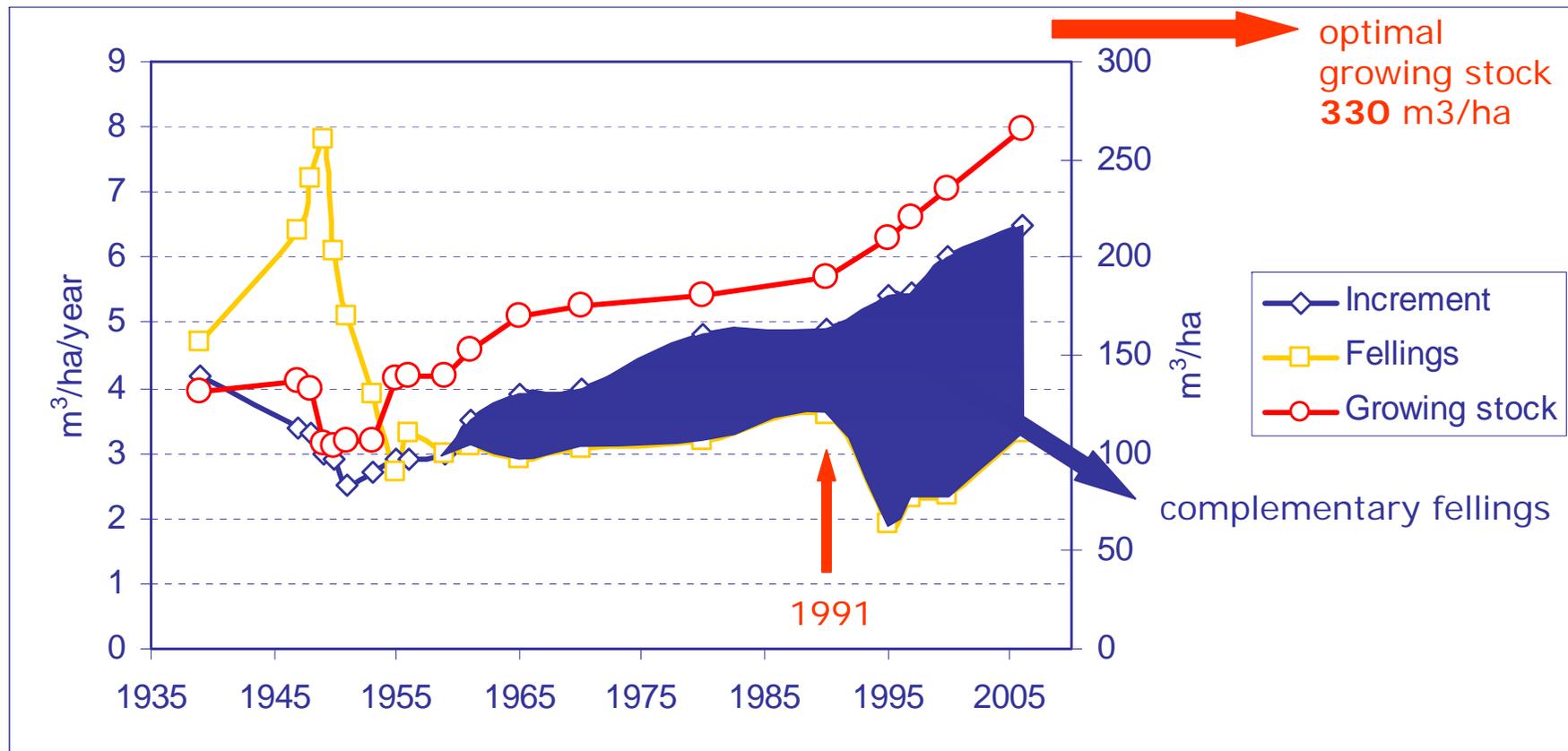
Forest serving as a bio-energy potential:

- (1) careful adjustments with other uses and functions
- (2) reconsideration of forest policy
- (3) inter-sectoral reconciliation





2. Increase of growing stocks



Yearly harvest, annual increment and growing stock in Slovenian forests (source Slovenia Forest Service)



3. Limitations for forest bio-energy

Timber production is limited with site potential (in Slovenia ~ **7** m³/ha/year):

- 50% => high quality timber
- 50% => bio-energy, industrial and cellulose wood





3. Limitations for forest bio-energy

Forest residues:

- maximum increment => roundwood thicker than 10 cm
- net primary production (NPP) is higher (residues, branches, foliage, stumps, roots)
- importance of the hidden part of NPP
 - forest "digestion", health and productivity (high concentration of nutrients, habitat for decomposers, structure of forest soil)
 - regulation of water cycling, prevention of erosion, biodiversity





Afforestation of Karst in 1895



Forest overexploitation: litter collecting and grazing



4. Linking or separating bio-energy with other forest uses?

Different forest management models in EU =>
two paradigms:

- (1) segregation (coarse grained settlement pattern; abundance of natural resources):
productive, protected and recreational forests
- (2) multifunctionality (fine grained settlement pattern; scarce natural resources):
multipurpose (forest ecosystem management - COP-7) and protected forests

Multifunctionality –
multipurpose
(close-to-nature)
forest

Old-growth and
other protected
forests

Segregation –
productive
forests



How
much?



State forests: Mixed mountain forest



Private forests: Recreational functions on Pohorje Mts.



Conclusions

- bio-energy potential from forests in SI: 2 m³/ per capita / year
- close-to-nature, multifunctional model combines the highest sustainable use with low environmental impact; CE and SE Europe
- policy support required for mobilization of forest resources in private forests
- segregation approach => higher risks
- “high-tech” and “fast wood” forests should not prevail in the European landscape matrix