The application of NFI data in the timber resource modeling – Latvian case study

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Content

- Background information
- Material and methods
- Some results
- Future tasks

Background information

- Traditionally stand wise forest inventory
- AAC calculation requested for state forests
- AAC calculations – area based with “main” goal – even age class structure
- Problems using previous approach
  - Inventory is mandatory only if forestry activities intended
  - Possible biases
  - No reliable increment data available
- NFI launched in Latvia in 2004

Short term project “Elaboration of sustainable, economically justified management models of Latvian forest resources” in 2007 (MAF)

Latvian team

- Research&Education
  - Silava (J.Donis, J. Jansons,P. Zālitis)
  - LLU (I. Liepa, D. Dubrovskis)
- Forest management companies
  - RMA (J. Bisenieks)
  - LVM (M. Gaigals, A. Grīnvalds)
- Governmental institutions
  - SFS
  - Ministry of Agriculture

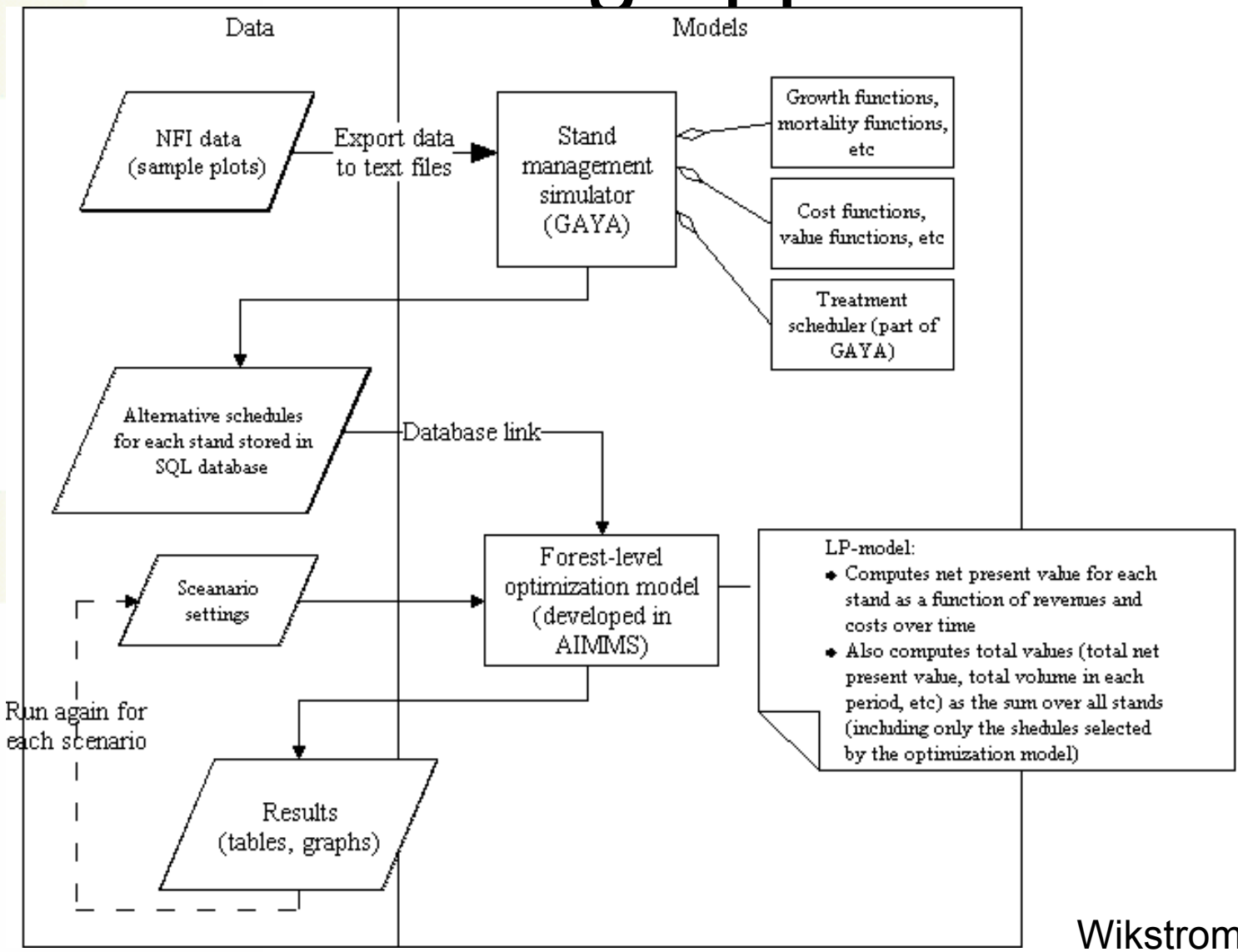
Swedish team

- Dr. P. Wikström
- Prof. L. O. Eriksson

Purpose

- Utilize NFI-data
- Agree on best available growth and yield models
- Agree on best available assortment models
- Investigate long-term harvest potential in Latvian forest and impact on previously agreed C&I

Modelling approach



Wikstrom, Erikson 2007

Modelling approach cont.

"Stand level"

- NFI data of 2005 & 2006 sample plots P,S, B dominated n=3100
- division by ownership (1) State, (2) Other forests;
- division by management restrictions
- Forest management guidelines
- Growth models (M.P. Ekö, 1985) G (P,S,B), Height increment (Elfving, B., & Kiviste, A. (1997). Volumes (Liepa, 1996)
- Assortment structure (Kenstavičus and Kuliešis, 1983).

- "Forest level"
  - Linear Programming (AIMMS)

Scenarios

"A.1 : Today's restrictions on annual allowable cuts (AAC) and legally binding rotation ages

- A.2 : Like A.1, but with no AAC restrictions
- B : Like A.2 + shorter rotation ages
- Restriction in all scenarios:
  - Non-declining harvest volume and revenue

Area represented

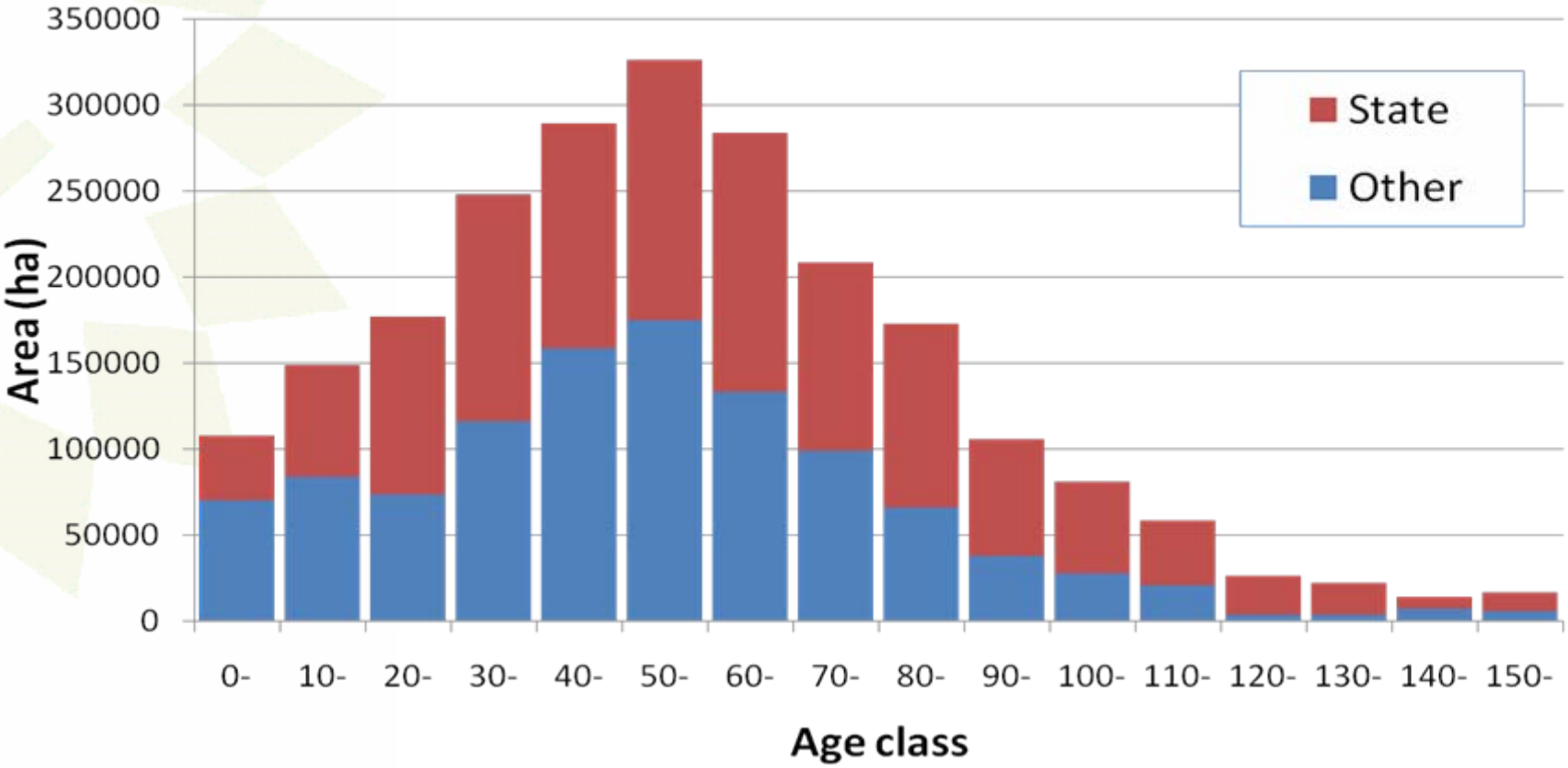
“2.2 million ha, (P, S, B dominated)

- Incl. 1.2 million state managed forests

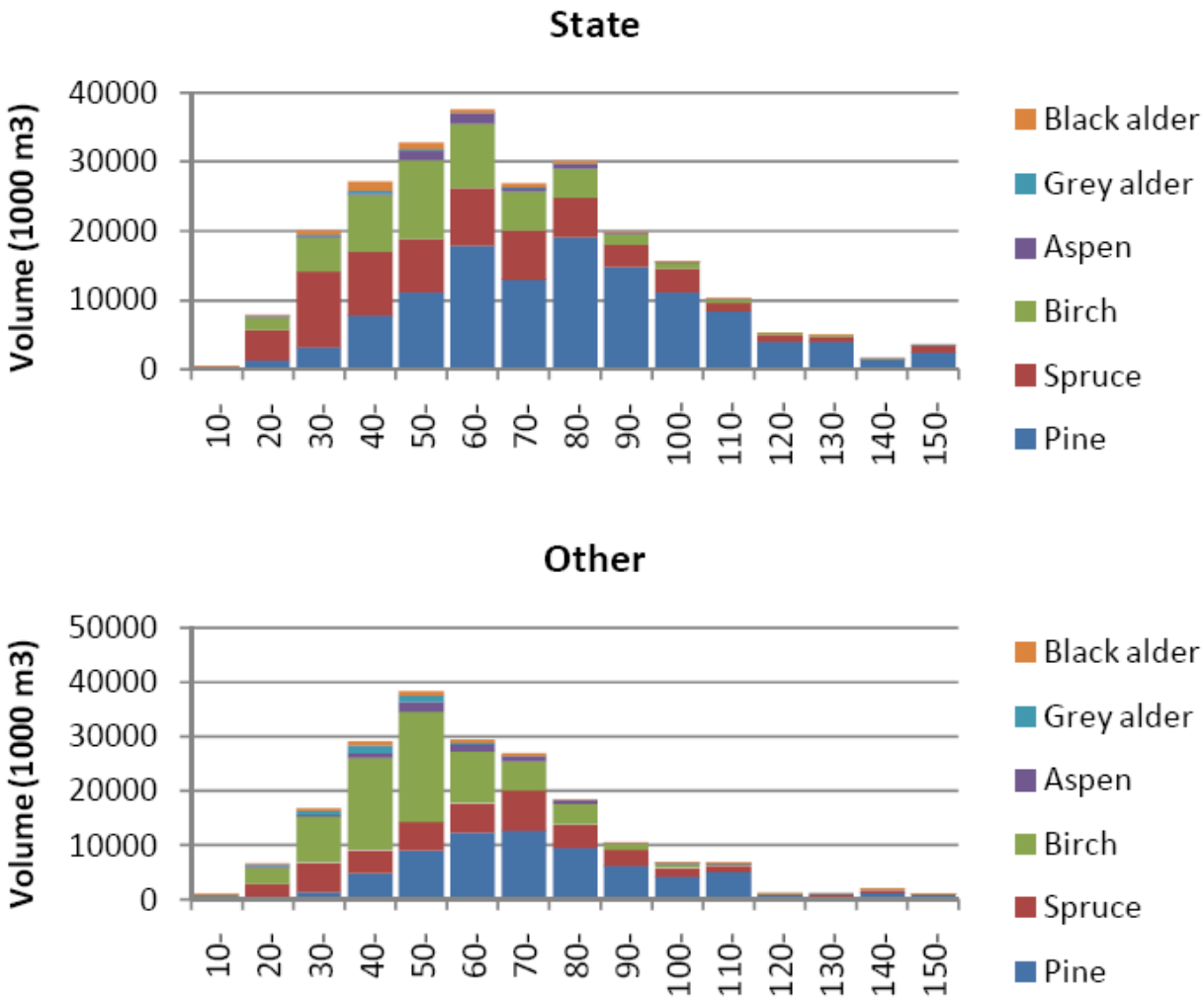
Examples of C&I for different scenarious

- Annual harvest volumes per treatment
- Forest development per species (volume after harvest)
- Harvest volume per species and diameter class
- Annual growth per age and site index class
- Average clear-cut age
- Clear-cut and thinning areas
- Revenues
- Total net present value
- Area over age class distribution

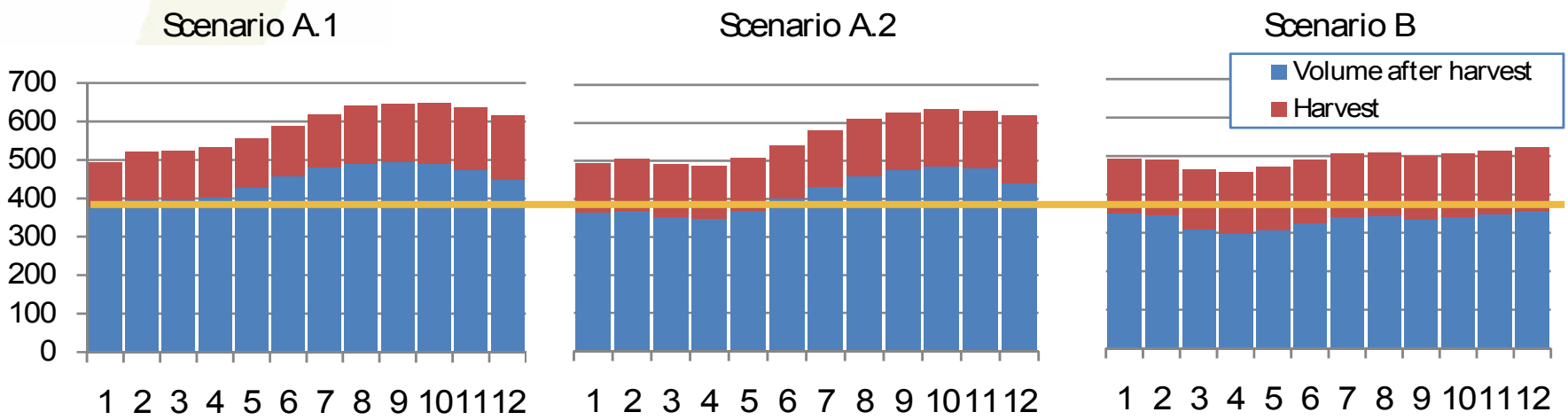
Area per age class today



Initial volume distribution by age classes



Results of scenarios: Volume before and after cutting



Future tasks

- More careful examination of used growth and yield models (Eko, 1985, Elfving & Kiviste 1997) needed and/or elaboration of new ones
- Approximation of reaction of forest stands on forestry activities (regeneration type, thinning, drainage, tree breeding etc.)
- Full biomass calculations
- Non wood benefits,
- Improvement of information on resource availability (legal, physical)
- Species change in the model
- Risks assessment
- ...