**Summary**

Study commissioned by JSC "LATVIAN STATE FORESTS".

Title “Improvement of the growth models”.

Phase 1 interim report.

Article NO.: 5-5.9\_00uy\_101\_15\_284

Lead Time: 12/22/2015. - 01.02.2016.

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Tasks according to the methodology of 1st stage:

Task 1. Preparation of NFI 2014 data for growth and yield model improvement.

From NFI database were selected 814 re-measured NFI plots and recorded to MS Excel. The initial plot selection criteria are: 1) in all NFI measurement cycles sampling plot is not divided into sectors, which means that whole sampling plot is within limits of the one stand; 2) in all cycles of the land category is forest stand (code 10), destructed stand (11), burning (12), windfall (13), glade (14) or forest in agricultural land (62).

Task 2. Literature review of the growth model in Estonia, Lithuania, Sweden and Finland.

Summarized information on currently used growth models in Estonia, Lithuania, Sweden and Finland. Modeled parameters - stand height, diameter, basal area, number of trees and yield. In assessing analyzed growth models, it appears that individual tree growth models are superior to stand level growth models and therefore are more suitable for modeling of the growth of mixed stands, but they are much more complex and require more time and work capacity.

Estonia and Lithuania, for growth projections designed stand level models. Estonian and Lithuanian growth models are not potentially better than previously developed Latvian forest growth models, so these models are not designed to be used in future studies.

Finland used the growth forecasting models designed for individual trees. Sweden used for growth projections for both the stand and individual tree inventory indicators forecasting. Sweden and Finland individual tree growth models are potentially better than previously Latvian developed growth models, so it would be necessary in future studies, based on the Swedish and Finnish models, develop individual tree growth models for Latvia.

To provide consecutiveness of modelling approaches further research would be necessary for clarification of previously developed Latvian models (Donis, 2015) based on 10 year period NFI data.

Task 3. Re-measurement of previously installed sample plots in uneven-aged stands (10 objects).

Re-measurements of stand spatial structure characterization are carried out in stands managed by selective cutting or shelterwood cutting is carried out during the period from 2002 to 2009.Previous measurements were carried out in 2006 till 2012.) Stand structure was re-evaluated in 64 plots (500 m2 R = 12.62 m) and as well performed regeneration accounting in 192 sample plots (25 m2; R = 1.82 m).