**SUMMARY**

Report of project “The use of ashes in the forest roads”.

Renewable energy sources (RES) accounted for a 36.8% (approx. 69PJ) share of the gross inland energy consumption in Latvia, 2014 [1]. 82.1% of renewable energy was produced by different kind of wood fuel, but 24.3% of it was produced in cogeneration plants [1]. It was estimated that few ktons of wood fly ash (WFA) was generated as a by-product by cogeneration of electricity and heat in 2014.

Previous studies and experience abroad, which was discoverd at the first stage of this research, confirmed that most of the bio-fuel light (GCF) of ash are suitable for various construction sub-sectors, including road construction. Therefore, in this study stage is proposed to stabilize the forest road gravel or dolomite surface layer with 10%, 20% and 30% WFA of the dry weight of mineral material.

Fractioned gravel and dolomite, and mixtures with 10%; 20%; 30% in the two periods sampled WFA from Ltd. FORTUM Latvia BFBF plant in Jelgava (collected in July 2016 and January 2017) were tested at the laboratory. Before making the mixture, WFA chemical properties were determined, as well as gravel and crushed stone dolomite particle size composition. The optimum moisture content of the mixtures was determined in standard Proctor test. pH was determined for each mixture, checking whether the mixture environment is suitable for long-lasting hydraulic reactions, which are directly linked to the strength and stiffness increase. For non-stabilized and stabilized mixes with 10%; 20%; 30% WFA at the optimum moisture content immediate bearing index (California Bearing value) was determined in California bearing capacity (CBR) tests that estimate the short-term properties of the newly mixed and compacted sample. Stabilized crushed stone samples were pushed out from Proctor templates and stored at 20°C ±2° C wrapped in order to prevent the possible evaporation for 7 and 28 days. After 7 and 28 days hardening mixture of 10%; 20%; 30% WFA were tested in uniaxial compression test to determine the maximum compression strength and uniaxial compressive deformation module. Compressive resistance is used as a benchmark to assess whether the WFA stabilized crushed stone samples correspond to a specific strength category, but the corresponding layer deformation module is used in the pavement design.

This project was initiated and developed in collaboration with JSC “Latvia’s State Forests” and LLC “FORTUM Latvia”. WFA - gravel and dolomite optimal mixes laboratory tests were performed in this second phase of the study to find instant (workability) properties as well as strength and stiffness after 7 and 28 days of hardening.