



**FORWARDER**  
**2020** SUSTAINABLE AND  
SMART LOGGING

# Get to know Forwarder2020

**Smart Forwarder for sustainable and efficient  
forest operation and management**



Anthony Salingre  
Steinbeis-Europa-Zentrum



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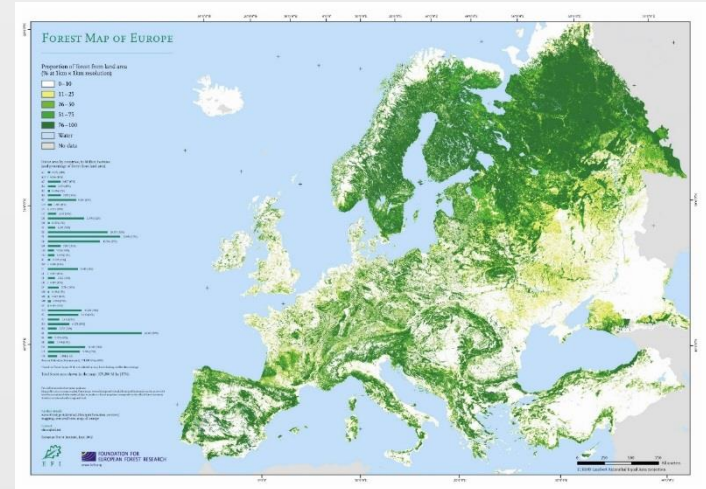


# Vision

🌳 Forest biomass accounts for almost half of the EU's total **renewable energy consumption**

🌳 Forests play an essential role in:

- **climate change mitigation**
- Safeguarding **biodiversity**
- Providing **non-wood forest products/** recreational



**Energy-efficient and environmental-friendly operation are needed to assure availability of non-wood products**

➔ Forwarder2020 aims at **improving sustainability** of logging/ operational forest management



# Objectives

Forwarders have the biggest wheel load, the biggest impact to the forest soil and the biggest travelling distances!

- 🌍 Minimizing the **damages on forest soils**
- 🌍 Improve the fuel economy
- 🌍 Improve **driver's comfort**
- 🌍 Improve the **timber harvesting on wetlands**
- 🌍 Improve transparency and **documentation of the timber production**
- 🌍 Decrease the **costs per volume** extracted



# 5 Innovations

## FORWARDER2020: 5 INNOVATIONS

### Monitoring system:

- Process data like machine data, static and dynamic load and position
- Accurate and easy to understand information of working area
- Follow up of the environmental impact

### Hydrostatic mechanical transmission:

- Reduces by 30% the fuel consumption
- Enables longer hauling distances
- Reduces engine speed and noise emission
- Reduces need of refueling
- Reduces need for new forest roads

### Hydropneumatic suspension:

- Enables long hauling distances
- Reduces the need for additional forest roads
- Increases off-road driving speed
- Reduces the dynamic wheel load by 25%
- Reduces the dynamic load on the structure
- Reduces ruts
- Improves the ergonomics and comfort for the operator

### Hybrid hydraulic system:

- Double recuperation of the potential energy
- Reduces by 30% the fuel consumption during loading and unloading
- Increases the speed for loading and unloading
- Reduces engine speed and noise emission
- Increases number of movements

### Bogie axle with three driven wheels:

- Doubles the surface under the bogie-tracks
- More productive and environmental friendly timber harvest on wetlands
- Reduces rut depths by 50%
- Increases the payload on wetlands



HSM 208F, 12T FORWARDER

Modules to be integrated as options in standard machine and used according to the need of the practitioners



# 5 Innovations focussing on:

## Environment protection

- 🌍 Reduce fuel consumption & forest roads needed
- 🌍 Minimize rut depth
- 🌍 Avoid extreme ruts while extracting timber from wetlands
- 🌍 Reduce the impact of forestry in many unexploited forest regions

## Better efficiency

- 🌍 Lower fuel consumption & increase of loading speed
- 🌍 Lower fuel consumption compared to existing hydrostatic transmissions by 30%
- 🌍 Control more precisely the forwarder during driving on uneven terrain
- 🌍 Decreased fatigue of the operator

## Better decision making in forest operational planning

- 🌍 Precise documentation of vehicle movements allows to **monitor, record, plan and control** the forwarding process





# Impacts & Benefits

- 🌍 **Sustainable forest management** decisions and operations
- 🌍 **Lower environmental impact** of forest management and harvesting operations
- 🌍 **Saving fossil fuel** and reduction of carbon dioxide emissions
- 🌍 **Reduction of the risk of back problems** for the operator
- 🌍 **Reduced negative ecological impact** through forest roads
- 🌍 **Sustainable supply of quality wood** for the growth of forestry enterprises and the creation of new jobs in SMEs
- 🌍 Supplying to the market a **unique and modular system**

# Partners



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# Current state of the project

 **Project** will develop **2 prototypes**:

- **Prototype 1: module 1** (hybride transmission system) & **module 2** (suspended cabin)
- **Prototype 2: module 3** (energy-saving crane), **module 4** (triple-bogie axle) & **module 5** (monitoring system)

 Difficulties with **Module 2**, which therefore has to be modified

 **Prototype 2** ready for **first in-house tests. First operational tests in Scotland** from week 17-21

 Next operational tests will be in **Lithuania** (prototype 2) and in **Romania** (prototype 1)







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**Thank you**

[www.forwarder2020-project.eu](http://www.forwarder2020-project.eu)

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Anthony Salingre  
Janina Kouvaris

Erbprinzenstrasse 4-12  
76133 Karlsruhe,  
Germany

e-mail: [salingre@steinbeis-europa.de](mailto:salingre@steinbeis-europa.de)  
[kouvaris@steinbeis-europa.de](mailto:kouvaris@steinbeis-europa.de)

[www.steinbeis-europa.de](http://www.steinbeis-europa.de)

