

# Cable road layout planner



## Seilaplan

*Seilaplan is a tool that supports the design of cable roads for timber harvesting. It works as a QGIS-Plugin.*

Starting point of the calculation are terrain data (digital elevation model or field measurement data in CSV format), machine and cable road properties.

The program calculates the skyline tensile forces, the skyline sag, support saddle forces. By knowing the rope forces, critical constructions can be avoided. This increases the safety at work.

Seilaplan includes an optimization algorithm that proposes the height and location of the supports. The load path of the skyline together with the terrain profile are displayed graphically and a construction manual is generated. Coordinates and saddle height of the supports can be saved as CSV and KML data so that they are electronically available for further planning steps.

The planning of cable road layout goes much faster. The calculated routing takes advantage of the natural terrain shapes and helps to reduce overall harvesting costs in mountainous regions and steep terrain.

## DETAILS

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### ORIGIN OF WOOD

Forest

### TYPE OF WOOD

Stemwood

### KIND OF WOOD CONCERNED

stemwood and full trees

### IMPACT ON ENVIRONMENT & BIODIVERSITY

The cost reduction will allow new, poorly accessible areas to be developed and additional timber to be harvested.

This has a positive effect on the protective function of the forest in the mountains and it promotes adaptation to climate change.

### INCOME EFFECT

Improved profitability of logging in steep terrain

### EXPLOITATION POTENTIAL

For forest owners and forest contractors

### HUB

Central-East Hub

### ECONOMIC IMPACT

Reduced installation cost, improved profitability

### MOBILIZATION POTENTIAL

> 100'000 m<sup>3</sup> for Switzerland

### SUSTAINABILITY POTENTIAL - VALUE

Very Positive

### EASE OF IMPLEMENTATION

Very easy

### EASE OF IMPLEMENTATION - EVALUATION

Very Easy

### KEY PREREQUISITES

Terrain data must be available or collected along the planned line.

### TYPE OF EVENT WHERE THIS BPI HAS BEEN FEATURED

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### JOB EFFECT

Faster and saver skyline layout planing

### COSTS OF IMPLEMENTATION ( EURO - € )

100

## **SPECIFIC KNOWLEDGE NEEDED**

Knowledge of QGis is necessary

## MORE DETAILS

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### CHALLENGE ADDRESSED

5.- Enhance economic and environmental performance of forest supply chains

### KEYWORDS

cable road  
skyline  
QGis plugin  
mountain forest

### COUNTRY OF ORIGIN

Switzerland

### DOMAIN

Forest management, ecosystem, resilience

### DIGITAL SOLUTION

Yes

### SCALE OF APPLICATION

Continental

### TYPE OF SOLUTION

Advice and services for forest owners

### INNOVATION

Yes

### START AND END YEAR

2012 - 2021

## CONTACT DATA

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### OWNER OR AUTHOR

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## REFERENCES AND RESOURCES

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### MAIN WEBSITE

<https://www.wsl.ch/en/index.html>

### PROJECT WEBSITE

<https://seilaplan.wsl.ch/en/index.html>

### PROJECT REFERENCE

Bont, L. G., Moll, P. E., Ramstein, L., Frutig, F., Heinimann, H. R., & Schweier, J. (2022).

### RESOURCES

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SEILAPLAN, a QGIS plugin for cable road layout design. Croat J For Eng. Bont, L. G., Ramstein, L., Frutig, F., & Schweier, J. (2022). Tensile forces and deflections on skylines of cable yarders: comparison of measurements with close-to-catenary predictions. International Journal of Forest Engineering, 1-22.  
[https://www.dora.lib4ri.ch/wsl/islandora/object/wsl%3A30255/datastream/PDF/Bont-2022-Tensile\\_forces\\_and\\_defl](https://www.dora.lib4ri.ch/wsl/islandora/object/wsl%3A30255/datastream/PDF/Bont-2022-Tensile_forces_and_defl)

LOGO OF BEST PRACTICE



Swiss Federal Institute for Forest,  
Snow and Landscape Research WSL

LOGO OF MAIN ORGANIZATION



Bern University  
of Applied Sciences

PROJECT UNDER WHICH THIS FACTSHEET HAS BEEN CREATED

Rosewood 4.0

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A TOOL FROM ROSEWOOD 4.0, DESIGNED AND DEVELOPED BY

