



Press Release
30/10/2022

ONEforest Multi-Criteria Decision Support System on forest management will empower stakeholders

ONEforest is developing a Multi-Criteria Decision Support System (MCDSS) based on methods from operations research, for direct and immediate use by stakeholders. Actors will be empowered to understand the far-reaching consequences of their decisions in a multi-criteria decision-making environment. Since the stakeholders have different objectives, multi-criteria optimisation techniques are applied to demonstrate different approaches that can be applied in practice.

The MCDSS includes ecological, economic, and social target indicators. It is able to make the interlinkages detected in the system dynamic (SD) approach visible for stakeholders as decision-making trade-offs between the target indicators, ultimately presenting and aligning regionally prioritised management goals with suitable silvicultural concepts while visualising the impact of stakeholder decision-making on the forest-wood value chains (FWVC). The MCDSS which is delivered as a software application will allow stakeholders to try out different approaches and understand the consequences of their decisions.

“The MCDSS will be tested and validated considering two aspects the usability and the functionality. Regarding usability we have to ask our stakeholders about their interests and if our MCDSS includes their goals and expectations. And then, we may have to adjust our user interface. With respect to functionality, we have to integrate the results of the simulation models as a data input and then, check with the consortium if the results are plausible in MCDSS”, explains Udo Buscher from Technical University of Dresden, who works on the Multi-Criteria Decision Support System (MCDSS).

Firstly, the ONEforest partners developed a mathematical basic model that represents the fundamentals of the multicriteria decision problem in a prototypical development environment. This includes the integration of some important indicators, objectives, and

stands - these are being expanded in the course of the project - and allows the assignment of management options to areas of the regions at hand.

In the next step, the project partners requested the possibility of integrating decision support regarding the choice of harvesting methods into the model. A first approach was therefore implemented.

Additionally, the model has also been further developed in such a way that spatial relationships can be represented. This allows the integration of constraints that are based on the neighborhood of the cells of a region. Furthermore, to enable closeness to reality, it was also taken into account that some indicators may be subject to uncertainties and thus, depending on the uncertainty scenario considered, may take on different values.

“The benefit generated by the MCDSS for the stakeholder is that they will receive some recommendations on how they treat different areas of the forest. Obviously, if they have different objectives then they will receive different recommendations. And those different recommendations can serve as basis for discussion and stakeholders can find a compromise”, express Udo Buscher.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000406.