

# How to incentivize low carbon land use by regulation without over-burdening individual actors – a research approach for forest ecosystems in Joensuu

Patrycja Murasicka, Franziska Wolff, Dawid Abramowicz, Roger Compte



**Ecosystem Services** are the benefits that the society obtains directly or indirectly from the nature.

The ideal state is that all services are provided equally in the processes of supply and demand and thus creating a balance between all services. Yet, in the process of land use change and degradation and as a result of increasing luxurious lifestyle the provision of the basic services and their quantities and qualities have altered significantly.

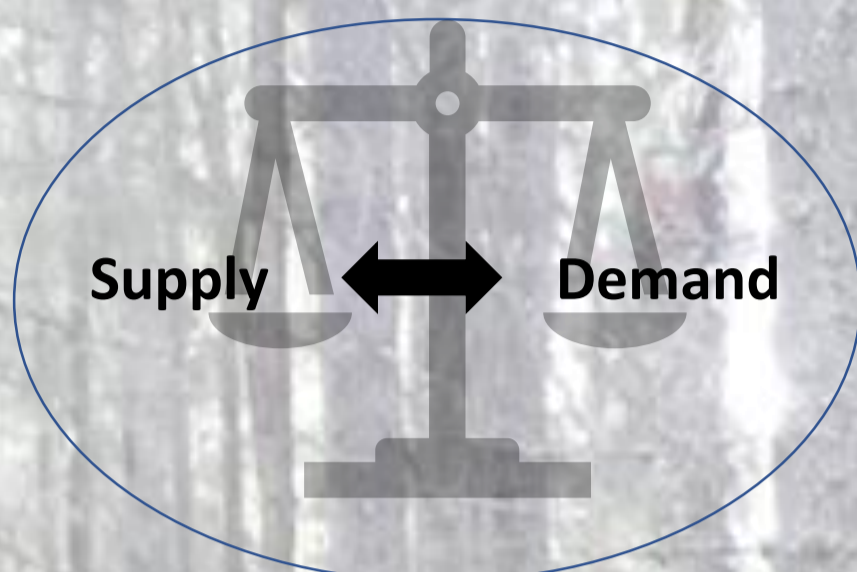


Figure 1: Supply and demands of ecosystem services

By dividing ecosystem services into provisioning, regulating, cultural and supporting services or, respectively, according to their ecological, social or monetary value, an ecosystem services assessment can be created. These assessments can support both, society and investors, to maintain functional ecological units and their processes.



Figure 2: Ecosystem Services Classification



## Research Approach & Methods

Due to the different land use demands there is the need to find a balance between services and actors that keep the sustainability of ecosystem services.

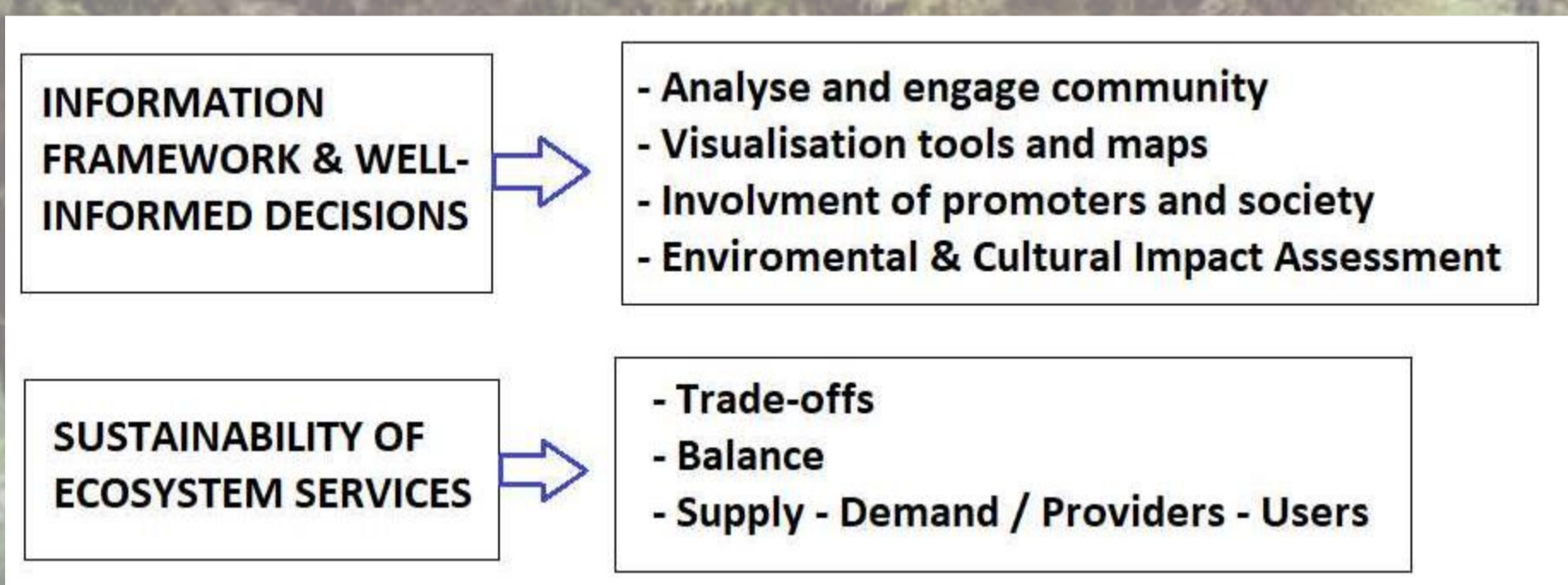


Figure 3: Cultural Ecosystem Services Assessment by society integration

As a key approach, it is suggested to apply an environmental impact assessment in combination with a cultural ecosystem service assessment in order to integrate the cultural values and the entire society. In our case study, we used questionnaires to assess forest ecosystem services in the area of Joensuu.

## Results expert questionnaire

Combined land use and forest management to meet economical and ecological needs	Expert Questionnaire Shared personally or via E-Mail	Citizen Questionnaire Shared via social media (facebook)
Financial support		
Forest conservation activities (including citizens) and active information sharing	6 received responses	18 received responses
Quality management of forests (natural state)		

## Results citizen questionnaire

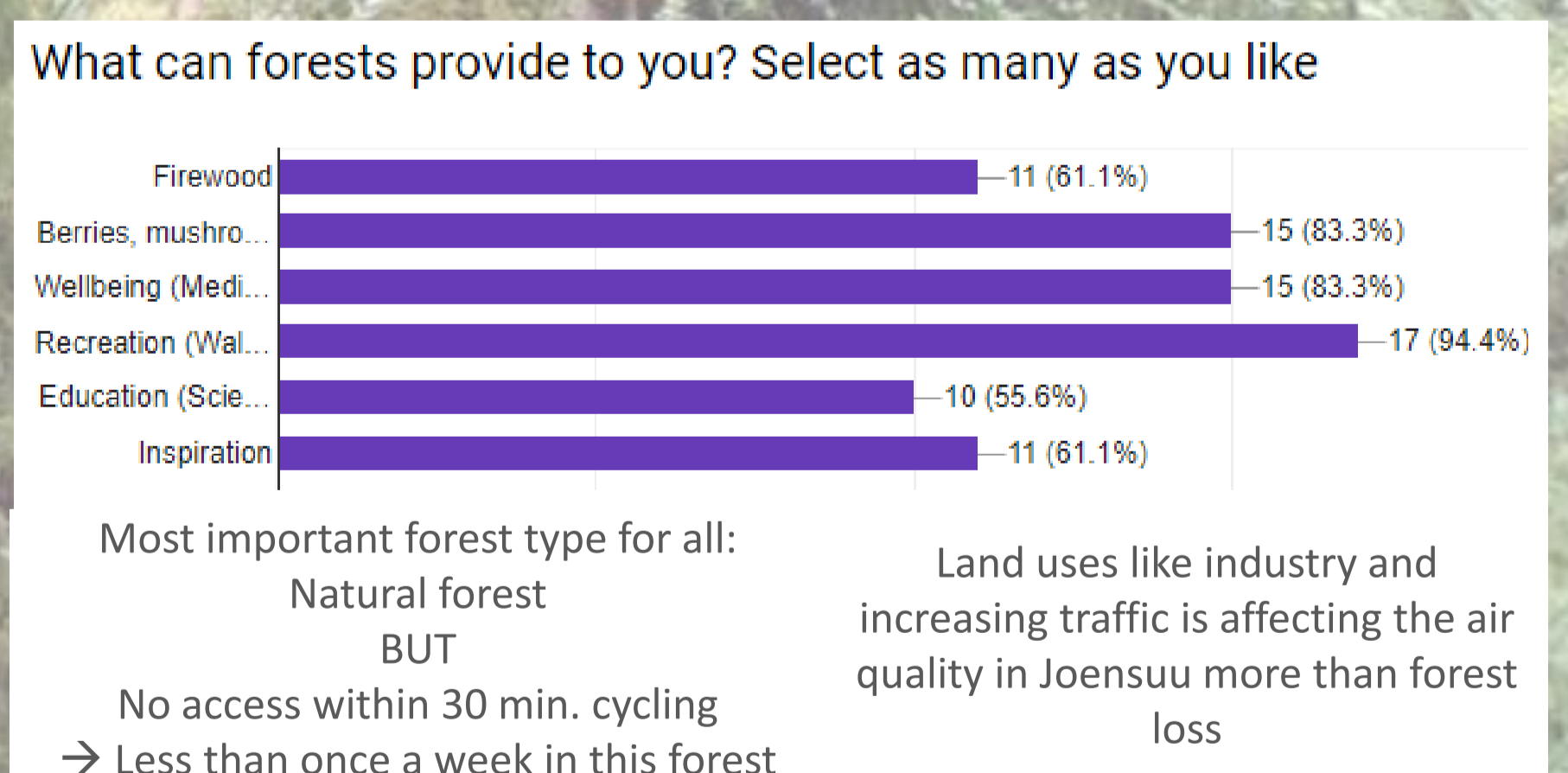


Figure 4: Example questions from citizen questionnaire

## Conclusions

These responses combined can be used to formulate incentives, in order to find the balance between supply and demand or provider and users, respectively.

For instance, investors can compensate lost ecosystem services with conservations and restoration projects close to Joensuu centre. In addition, the creation of a low carbon participation label can be an incentive for investors to include the idea of low carbon.