



r.green.biomassfor



Short description

Developed as an add-on of GRASS GIS software, r.green.biomassfor is a holistic model able to quantify in MW/y the potential bio-energy, exploitable from wood biomass in forest ecosystems, under the light of ecological and economic sustainability. It was an evolution of Biomassfor, a model created by DICAM-UNITN and developed in collaboration with CRA-MPF and GESAAF-UNIFI. It has also inspired the structure of the other r.green sub-models. In order to run the model a series of mandatory variables is required and the results can be utterly refined inserting a series of optional variables. The r.green.biomassfor considers theoretical, legal, technical, economic and sustainable principles to evaluate the energetic potential. The user can interactively change input data and/or variables (like for example mechanization level or chip wood price) thus producing different scenarios.

Mandatory data input:

- Forest stand map with yield and increment values.
- Forest management and treatment.
- Ordinary and forest road network.
- Water network.
- Digital elevation model.

Optional data input:

- Soil data (texture, depth, fertility).
- Lakes
- Protected areas.
- Fire risk.
- Costs and marked price of different wood typologies.
- Level of adopted mechanization.

Output data:

- Theoretical maximum bioenergy map exploitable on the base of forest increment.
- Bioenergy map taking into account the level of mechanization and accessibility of the area.
- Costs and revenues map and data
- CO₂ emission map and data, and fire risk reduction maps

Link(s) to further information

Link to the software <https://svn.osgeo.org/grass/grass-addons/grass7/raster/r.green/>

Renewable energy type(s)

Wood biomass.

Main objective(s)

The characteristics of the Alpine region and the present forest landscape dynamics suggest that the exploitation of wood-energy sources can be extremely important for bioenergy production. The objective of the model is to give a user friendly tool that can be used by technicians, researchers and stakeholders to produce useful scenarios for decision makers simulating different situations. The software `r.green.biomassfor` considers theoretical, legal, technical, economic and sustainable principles in order to evaluate the energetic potential of forests under different spatially explicit scenarios helping decision makers to create alternatives.

Target group(s)

Administrators, planners, designers, researchers.

Operating site(s)

Mis and Mae valley, North east Italy; Alpi Marittime Natural park, North west Italy; Triglav National Park, Slovenia

Experiences / best practise examples

The model is being used mainly in three pilot areas: the Mis and Mae valley in north east Italy, The Alpi Marittime Natural park in north west Italy, and in the Triglav National Park in Slovenia.

In Mis and Mae valley different scenarios with different wood chip prices combined with existing/planned bioenergy plants location were produced and showed to Veneto Regional administrators in different public events in Longarone, Agordo, Venezia. This started a discussion on the optimization of bioenergy plants and in general on biomass opportunities. In the next months the model will be used in meetings with local stakeholders of the Valleys.

In Alpi Marittime, the model was used to define scenarios that can be showed to local administrator.

In Triglav National Park, different biomass production scenarios were created and a comparison with the Wisdom model previously used by the park managers to produce scenarios is being carried out.

Data source

Data were provided by local or regional administrators in the pilot areas and, when necessary, integrated with Eurac database.

Responsible Partner(s)

EURAC, University of Trento.

Stakeholders involved

Administrators, planners, local associations, citizens

Contact person(s)

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