

## Submitted Abstract

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## Abstract

In context where energy transition from fossil fuels to renewable energy sources is pivotal in mitigating climate change effects, mountain communities can be one step ahead. Abundance of forest resources makes the mountain areas of Italy suitable for the development of a renewable thermal energy system, the District heating system based on biomass (BDH) (Caputo et al., 2019, Soltero et al., 2018). When based on unused resources, benefits for the local communities for environmental, economic and social aspects are amplified.

One key aspect in developing BDH systems is the social dimension. It involves the supply chain stakeholders, but also the local community. Studies on social dimension are missing (Cambero and Sowlati, 2014).

The present contribution addresses this gap by investigating the social issues related to cooperating for the use of forest residues, in developing a BDH system. Comelico, an Inner Area of Italy, has abundant yet unused forest residues from forest operations. A BDH system could promote cooperation among local communities and collective forest properties, the Regole. Regole are classified as private property according to the Italian law, but their nature as collective property of the historical families living in the area is still strong, as their role as institutions in their communities. Alone, each Regola cannot supply enough biomass for a BDH system, but by coordinating with the other Regole, the supply could be sufficient.

Lack of information on social barriers to BDH systems development encourages the use of an explorative approach with qualitative data. The methods are based on semi-structured interviews to stakeholders, fitted in a SWOT analysis on developing a local BDH system.

The stakeholders are the Regole presidents, who manage more than 80% of the forest in Comelico, on the supply side. On the demand side, the interviewees are potential consumers like municipalities and companies involved in the tourism sector, such as hotels and restaurants. Intermediaries, forest companies and foresters, are also involved in the analysis. This approach allows to identify not only the barriers in the supply chain, but also the interest of the potential consumers.

Developing a BDH with unused natural resources can help building trust and share information among the actors on the supply chain and promote future collective actions for local development.

The study outcome could support decision-makers, locally and Regionally, in developing BDH systems and in applying for funds or design supporting policies for the renewable energy sector.