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The role of biomass for achieving RES-H/C targets in EU Member States

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The 2020 targets of the EU regarding energy efficiency, CO_2-reduction and renewable energy require substantial growth of all RES-technologies and sectors. This includes the heating sector which is addressed in different directives: the renewable energy directive (RED), the energy performance of buildings directive (EPBD) and the energy efficiency directive (EED). Biomass currently clearly holds the highest share of all RES-H/C systems (about 95 %) in EU-27. The national renewable energy action plans (NREAP) of the different European countries show that biomass is expected to show a considerable growth in the heating sector. In order to realize these targets, it will require appropriate, ambitious support policies.

The core objectives of this paper are:
- to analyse the role of biomass in residential and service buildings for achieving RES-H/C targets for selected EU member states in various scenarios up to 2030
- to analyse the impact of different support policies for biomass heating in these countries
- to identify the interaction of biomass heating with other RES-H/C technologies and efficiency improvement and
- to derive conclusions regarding the further development of policies for biomass heating in the context of the different EU directives (RED, EPBD, EED).

The analysis is focused on the following EU countries: AT, BG, CZ, DE, ES, FI, FR, IT, RO. The methodological approach will include the following steps:
- Comparative analysis of policy measures in place, targets and NREAPs with respect to the role of biomass heating for residential and service buildings
- Modeling of space heating and hot water preparation in these countries. For this purpose we will use the model Invert/EE-Lab, a bottom-up simulation tool modeling the decision for the investment in different heating technologies and thermal renovation measures of buildings.
- Simulation of the impact of different support policies and comparative analyses of different policies in different scenarios in different countries. In particular, this will include the investigation of the impact of investment subsidies, use obligations, tax incentives, renewable heat incentives etc.
- Deriving conclusions and recommendations regarding the design of biomass heating support policies.

The results show a huge variety within the investigated countries, mainly due to the big differences in the current role of biomass in the heating sector in buildings. The share of biomass in the heating sector in residential and service buildings that could be achieved in ambitious policy scenarios varies between below or about 10 % in 2020 and 2030 extending to potential penetrations of more than 35 % (PL) or even 60 % (LT) in 2020 and nearly 60 % (PL) and 80 % (LT) in 2030. There is a huge variety of impact factors that explain the different penetration of biomass heating systems. These include energy prices and other economic conditions, the structure of the heating market, the historical role and tradition of biomass heating, the role of district heating and the role of biomass in the district heating sector, the know-how and awareness of stakeholders and the availability of biomass resources. The uptake of nearly-zero-energy-buildings (nZEB) according to the EPBD might have a strong potential impact on the role of different RES-H technologies and biomass in particular. However, due to the low rates of new building construction and renovation, the penetration of RES-H/C can be much faster than the impact of nZEB. In particular, the paper shows that effective and efficient policies can have a crucial impact on the penetration of biomass heating systems. Moreover, it provides recommendations for the design of such policy instruments.