

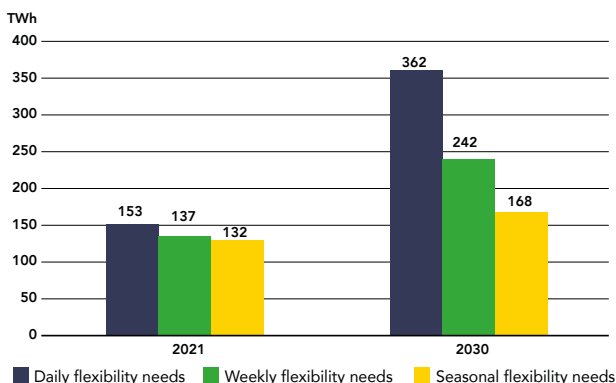
## DEMAND SIDE FLEXIBILITY

# Solutions for the decarbonisation of the pulp and paper industry

The pulp and paper sector is committed to achieving climate neutrality in Europe by 2050. This requires reducing emissions in our production processes by the implementation of energy-efficient and flexible technologies and the effective use of fossil-free energy sources.

Cepi's Energy Efficiency Solutions Forum (EESF) aims to accelerate the development and implementation of carbon-reducing technologies and solutions in our sector. We accomplish this by forging new partnerships and collaborating with developers and suppliers of energy-efficient and flexible technologies, as well as providers of fossil-free energy.

One of the tools to decarbonise in a cost-efficient way is through **demand side flexibility**. The rapidly increasing variability of electricity supply due to increased use of variable renewables also increases the need for system flexibility. This will become crucial in the next five years (fluctuations are expected to increase to/by more than 130%), and indispensable by 2050. Apart from being a necessity, it also provides consumers with the required flexibility to support cost-efficient decarbonisation.



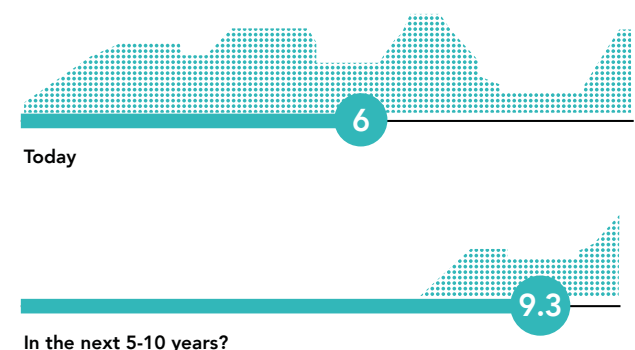
Source: ACER/EEA, Flexibility solutions to support a decarbonised and secure EU electricity system, October 2023

## How can demand side flexibility help to decarbonise the paper industry?

The energy supply system will change from the current centralised energy generation to a flexible activation of new decentralised energy resources (DER), such as controllable loads, energy storage facilities and small-scale renewable energy generation behind the meter. This provides the industry the opportunity to increase its flexible capability, especially when companies have flexible assets such as heat pumps, E-boilers, MVR, conveyer belts and infrared dryers. Encompassing multiple assets (consuming as well as producing) improves flexibility potential.

Besides installing flexible loads behind the meter, it is crucial that this flexibility is activated in a smart time-dependent way, based on external price signals and market incentives. The customer and its production process always have priority. Providing flexibility should be remunerated, though never mandatory or negatively affect industrial output. The customer can always indicate whether it is available or not on any given day or time.

## How important is Demand Side Flexibility to your company?





## Sustainability and financial drivers for demand side flexibility

In 2030, the EU will benefit from the full activation of demand side flexibility

- Consumers with flexible assets will benefit directly from more than €71 billion per year. All consumers will benefit from lower wholesale prices and system costs of over €300 billion per year.
- Renewable energy curtailment will reduce by 15,5 TW and 37,5 million tonnes of GHG emission will be saved.

## What is demand side flexibility?

Demand side flexibility (DSF) refers to the capacity of any active customer to react to external signals and adjust its energy generation and consumption in a dynamic, time-dependent way, individually as well as through the support of flexibility service companies (aggregators).

Demand side flexibility can be provided by DERs, such as demand management, energy storage, smart and bidirectional electric vehicles and distributed renewable generation to support a more reliable, sustainable and efficient energy system.

The mere deployment of DERs is not enough. Consumers must utilise them in a flexible way, reacting to external signals received from the system. These signals can be clustered in two main categories: implicit price signals and explicit incentives.

- **Implicit price signals** require smart meters and dynamic retail tariffs from suppliers, which are modern price offers to consumers willing to adapt their energy use based on wholesale electricity price fluctuations.

- **Explicit incentives** generally require the support of an aggregator, which can be an independent company or a specific service provided by an electricity supplier, which pools the flexibility of different consumers they have contracts with and sells it onto various markets, from wholesale electricity markets to markets set up by TSOs or DSOs, to balance networks and solve congestions with the help of connected consumers.

## Use case

Arctic Paper Grycksbo uses its assets to participate in multiple reserve markets in Sweden with a wide range of assets and a total flexible capacity of 30 MW. Arctic Paper Grycksbo is active on the Fast frequency reserve provision (FFR) and the Frequency containment reserve (FCR-D up and down).

