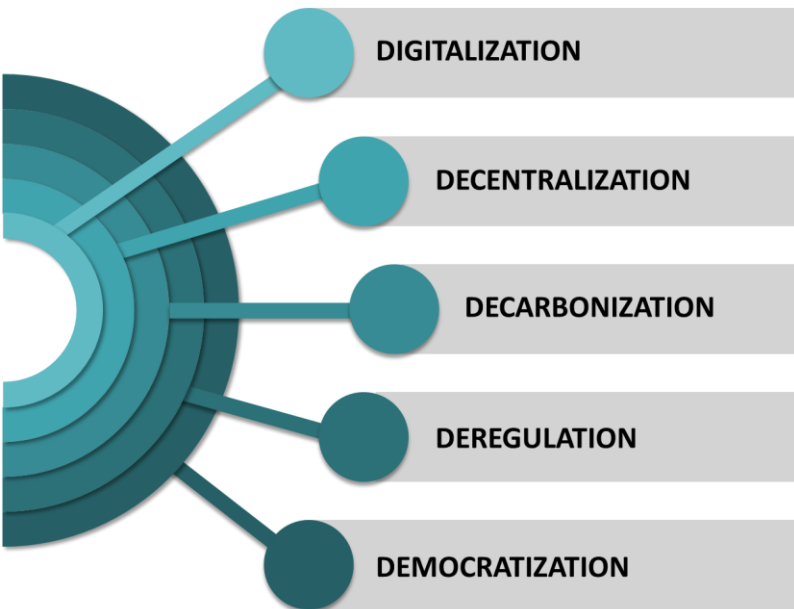




Delnooz A., Vanschoenwinkel J., Mou Y., Höschle H. – November 2020  
This study was carried out for the Flemish Government, Department Omgeving

## Collective activities will start taking up a more important place in the energy landscape...



In order to achieve the climate goals, the past decennia have seen some major shifts in the energy landscape (5 Ds). An important trend is for instance that energy is now produced in a more renewable way and on a much smaller scale. In this context, the role of digitisation and a more active consumer becomes more important. Collective activities can enlarge the critical mass of the consumer and its impact. Europe has instructed all member states to design a democratic framework by 2021, which will make citizens (both households and companies) its primary focus and which will create an equal playing field for among others production, storage, usage, the sharing and the sale of energy.

Within this context, this study provides insights in the added value and different types of collective activities, the hurdles these collaborations will face (cfr. REDII Article 21§6 and 22§3) and the different ways to offer solutions.

## ... and will lead to different types of added value for society...

Collective activities have the potential to offer added value in very diverse domains and specifically where traditional actors don't succeed enough. On a **socio-economic level**, they can facilitate local investments, which will anchor the value locally and which augment energy autonomy to a greater extent. It also offers opportunities for families currently living in energy poverty. When it comes to **economic benefits**, it gives access to extra capital and new ways of financing. Besides that, possibilities can be created for net users to reduce their energy bill. On a **social level**, collective activities lead to a larger public support for renewable energy and more social cohesion. It involves citizens (households and companies) in the energy transition. A more democratic governing of energy related activities can be realised. Finally, when it comes to the **ecological aspect**, the collective activities can ensure more renewable energy and strive for the use of more local resources. The social added value of collective activities often remains underexposed and is difficult to quantify. Yet, nevertheless, it is an essential part of the collective activities within the framework of the energy transition.

(Socio)-  
economic



Social

Ecological



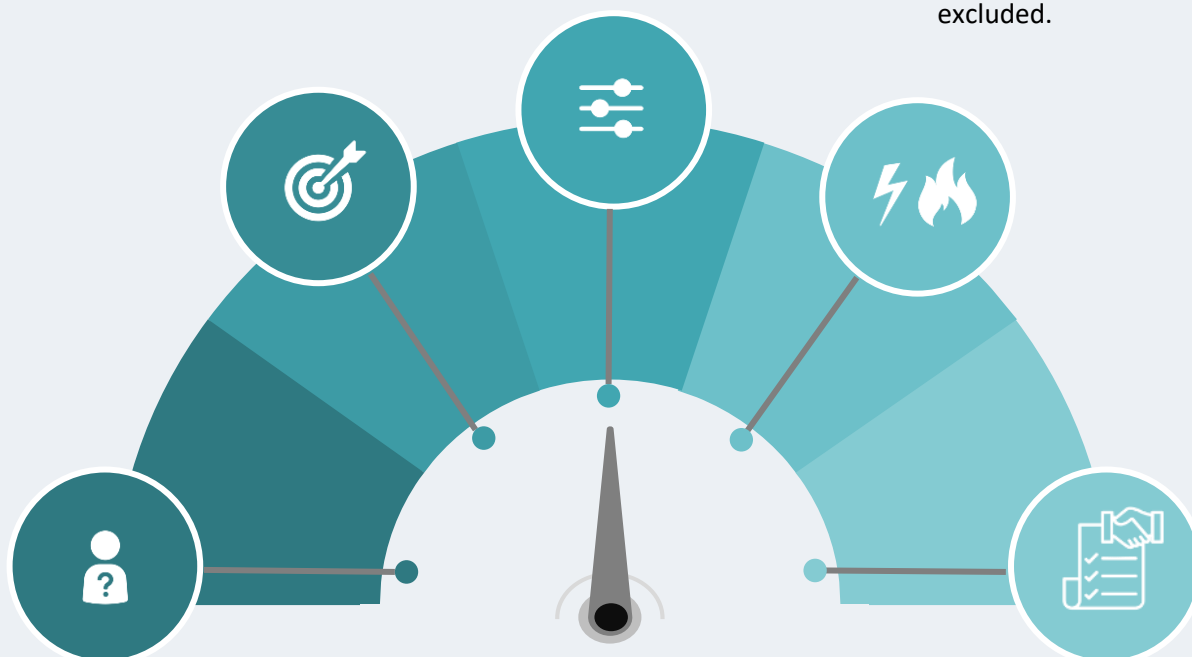
## ...but is not always possible today, as appropriate legal concepts are missing.

Today, there are already various technical concepts (heat networks, direct lines/pipes, closed distribution networks, private distribution networks) that enable the exchange of energy flows. However, for the majority of the end users, these concepts aren't available. They might make use of the financial or organizational systems (e.g. third party financing, crowdfunding, aggregator portfolios...). Yet, these systems do not always comprehend all activities and perspectives you would need for a collective activity. That means that the same potential can't be achieved.

# What is a collective activity?

The “Clean Energy For All Europeans Package” recognises six categories of collective activities, namely 1) renewables self-consumers, 2) jointly acting renewables self-consumers, 3) active customer, 4) jointly acting final customers, 5) the renewable energy community, 6) the citizen energy community. However, in reality a large diversity exists within these European concepts and alternative forms of collective activities exist as well. In order to map this diversity, the study identified five criteria to characterise the collective activity.

Goal	Activity	Energy carrier
<p>Collective activities are created for a goal that surpasses mere profit-seeking. They strive to achieve ecological, social or economic goals for their members and/or their environment.</p>	<p>Because of their inherent innovative character, collective activities unite various separate activities, stretching from self-consumption, energy sharing and offering flexibility services, to selling energy and network management. In doing so, technology neutrality is kept in mind.</p>	<p>Collective activities focus on energy sources like electricity, heat, gas or combinations of these energy carriers. The focus is mainly on renewable energy, but combinations with non-renewable energy aren't excluded.</p>



## Participation criteria

Collective activities can imply both implicit and explicit participation criteria, which means that not everyone would have equal access to every collective activity. For example, certain financial contributions might be required (i.e. conditional inclusivity), or access might be connected to a certain period of time (temporary inclusivity). Participation can also be linked to certain locational aspects like a geographical area or a technical proximity (locational inclusivity). Finally, participant specific criteria can be set, while focusing on a certain type of participant.

## Governance

Concerning collective activities, it is important to separate the activities and the way the entity is managed. The entity has to be autonomous for individual members and/or related market players, and it needs to be verified who has the effective control (authority) and property. Despite the fact that governance is an important part of the collective activities, in this report, there was no distinguish based on possible differences in governance structure. The report assumed these are basic and necessary requirements for a collective activity to differentiate itself from non-collective activities.

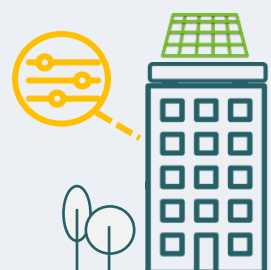
Different combinations and/or interpretations of these classification axes can lead to different collective activities. Certain types of collaboration can be pursued through existing financial organising or technical concepts. Other types of collaboration are currently insufficiently supported and they require further attention.

# What can a collective activity achieve?

In the report, a full overview chart has been made with all the possible collective activities. For each of these activities, it was examined to which extent there were already implementation options within the existing regulatory framework. As such it provides insight in the types of cooperation for which a supportive policy framework is yet to be established. In order for the government to initiate the appropriate facilitating actions and to support any position-taking concerning the different types of collective activities, an objective comparison is required. For this reason, the report also selected some representative use cases, which it tested through a quantitative analysis.

## Innovative residential grid users with ecological motives

This use case brings households within one building together in one collective activity, where a shared PV installation is installed. The main motivation of these participants consists of achieving ecological benefits. A simulation shows that advantages are ensured for both the grid users (e.g. lower total cost), the distribution operator (e.g. aggregated usage, yearly peak usage) and for society (e.g. CO<sub>2</sub> emission reductions and increased own PV use). The effect of an additional incentive, beside the energy component, remains limited. The level of self-consumption can increase significantly but will also be influenced by how generated energy is assigned or divided between the members (depending on the distribution key or optimal allocation).



## Vulnerable users looking for an affordable energy bill

The second use case concerns a group of vulnerable users (without flexibility), brought together in a collective activity in order to achieve an ecological and economic response to higher social energy costs for unprotected users. Despite the missing flexibility and consequently the ability to respond to PV production or price signals, this use case offers a realistic business case and can be part of the solution to energy poverty.



## Maximum integration of renewable energy on a public building

The central idea behind this use case is to increase the profitability of a large-scale PV installation of a building with limited flexibility, by involving flexible consumers in the collective activity. Crucial for profitability is a smart composition of the participant group, based on the complementary flexibility and consumption profiles in function of peak shaving. However, the benefits for the distribution operator depend on technical proximity and the network status. This use case ensures a better use of large roof surfaces, achieving an ecological added value as well.



## SMEs attributing to grid support

Use case 4 concerns the collaboration of a number of SMEs, who aim to decrease their peaks on the company site and as such attribute to grid support. Results show that both the impact on the grid user (lower total costs) and the impact on the year peak reduction is limited.

The results of this simulation suggest that flexibility could be valorised higher in an alternative business case. Therefore, for this specific example, an additional stimulus through grid tariffs can be questioned.



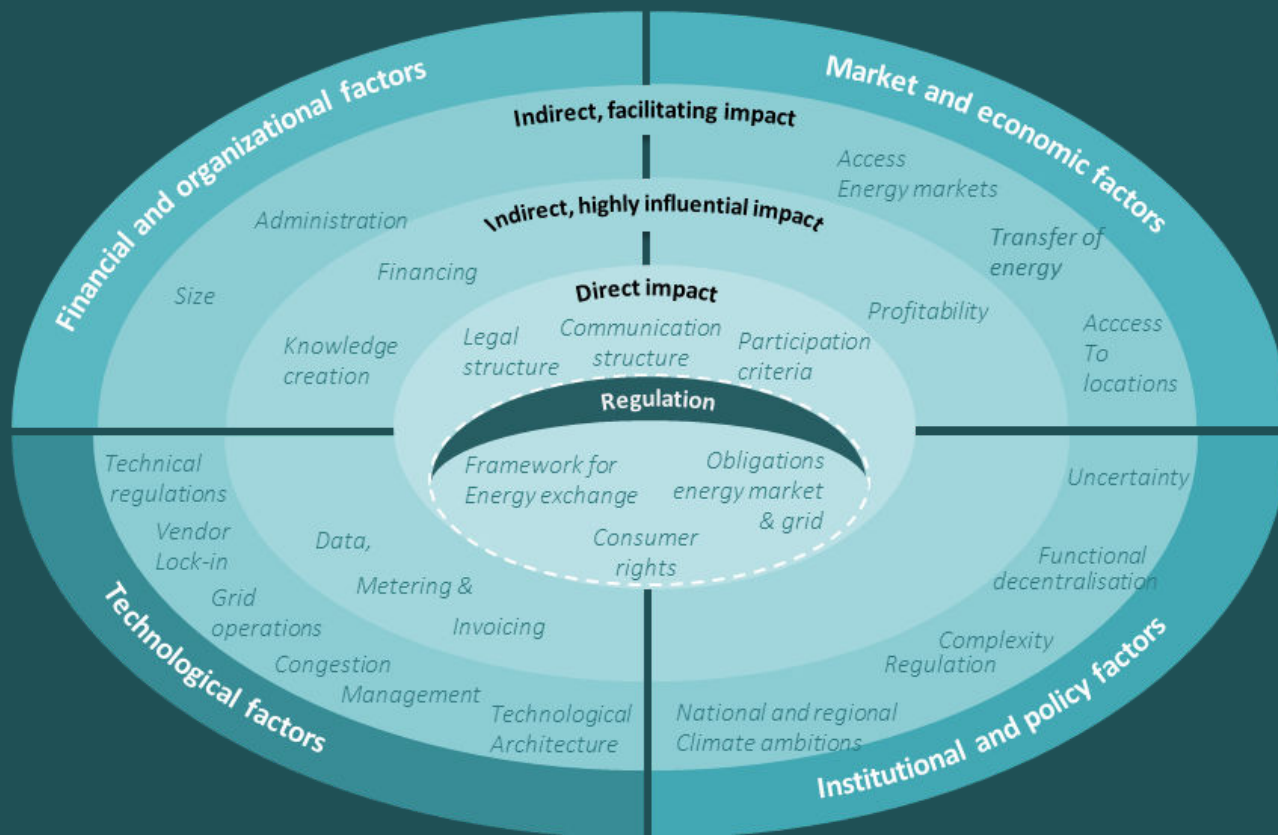
## Maximum renewable energy by cooperation between SMEs and residential users

The goal of this use case is to strive for maximum PV integration on company sites. A large-scale PV installation will be provided for an SME, but because of a lack of flexibility, residential users (e.g. the company's own employees) are involved to use the produced energy. A focus point concerning profitability is the way to apply the network tariff for collective activities, for both low and medium voltage grid users and to look into whether different rules have to apply for internal energy flows.



## How can collective activities be supported?

The image below shows the five main barriers for collective activities: Finance and Organization, Market and Economy, Technology, Institution and Governance, Regulation). Within the framework of the REDII directive, Member States have to develop a facilitating framework, tackling these hurdles in order to facilitate a large-scale roll-out of collective activities. In the report, these factors are prioritized in function of the necessity for action. Below, the main lessons are highlighted.



Added value and goal have to provide guidance and direction.

Existing profitability incentives do not sufficiently take into account the added value to the "broader energy system" for certain collective activities.

Additional incentives can be necessary, but have to be aligned with specific goals.

The added value of collective activities stretches over different domains. Facilitating measures have to be taken with a concrete goal in mind. Support, both financial and through other appropriate tools, has to be coordinated. Insights in the magnitude and weight of the advantages and their beneficiaries are necessary to stimulate the desired goals and added value appropriately.

At the moment, the business case for collective activities mainly consists of: i) the valorization of self-production through the energy component, and ii) the offer of flexibility. However, both aspects have limits, e.g. a discrepancy between the value for internally injected energy and the price paid for the use of this internal energy. Furthermore, the access to certain flexibility markets can be enhanced further, despite the significant efforts towards technology neutrality that have already been carried out.

Starting a collective activity requires investments in both time and means. Yet, the collective activity does not always see these efforts and the created added value being translated into a profitable business case. An additional incentive could be part of the solution. The way such an incentive is put together, has to be in line with both the orientation of the added value and the goals of the stakeholders involved (i.e. societal goals for policy makers, cost reflective grid tariffs set by the regulator and a balanced contribution to the grid costs by the distribution operator). This way, the additional incentive could be shaped through the energy bill (network tariffs and taxes) or through other options, like subsidies.

An economic framework and system needs should be the guidance for the role of the collective activity when it comes to flexibility and other rules.

Collective activities can be suitable for specific target groups. Nevertheless, they require adapted policy tools.

Obligations have to be proportionate and take into account possible consequences for third parties.

Collective activity requires a search for complementary and flexibility.

Implementing systems for measurement and calculation needs to be done independently and in a cost and time efficient way.

Room for choice and flexibility for collective activities is essential and the effectiveness of the policy framework has to be supervised.

When developing rules and incentives, a system vision is imperative. The market must give direction to the valorization of flexibility. Policy that strictly focuses on self-consumption can interfere with system needs and other incentives, and/or can stimulate unwanted investments in technologies.

Collective activities can be used to reach specific target groups like vulnerable families and tenants/landlords. Considering the special attention of the EU for these target groups, an intervention by the policy maker may be desired, in order to support similar activities. This could be financial support for vulnerable families or acting as a third party in order to create a transparent and a fair distribution key.

Current obligations and responsibilities are complex for collective activities and will be outsourced frequently. To facilitate this, it is necessary to look into the impacts for third parties. For example, the organization of green electricity and the consequences of outsourcing specific activities. In this regard, it is also important to examine the difference in impact of different responsibilities depending on the size of the collective activity.

In order to achieve a distinctive added value for collective activities, a search for complementarity and/or flexibility is essential from the point of view of profitability. The way the population of a collective activity is formed, strongly gives direction to the potential added value. The question should be raised whether a selective approach of participants, depending on the added value within the collective activity (and consequently the exclusion of certain participants) depending on the motivation of the collective activity, is justified.

It is necessary to start thinking on time about which organizational systems are required for internal calculations or for the optimization of energy flows in collective activities. In the short run, already existing parties can definitely play a facilitating role and can help to speed up implementation. This is important as such practical factors should not delay the implementation and roll-out of collective activities.

Given the innovative and dynamic character of collective activities, not all current and future barriers can be mapped out. As a result, flexibility is necessary to cover the variations in technology (connected to residual heat, non-renewable energy, storage of grey electricity), location (linked to the definition of proximity) and other criteria. The many differences between collective activities make it hard to set up a "closed" regulatory framework. That is why it is important to foresee enough freedom for collective activities to keep everything workable and to allow them to tailor certain criteria to their own needs (e.g. depending on project size, activity type and location). The policy maker also needs to make sure that the new policy framework will be evaluated quickly and followed-up on, in order to analyze its effectiveness and to ensure the still developing playing field in Flanders.

More information? Read our Expert Talk [here](#).