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cVPP
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DEVELOPMENT OF SERVICES FOR SOCIAL VULNERABLE TARGET GROUPS

PARTNER RESPONSIBLE: ENERGENT

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Project acronym: cVPP

Project full title: Community-based Virtual Power Plant (cVPP): a novel model of radical decarbonisation based on empowerment of low-carbon community driven energy initiatives

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1 INTRODUCTION

In cVPP, the objective is to involve the whole community in various services and business models in the future energy market. This means that communities need to play a more active role in the production of renewable energy (decentral or central), the supply of energy (as a cooperative company), the offer of flexibility to the markets (to the DSO or the TSO), or the smart management of their consumption (collective self consumption / implicit demand response). For the cVPP in Gent, this is researched in the neighbourhood of St-Amandsberg.

One of the key resources of a working cVPP is the production of renewable energy. From the report I3.3.1 (selection of the cVPP investment portfolio), we learned that within the dense area of St-Amandsberg, the production of local PV (photovoltaic solar panels) is the most obvious form of renewable energy due to abundant availability of roof space (which would otherwise be of no use).

The investment in individual solar production is profitable in the Flemish region. Through the current tariff system, which consists of a 'prosumer tariff' that is taxed per kW of installed inverter capacity, a payback time of 6 to 9 years is very common (in 2018-2019). This implies an interest rate of over 10 % on a 20 year depreciation period. Obviously, this is far better than the almost-zero interest rates of a bank account and could even be considered as one of the most profitable (and relatively safe) investments that are accessible to current day citizens.

Translated to the resulting cost of electricity, an average consumer pays a unit electricity cost of 27 cEUR/kWh (2019), while an average prosumer, owning a PV installation that covers its yearly consumption, pays 16 cEUR/kWh. The current investment scheme thus empowers people that already have the possibility to invest in PV.

Despite being a worthwhile investment, within the neigbourhood of St-Amandsberg, only +- 1,5% of the included families (1350 living units) owned a PV installation before 2018. All other families did not. This is ten times lower than the average Flemish region where the same investment opportunities exist,and it is partly linked with the socio-economic context of the neighbourhood. Indeed, St-Amandsberg is considered highly vulnerable, with almost 50% of the families without Dutch background (city statistics 2018 – Gent), over 60% rental homes (feasibility study ZES – 2017) and one of the lowest income levels of Ghent (city statistics 2018 – Gent).

The cVPP project has, therefore, focused on these target groups. A community should be inclusive (see cVPP community definition), hence it is of utmost importance to find energy related solutions for these target groups. In case this is not possible, it is essential to identify a key legal solution that could solve this issue and increase the involvement of entire communities in the energy transition.

Within the cVPP project, in line with the cVPP role theory (see T1.2.1), EnerGent can be considered as an external facilitator to provide more PV in the neighbourhood. On the long term, EnerGent wants to become very inclusive as an energy cooperative as well. This means it will facilitate its own cooperative and cooperants towards a working cVPP.

2 DETERMINATION OF STRATEGY

As a first step, target groups were identified. Target groups were selected based on available data, but also assumptions and preliminary discussions, that indicated little involvement in renewable energy.

The following groups were identified:

- Rental houses (tenants and letters)
- Apartments
- Social rental offices (public)
- Standard (private or public) rental offices
- (Public and non-profit) Social housing companies
- Houses with unsuited roof
- Families with substantial language arrears
- Families with very low financial means

Commented [M-RM1]: This is usually not used in such context, but rather for delays in payment, delays in financial instalments, etc.

For each of these target groups, several actions were taken to clearly understand the social, financial, and legal context that defines the current reluctance towards renewable energy.

In the **report I3.4.2 (communication strategy for neighbourhood involvement)**, several communication strategies are identified with possible means to reach out to different target groups. In the report **I3.2.2 (set-up of a bottom-up platform for cVPP)**, possibilities on how to involve citizens in a general campaign towards renewable energy are described. Both are a significant starting point to gain trust in the community and to organize the first contact.

Nevertheless, the real challenge in increasing renewable energy for socio-economically vulnerable groups is to provide services that supplement the current market offer and that respond to the needs of the identified target groups. These solutions can be various: legal, financial, practical and sociological. The next step was, therefore, to identify and test solutions for different target groups. This is elaborated in **chapter 4**.

To create a solution for PV for difficult target groups, it is of utmost importance to create a streamlined process flow that guides people to a PV installation. In order to do so, a partnership was established with a local contractor. The way this was done, and the choices that were made, is described in **chapter 3**.

In several cases, no real solutions to facilitate PV, were found within the current legal framework, which means that sometimes, solutions can only be provided by changing the regulatory framework. These limitations are also pointed out in chapter 4.

3 A GUIDED GROUP PURCHASE FOR SOLAR PANELS

An approach to increase RE in a certain area starts with a competitive PV offer. The current market applies group purchases as a tool to increase efficiency at the contractor level and thereby lowering prices for the prosumer. For the selected neighbourhood, a tender was released for a group purchase for PV installations. Compared to ordinary group purchases, several choices were made that (1) facilitate the interconnection of the group purchase and the project and (2) ensure long term sustainability for the clients. These choices are described below.

3.1 QUALITY CRITERIA

The PV sector has been evolving very fast, and competition is high. This involves certain quality risks. The focus of the project is the long term reduction of energy poverty, and this can only be achieved if the PV installation itself has a sufficiently long stable lifetime. Therefore, it was considered useful to incorporate several quality conditions in the tender procedure.

- Minimal warranty criteria (PV panels: product warranty 10 years; power warranty 25 years; invertor: product warranty of 10 years, extendable to 20 years).
- Quality criteria for PV panels: PV panel brand should be included in the top 5 of the PV module reliability scorecard, an independent scorecard that enables quality comparison.
- Quality criteria for PV panels: PV panel brand should be TIER 1 supplier.
- Quality criteria for installation: Before installation, a compulsory roof check is required by the contractor, to verify issues with asbestos, insulation lock-in, and quality of underlying roof tiles.

3.2 ECOLOGICAL & SOCIAL SUSTAINABILITY CRITERIA

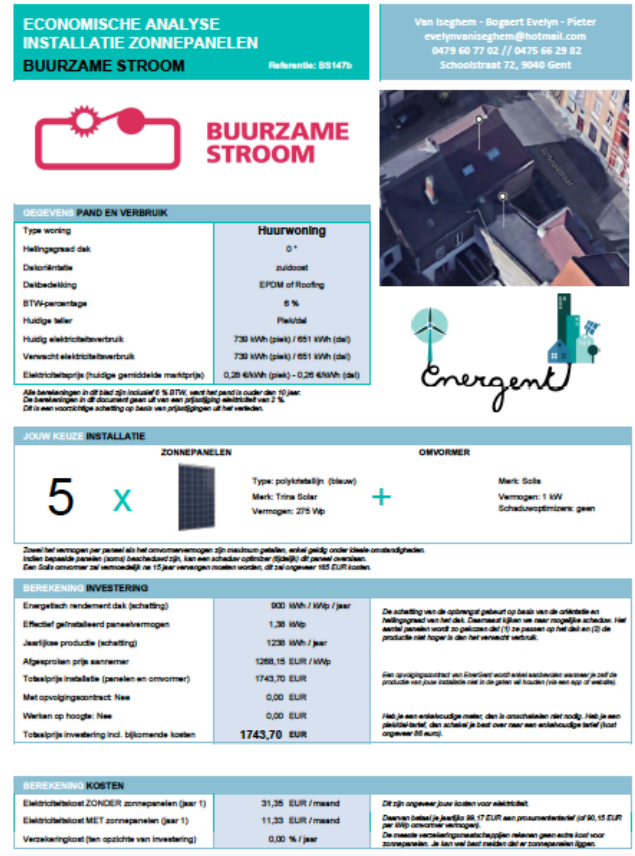
One other very important objective of the project is to increase the sustainability of the renewable energy sector. Measures that genuinely ensure lower environmental impact of the PV production are therefore obvious.

- Sustainability criteria for PV panels: PV panel brand should be included in the top 5 of the Solar Scorecard; an independent scorecard that enables production sustainability comparison (such as air pollution, carbon impact, prison labor, etc.)

3.3 OPTIMIZED PROCESS FLOW

In the whole process flow of introducing to people the benefits of PV, it is of importance that the contractor does not impose other opinions to the target groups (for example related to the size of the installation or the chosen materials).

- For the neighbourhood, it was, therefore, necessary that EnerGent would organize the consistent design (see Figure 1) and follow-up of the installation and that most of the communication would also run through one contact person of EnerGent. For exceptionally vulnerable people, a third person, from the experienced organization ‘samenlevingsopbouw’ was nevertheless integrated.



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BUURZAME STROOM

GEGEVENS PAND EN VERBRUIK

Type woning	Huurwoning
Hellingsgraad dak	0 °
Dakoriëntatie	zuidoost
Dakbedekking	EPDM of Roofing
BTW-percentage	6 %
Huidige teller	Piek/dal
Huidig elektriciteitsverbruik	739 kWh (piek) / 651 kWh (dal)
Verwacht elektriciteitsverbruik	739 kWh (piek) / 651 kWh (dal)
Elektriciteitsprijs (huidige gemiddelde marktprijs)	0,26 €/kWh (piek) - 0,26 €/kWh (dal)

Alle berekeningen in dit blad zijn inclusief 6 % BTW, want het pand is ouder dan 10 jaar.
De berekeningen in dit document gaan uit van een prijsstijging elektriciteit van 2 %.
Dit is een voorlichtige schatting op basis van prijsstijgingen uit het verleden.

JOUW KEUZE INSTALLATIE

ZONNEPANELEN

5 x

Type: polykristallijn (blauw)
Merk: Trina Solar
Vermogen: 275 Wp

\+

OMVORMER

Merk: Solis
Vermogen: 1 kW
Schaduwoptimizers: geen

Zowel het vermogen per paneel als het omvormervermogen zijn maximum getallen, enkel geldig onder ideale omstandigheden.
Indien bepaalde panelen (some) beschaduwd zijn, kan een schaduw optimizer (bijdelijk) dit paneel overslaan.
Een Solis omvormer zal vermoedelijk na 15 jaar vervangen moeten worden, dit zal ongeveer 165 EUR kosten.

BEREKENING INVESTERING

Energetisch rendement dak (schatting)	900 kWh / kWp / jaar	De schatting van de opbrengst gebeurt op basis van de oriëntatie en hellingsgraad van het dak. Daarnaast kijken we naar mogelijke schaduw. Het aantal panelen wordt zo gekozen dat (1) ze passen op het dak en (2) de productie niet hoger is dan het verwacht verbruik.
Effectief geïnstalleerd paneelvermogen	1,38 kWp	
Jaarlijkse productie (schatting)	1238 kWh / jaar	
Afgesproken prijs aannemer	1258,15 EUR / kWp	
Totaalprijs installatie (panelen en omvormer)	1743,70 EUR	Een opvolgingscontract van Enerlyent wordt enkel aanbevolen wanneer je zelf de productie van jouw installatie niet in de gaten wil houden (via een app of website).
Met opvolgingscontract: Nee	0,00 EUR	
Werken op hoogte: Nee	0,00 EUR	Heb je een enkelvoudige meter, dan is omschakelen niet nodig. Heb je een piek/dal-tarief, dan schakel je best over naar een enkelvoudige tarief (kost ongeveer 65 euro).
Totaalprijs investering incl. bijkomende kosten	**1743,70 EUR**	

BEREKENING KOSTEN

Elektriciteitskost ZONDER zonnepanelen (jaar 1)	31,35 EUR / maand	Dit zijn ongeveer jouw kosten voor elektriciteit.
Elektriciteitskost MET zonnepanelen (jaar 1)	11,33 EUR / maand	Daarvan betaal je jaarlijks 99,17 EUR aan prosumententarief (of 90,15 EUR per kWp omvormer vermogen).
Verzekeringskost (ten opzichte van investering)	0,00 % / jaar	De meeste verzekeringsmaatschappijen rekenen geen extra kost voor zonnepanelen. Je kan wel best melden dat er zonnepanelen liggen.

Figure 1: typical design leaflet about the PV installations that interested participants received in the first stage of the process flow.

4 SERVICES FOR THE SELECTED TARGET GROUPS

4.1 RENTAL HOUSES

4.1.1 Identification of challenges

In Flanders, very little PV panels are installed on rental houses. As the percentage of rental homes is significantly higher in the selected neighbourhood, this can off course be considered as one of the main reasons for the relatively low PV involvement.

To fully understand the challenges related to insulation and PV panels on rental houses, the following actions were taken:

- The current legal framework for rental homes was consulted.
- A discussion was organized with the tenant union.
- 2 interactive evenings were organised with several neighbourhood tenants to understand their concerns.
- During the process of involvement, over 15 letters were discussed concerning their eagerness to participate in a PV project.

From these consultation rounds, the following main challenges were identified:

- If PV panels are to be installed on the roof of a rental home, this would mostly mean that the house owner needs to invest in the PV installation, while it is the tenant that has the advantage of the lower electricity bill. Therefore, the latter has no financial incentive to make the investment.
- If PV panels are to be invested by the latter, it is prior to reach out to this group. However, there are no efficient means to directly communicate because of privacy concerns (recent GDPR legislation). The only way to communicate to the latters is via the tenant (which is reached through door-to-door communication campaigns in the neighborhood). This seemingly obvious communication is very hard in practice. Very few tenants are eager to communicate more than necessary, with their latter more than necessary

4.1.2 Proposed solution

- For rental houses, a legally binding split incentive was researched in which the tenant accepts a higher rental price as a compensation for its lower electricity bill. As it is legally not admitted to renew the rental contract with the sole purpose of increasing the rental price, an addendum to the existing rental contract appeared as the best way to organize this. In order to be legally binding, this addendum was verified by the tenant union.
- The most important criteria within the addendum were the following: The benefits from the split incentive should warrant a net reduction of the costs of the tenant (and ideally a reduction of 25%). Therefore, it was not allowed that the expected savings on the electricity bill were lower than the addendum price. In order to warrant this condition, limitations were set on the number of panels and a compensation mechanism was created if this condition was not met.

4.1.3 Evaluation of the proposed solution

- Because of the communicative challenges, and difficult administrative burden (addendum on the rental contract), this solution was not considered satisfying. Moreover, this kind of split incentive would need an objective third party, which would inherently induce costs for both parties. However, it would then not be a sustainable solution as well. As a result of these difficulties, only 3 latters (and their tenants) were convinced in such a scheme.
- It is proposed that latters are given the possibility to increase their rental costs, without prior approval of the tenant. It should be the government that defines the calculation method for this increase, whereby it considers an advantage for both tenant and the latter. The calculation method should be simple and also accept rare cases were the tenant does not receive a net benefit. Simplicity is more important than ensuring a 100% coverage of the win-win split incentive.
- Furthermore, it is proposed that the whole rental market (as it is shown on IMMO websites) is made more conscious about expected monthly energy costs. A monthly cost should therefore not be expressed as the sole rental cost but always as a double number, being the rental cost + the expected monthly energy cost.

4.2 APARTMENTS

The neighbourhood has an estimated 45 apartment blocks, all together being the living place of +- 400 families (feasibility study ZES – 2017). Only 1 apartment had a solar PV installation on its roof.

4.2.1 Identification of challenges

Several meetings were organized with syndics and associations of co-owners. From these meetings, the following lessons could be summed up:

- In an apartment, most roofs are owned by the association of co-owners. For a solar panel installation which is connected to the common electricity consumption (elevators, lighting in the hall, etc.), ¾ of the owners (and 2/3 of the owners as of 01/01/2019) need to agree on the installation. This is a relatively high percentage of people that need to be convinced. PV for private purposes (on the collective roof) is even more complicated as the whole code of the association then needs adjustment and 4/5 of the owners need to agree.
- From a technical point of view, an apartment complicates a lot. By law, every citizen needs to have its own connection to the grid, and each PV installation can only be connected to one electricity connection. This means that private PV installation on apartment roofs are complicated combinations of micro-installations instead of one big installation.

4.2.2 Proposed solution

- In the project, EnerGent realized PV installations on 2 apartments. This was only possible through very active involvement in the decision making of the association of co-owners.
- During the project, the required majority for decision making for PV was changed in the law - from 3/4 to 2/3 of the owners (at least for PV installations based on the common electricity consumption). At the same time, this was changed for insulation from 3/4 to 1/2. This is a good evolution, but EnerGent proposes a change towards a majority of only half of the owners for solar panels as well. Considering the profitability of PV installations, and the availability of long term loans for associations of co-owners, this is a reasonable proposition. In most of the cases, a loan with a 10 years term will allow for a net reduction of operational costs from the very beginning.
- Only a part of the roof can mostly be beneficially used for the production of green electricity, as the common electricity consumption is not high enough. Private installations are therefore required, and to avoid a technical complexity, EnerGent proposed the install of one extra electricity meter, installed up current from all the current electricity meters. This meter would make it possible to connect the PV production to the full electricity consumption of the apartment (and not only the common electricity consumption).

4.3 FAMILIES WITH SUBSTANTIAL LANGUAGE ARREARS

The neighbourhood of St-Amandsberg is highly multicultural. Most non-autochtonous inhabitants have a Turkish and Bulgur origin.

4.3.1 Identification of challenges

- The biggest challenge for this target group is related to communication and gaining trust within the community. This is described in the report I3.4.2 (communication strategy for neighbourhood involvement).
- Other challenges within the community are related to the economic context and are considered as a different target group.

4.3.2 Proposed solution

- The project showed it is very hard to include the Turkish community in Ghent, and showed a very reluctant attitude towards the project. It was concluded that this distrust comes from a deeper, more general distrust towards the government. Also, within these communities it appears that much more credit is given to people with high status within their own community.
- Within this project, a successful PV installation could be installed on 5 houses within this target group. One of the respective house owners could be considered as a high-status personality within the community. It is hoped that word-of-mouth advertising will instigate further interest in PV investments. Until now, it is not sure how effective the communication has been.

4.4 HOUSES WITH NO FINANCIAL MEANS

It is estimated that in the city of Gent, +- 20% of the families do not have immediate access to the necessary investment for a PV installation (of 3000 € on average). In neighbourhoods, such as St-Amandsberg, this number is by no doubt higher. For this group, other financial mechanisms are required that allow for the investment of PV.

4.4.1 Identification of challenges

- In Flanders, a public financing system exists that allows citizens to borrow money at low interest rate (0 of 1%). These loans have a max duration of 10 years. In the case of PV systems, that generally have a lower payback time than 10 years, this means that the monthly repayment is generally equal (or lower) than the reduction of the electricity costs. This means a net advantage from day 1. The project has shown that a lot of prosumers are not aware of this basic financial mechanism.
- However, the possibility for governments to allow loans to people is strictly connected to certain liquidity criteria. In several cases, such loans are not possible, even if the monthly costs would be immediately net-reduced after the investment.
- It is possible to re-uptake mortgage credit. In some cases, this can mean you can increase your loan for the investment in a PV system for a period of 15 years. In such situations, this means that your reduction in monthly costs lowers by 30% from the first month. One disadvantage is the administrative costs that banks charge for small changes in the mortgage credit.

4.4.2 Proposed solutions

- Most of the work concerning public energy loans has been done on the level of communication (see report I3.4.2). This is the most important and should be further encouraged to people without financial means.
- EnerGent had involved several people that could not have a loan. It is understandable that loans are related to certain liquidity criteria. Nevertheless, if a total net cost reduction can be ensured, this should be a financial no-brainer. A loan for a PV installation should never be held up.
- In total, 2 banks (VDK Spaarbank and BNP Paribas) with high coverage in the area were approached to ask for pro-active communication about possibilities for re-uptake of mortgage credit as a financial no-brainer. BNP Paribas was interested in the idea, but first wants a discussion on the level of its advisory board (Brussels). VDK Spaarbank, a more locally arched bank, is willing to do a test on the level of the neighbourhood. As of June 2019, this test has still not started, hence the same holds for the effectiveness of this measure. Remark: none of the banks wanted to reduce their administrative cost for this re-uptake.
- EnerGent, as an energy cooperative, proposed a third party system were Solar Panels could be rented for a period of 20 years. Also, in this scheme, a net reduction of 20 to 30% of the average monthly cost could be warranted. A fund has been established to create long term stability.

4.5 HOUSES WITH AN UNSUITABLE ROOF

There are different reasons why certain roofs are not suitable for the installation of PV systems. In some cases, this is a fixed situation that cannot easily be overcome. For instance, in the case of persistent shadow or north orientation, PV panels significantly produce less solar energy, which leads to negative profitability. However, in most cases, the unsuitability of roofs for PV systems is a consequence of low carrying capacity, worn-out roof tiles, the presence of asbestos, or the absence of insulation. In case of asbestos, it is prohibited by law to fix PV systems on them. In the case of insulation, there are little limitations, but the chances are that future insulation needs to be installed from the outside. In this case, PV panels would rather obstruct further insulation (a so-called lock-in) which is unacceptable from an ecological standpoint of view.

4.5.1 Identification of challenges

- The offer of solar panels is very straight forward. After a limited investment, the installation is paied back after 6 to 10 years. By applying insulation, strengthening the structure, or removing asbestos, the project becomes much more complicated. The need for guidance grows, as well as the need for expertise. Very few contractors combine the works, causing the need for several collaborating contractors.
- Of course, any construction change at a roof involves costs that are barely profitable as such. In case of insulation, luckily, the energy bill can significantly lower, but even these savings mostly do not offset the cost of investment in the first 20 years. Rather than this, an insulation project must be considered as a long term investment that will increase the value of the living unit in the long term or will create an increase in comfort. In either case, from the standpoint of view of the inhabitant, a lot more considerations are to be taken.
- Because of the above-mentioned issues, several government structures tend to subsidize part of the insulation works to address Climate Change. In the project area, 3 different government levels interfere in insulation project: the city Gent, the distribution net operator, and the Flemish region. On the level of the city of Gent, the living and the

energy department are not structurally integrated, causing 2 different subsidy schemes from one actor. Many citizens are confused by this complexity, and might rather be discouraged than encouraged to tackle their lack of insulation.

4.5.2 Proposed solutions

- Since a substantial part of the above-mentioned issues are the complexity, focus was put on reducing this complexity, through the creation of one contact person for the guidance of the whole project (PV and insulation) - not only for technical matters (choice of materials, evaluation of the offers from contractors) but also sociological and financial matters (bank, public loans, subsidies).
- The project proposed a radical change of the subsidy schemes. Following calculations in several (roof) insulation scenarios, it was concluded that the sum of all subsidies reached almost 80% of the total investment costs. Including costs for civil servants helping with the subsidy demands or verifying the subsidy demands, it is almost certain that the total societal cost surpasses the cost of the project itself. As a consequence, it was proposed to give insulation for free for the lowest income categories. This would facilitate very easy communication towards citizens and potentially reduce reliance on societal costs. As of June 2019, the effect of this strategy was not evaluated yet.

4.6 SOCIAL (PUBLIC) RENTAL OFFICE

A social rental office is a public company that connects latters with vulnerable tenants, with the aimto facilitate the vulnerable tenants in finding reasonably priced rental houses. Latters receive a limited rent (in comparison with the private market), however in return they receive a secured payment from the social rental office and are deprived from maintenance and administration. In some cases, latters can receive additional subsidies for allocating their assets to the social rental office. In the neighborhood of St-Amandsberg, the social rental office of Gent administers over 20 houses.

4.6.1 Identification of challenges

In collaboration with the social rental office, the following challenges were defined:

- As in the case of a standard rental home situation, the installation of solar PV would induce a lower cost for the tenant. In the case of social rental office, the monthly fee is determined by following certain criteria (such as the number of rooms, livable surface, garden, etc.). Insulation and PV is not one of the criteria, therefore, the price of the rent cannot be changed if energy norms of the house are better, even if this induces significant cost reduction of the energy invoice.
- Most of the latters only temporarily join the social rental office (the average period is 5 years). This means that it is mostly not reasonable to change the actual rental contract of the social rental office with the latter. The amount of time that was initially spent to arrange the contract with the latter, wouldn't allow for a second negotiation for the sole purpose of including PV.

4.6.2 Proposed solutions

- Several solutions were proposed to the social rental office in Gent. In one solution, the investment in PV on the roofs was done by the latter. In the other propositions, the social

rental office itself or a third party (for example the energy cooperative EnerGent) could invest in PV installation and lease the PV installation to the tenant.

- Because of clear wish to reduce the complexity to the maximum, the most appreciated solution consisted of a policy change of the social rental office. Within this policy, new latters are given the possibility to increase their rental costs with a certain amount if they organize the investment in PV within a few months after the starting date of a new rental contract.
- On June 14, 2019, the board of directives of the social rental office decided it is now possible to increase the rental costs, if solar panels are installed. A maximum number of PV panels was determined depending on the number of sleeping rooms and the presence of electric cooking, an electric boiler, and an electric heating system. This number was calculated by EnerGent and determined in such a way that a net cost reduction of the tenant could be ensured in most cases.

4.7 PRIVATE RENTAL OFFICE

A rental office is an office that organizes the rental activities for latters. They mostly do notown the living units, but only facilitate. In theory, they are an interesting partner in stimulating PV through latters as they communicate directly to them.

Two rental offices that were active in the neigbourhood were contacted. None of them was interested in collaboration, because of their desire to stay focused on their business and not trying to use their business to convince latters to invest in renewable energy. As a result, no solutions for rental houses through private rental offices could be organized.

4.8 PUBLIC RENTAL OFFICE

A public rental office functions the same as a private rental office, but introduces a social role by discouraging (cultural background) discrimination of certain tenants, still a frequently occurring problem in the rental market in Belgium. The public rental office, thereby, warrants payment and (to some degree) maintenance.Latters are, therefore, less likely to haveprejudice and beafraid to involve certain tenants.

The public rental office was consulted to search for the best solution for this target group. Nevertheless, as of June 2019, no specific solution was defined.

4.9 PUBLIC SOCIAL HOUSING COMPANY

In the neighborhood, over 50 housing units (or apartments) are social housing that isowned by the local government and organized by the public social housing company. These housing units are rented at a very low rental fee to ensure shelter for very socio-economically vulnerable families.

A substantial part of the housing units suffered the last decades from underinvestment. This is one of the main reasons why a significant part of the social housing unit has serious issues concerning living quality, and never defined insulation, and PV panels as their primary focus.

The social housing company WoninGent was consulted several times to understand their needs. It was communicated that only in 2020 time would be invested in the cVPP project. As a result, as of June 2019, no specific solution was defined.

4.10 NON-PROFIT SOCIAL HOUSING COMPANY

Next to the public social housing company, several non-profit social housing companies exist in the neighbourhood. These social housing companies are relatively organized in the same way as the public social housing companies. However, generally they have higher rental fees, to ensure a sustainable business. As of June 2019, contact was made with 2 social housing companies (de Gentse Haard and the Volkshaard). No solutions could be defined.

5 CONCLUSION

In the above descriptions, the different target groups were considered as very delineated groups without further interaction with the other target groups. The project shows that solutions for most of these groups are possible or will be possible by the end of the project.

In reality, this situation is, off course, not so easy. Several families that were involved could be considered as a combination of difficult target groups. In the extreme cases, it would, for example, be a socio-vulnerable family, with Turkish background and stringent language arrear, living as tenant in apartment block that is rented through a private rental office. It is clear that such groups can be considered as one the most difficult to involve in renewable energy. Aside their own participation, they are dependent on the participation of several other actors such as an engaged latter, a facilitating rental office, a clear legal framework for tenants, and a change of beliefs concerning renewable energy within the Turkish community they live in.

As a result, it can be concluded that reaching out to relatively easy, defined groups, is only a first step towards higher renewable energy involvement. The most difficult groups will, nevertheless, only be reached if each limitation is removed.