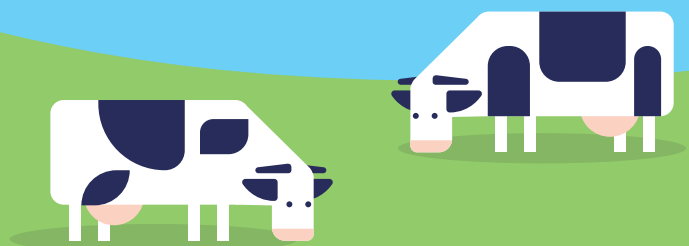




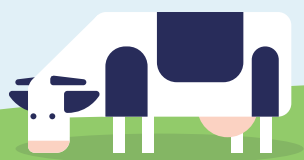
# The energy efficiency toolkit for energy communities.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696084



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## INTRODUCTION

The REScoop Plus project aims to make REScoops in Europe go beyond their activities of producing and supplying energy and take up energy savings for their members as a new pillar in their organisations. This report is a description of the best practices that partners undertake to encourage and promote energy savings among their members that were selected in the REScoop Plus project.

## GOAL OF THIS REPORT

This report validates the selection of best practices based on the criteria that were formulated in the best practice criteria report. It demonstrates the state of the art of involving members/consumers in energy saving, that are worthwhile to disseminate and share with REScoops, to ease the uptake of these best practises in other European countries.

## PROCESS OF VALIDATION

In the project REScoop Plus we first have made an overall inventory of all activities on energy savings of our partners. This research was done by the University of Twente based on questionnaires and short interviews with the partners. Next to that the Technical University of Crete did a data analysis on those activities that could give substantial data and could be measured. The inventory combined with the data analysis gave us the information we needed to select best practice activities in the field of energy savings.

In the inventory there was a list of 17 practices. Based on the established criteria we made a selection of 8 best practises. Once selected there was a second interview with experts on each of the best practices to get a better understanding of the actions involved, the way of implementation and the costs involved. During the interviews we went through the criteria with the experts in order to obtain additional information, and a more detailed explanation of the scoring on each criteria. Thus for most of the criteria the scoring is a qualitative score based on the interviews with the experts. The Technical University of Crete contributed with data analysis on a quantitative scoring of the impact of the best practices, in case sufficient data were available.

## CRITERIA

For the selection of best practices, we developed a concrete set of selection criteria, assuring the selected practices included a balanced set of characteristics, and taking into account different types of concerns that will influence their dissemination and implementation. These criteria are described extensively in the best practice criteria report.

The selection criteria are:

- 1 Effectiveness:**
  - 1 Outreach efficiency
  - 2 Cost efficiency
  - 3 Time Efficiency
  - 4 Long term efficiency
- 2 Pre-investments and share of costs**
- 3 Implementation**
  - 1 Administrative burdens
  - 2 Training of employees or volunteers
  - 3 Integration into existing systems
  - 4 Adjustment of practices
- 4 Market uptake**
  - 1 Regulatory context
  - 2 Organisational context
- 5 Ethical performance**
  - 1 Degree of control by end-user
  - 2 Transparency
  - 3 Data management

## **GENERAL OBSERVATIONS**

For the readers of this best practice report it is important to understand that energy saving activities come in many ways and for different reasons. There are technical reasons. For example, energy savings makes district-heating systems more efficient. There are financial reasons. For example, there is money to be made for the energy supplier when district-heating systems run more efficient. Or when national regulations are in place that create a market for energy savings in households. Or for financial reasons from the viewpoint of the consumers, who wish to reduce their energy bills. Marketing is also a reason. For REScoops it is a way to activate members and consumers and to create commitment and loyalty to the cooperative. Finally, a reason is that energy savings are considered part of the goals of the REScoop and actively promoted and supported as a service to its members.

## **IMPACT**

In this report, we are giving an overview of the impact of each best practices. Those impacts are estimations based in statistical and behavioural research carried out by, respectively, the Technical University of Crete (GR) and the University of Twente (NL). Those analysis focuses on benefits to the members of the cooperatives. The reasons for this focus is linked to the essence of an energy cooperative: to serve its members and the community as a whole. Therefore, any benefit to the member is a benefit to the energy cooperative.

## **EXPERTS**

The experts working on the best practices were interviewed. A brief description of each expert is included in this report, to make it easier for REScoops around Europe to contact these experts for dissemination of the best practices. In the following phases of this REScoop Plus project, these experts will play a role to assist partner REScoops throughout Europe to implement the best practices.

## **DISSEMINATION OF BEST PRACTICES THROUGHOUT EUROPE**

The main goal of the REScoop Plus project is to disseminate the knowledge on the best practices throughout Europe in order to get REScoops in Europe started with energy savings. The best practices will be taken up in a REScoop Plus Toolkit. This is an online tool to easily learn about these best practices. Next to that we will organise together with national federations of REScoops national workshops where the experts can go deeper into the details of the best practices and answer questions of interested REScoops face to face. Those REScoops interested in implementing the measures will get in house trainings of these experts so that these energy saving best practices can be implemented into their organisation and day to day routine.

## **UPDATE OF THIS REPORT**

This report is updated after five synergy workshops and after some of the best practices are being implemented in starting REScoops. In these workshops experts demonstrated the best practices mentioned in this report and discussed how their best practices could be improved. In addition, in these workshops starting REScoops were invited. Also, the implementation of the best practices gives a good idea for other REScoops what it means for your organisation to implement the best practice in a new REScoop. They could reflect how these best practices could be implemented in their REScoop. This update is a result of these discussions. It adds the following paragraphs to the best practice description.

### **ABOUT THE RESCOOP OR THIRD PARTY**

In the workshops it became clear that the implementation of best practices needs to be placed into context. In order to get a good idea whether it is possible to implement the best practice in another REScoop one needs to understand in what kind of REScoop it works at the moment.

### **IMPLEMENTATION IN ANOTHER RESCOOP**

By implementing the best practices in another REScoops we can describe what activities are needed to implement a best practice in a starting REScoop. This gives the readers a good idea on whether they starting REScoops an idea what needs to be organised to implement these best practices.

### **COMBINATION WITH OTHER BEST PRACTICES**

The goal of the synergy workshops was to improve the workshops. In the workshops it became clear that several best practices could be improved by combining them with other best practices.

## **SECOND UPDATE OF THIS REPORT**

After the implementation of some of the best practices in several pilot REScoops and after the research on the REScoops that use the best practices were concluded we added extra information to the toolkit.

### **IMPLEMENTATION IN THE PILOT RESCOOPS**

To give a good idea of what the obstacles or advantages are for the implementation of the best practices in a new REScoop, we describe the experiences of the pilot REScoops during their implementation.

## **LEGAL ENVIRONMENT**

To give better context in what kind of legal environment this best practice was developed. REScoops that want to use the tool can understand the legal implications of implementing the tool. In many cases this has to do with data privacy.

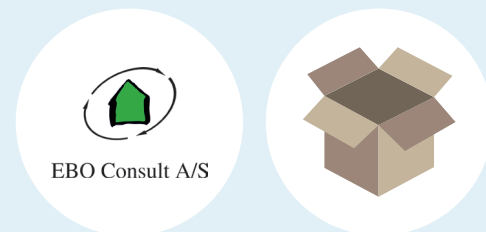
## **RESULTS AND IMPACT**

All REScoops that have a best practice were analysed. The REScoop and their best practices were analysed on their effectiveness and energy data was analysed to see if there was any impact in reducing their members' energy consumption. These results of both research are extensively discussed in two other reports (D3.4 Effectiveness report and D 2.4 Final Data Analysis Report). In this report we give a short summary of the results relating the best practices.



# THE “PACKAGE” APPROACH

**RESCOOP: HVIDOVRE FJERNVARME, FDHVIDOVRE, AND AVEDØRE · COUNTRY: DENMARK · THIRD PARTY INVOLVED: EBO CONSULT**



## ABOUT THE RESCOOP OR THIRD PARTY

Hvidovre Fjernvarme, FDHvidovre, Avedøre, and Rebæk Søpark are consumer-driven and consumer managed district heating cooperatives. These cooperatives supply heat to about 30.000 consumers.

### EBO Consult

EBO Consult manages administrative and technical tasks of several local district heating non-profit companies. One of the administrative and technical tasks that EBO Consult manages for Hvidovre Fjernvarme is to expand district heating in Hvidovre, which is a suburb in Copenhagen. The company was founded in 1931 as a consultancy company that focussed on district heating for social housing organisations. The company has 13 employees.

## DESCRIPTION OF MEASURE

EBO Consult manages administrative and technical tasks of several local district heating non-profit companies, called Hvidovre Fjernvarme, FDHvidovre, Avedøre and Rebæk Søpark. Each company is a cooperative owned and directed by citizens and consumers. One of the administrative and technical tasks that EBO Consult manages for Hvidovre Fjernvarme is to expand district heating in Hvidovre, which is a suburb in Copenhagen. The expansion of district heating is accomplished by separating the expansion area into projects.

In order to realize and begin a project, 30 % of the heat demand (i.e. home owners) in each project has to accept a conversion into district heating from natural gas, electricity or oil. Therefore, each project starts with a marketing period. A measure that is used to achieve the 30 % is the package approach, which is a conversion package for the homeowner.

## DESCRIPTION OF ACTIONS

First there is a marketing period where a specific area is targeted. Which area is next, is determined in advance in a district heating expansion plan. In order to begin, a project proposal must be prepared and sent to the municipality for approval. It must include socio-economic, user-economic, environmental analyses etc. of different heating sources (district heating, oil or gas). The city council is obliged to approve the heating source that has the largest socio-economic benefits.

Consequently, a period of 2-4 months the cooperative goes into the area, starting off with newspaper articles and information nights. People can sign up to participate on the website of the cooperative. The marketing in this campaign has three main arguments: comfort, price and sustainability.

When 30% of the district households sign up, the project goes ahead. There is a specific deadline for people to sign up. When the customer agrees on the details, he signs a contract with the cooperative.

Everybody that signs up gets a visit of the account manager of the cooperative. This person explains all the details on how, when and where the installations will be installed. This account manager communicates with the cooperative and the builders and construction workers, the customer only needs to be home when they start the installation.

Customers only have to do two actions. Sign the contract and open their house for the installation. All the rest is taken care of by the cooperative. Customers can become a member of the cooperative (non-profit organisation in Denmark).

After the installation members get information on saving energy. The more efficiently they use the heat the better the business case of the project. Since all profits are returned by lower heating prices, it is in their interest to save heat since it benefits everybody.

## IMPLEMENTATION IN ANOTHER RESCOOP

It is clear that the implementation of this best practice needs a sufficient amount of technical knowledge and a well-structured organisation. The organisation needs technician to assess the houses and all legal and administrative aspects need to be in order to be able to make sure customers only have four contact moments. After that your organisation needs to be able to execute the expansion of the district heating. However, the concept is not limited to situations where there is district heating. It can also be applied in retrofitting houses.

## COST OF IMPLEMENTATION

The package solution has a fixed price of +/- €6000. People who cannot afford this amount can choose to repay it through their energy bill. They can decide in how many terms they want to pay it.



## IMPLEMENTATION IN PILOT RESCOOP

The Package Approach was not implemented in a pilot REScoop as such, since it needs the full development of a district heating network. This was out of the scope of the project. The pilot REScoop Ecopower did use this best practice to develop a business case for the district heating network they are developing. In developing their business plan, they included the Package Approach in order to lower their expected investment costs.

## LEGAL ENVIRONMENT

The Danish legal environment is rather conducive to the deployment of district heating. It supports collective actions by groups of citizens. The establishment of a district heating system and the DHC is based on thorough heat planning. The heat plan, including the organizational structure of the system, must be approved by the municipality before the implementation phases. The Heat Supply Act stipulates that consumers have an influence on the district heating structure. For example, consumers are given a priority right on the purchase of a municipality-owned district heating system, when the municipality wants to sell it to a third party.

Nonetheless, this best practice can be implemented in any country where district heating is a more sustainable and more profitable option than heating houses with fossil heat sources.

## RESULTS AND IMPACT

The package approach means that at least 30% percent of the inhabitants of a district change their energy source. The transition from gas to sustainable heat (50%) has a large impact on energy savings. From the behavioural research, it was showed that people did not necessarily choose this approach because of the energy savings but because the offer came at the right time and was easy and cheap.

## COMBINATION WITH OTHER BEST PRACTICES

The best combination with package approach model is the technical service. The technical service can be considered as a follow-up check of the new district heating installation. The service makes sure that everything goes well at the consumer after they converted from oil or natural gas into district heating, and the service makes sure that the district heating unit is installed in the most efficient way. It limits mistakes on the district heating installation, and it is more likely that the consumer will have a great experience converting into district heating.

the "Pakkeløsningen" approach	Score	Explanation of Score
<b>Effectiveness: The effectiveness of energy saving measures exists of different parts</b>		
Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.	++++	The transition from gas to sustainable heat (50%) has a large impact on energy savings. The transition from gas, oil and electricity is considered an energy saving in Denmark.  A conversion from oil to district heating = over 70 % decrease in CO2 emission pr. consumer.  A conversion from gas to district heating = over 60 % decrease in CO2 emission pr. Consumer.
Outreach efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach.	+++	Reaches at least 30% percent per district and has significant impact. 386 households changed their energy source in last projects.
Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.	+++	6-12 months of implementation to first transition and significant energy saving. After that the communication continues.

<b>Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?</b>		
	++	Thanks to the cooperative model, the consumers benefit. Members share the costs. The cooperative shares pre-investments, but also gets the benefits. Returns get back through energy bill. For consumers the price of installation is €6000. They save €700 a year. Less than 10 year ROI is about the average. In the meantime, the cooperative ensure a captive and engaged consumer base and significant starting capital
<b>Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.</b>		
Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	+	It requires extensive specialised organisation, but is legitimized by the high impact.
Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	+	Cannot do this with volunteers, but you need trained skilled workers to implement. It is not a quick win. But once the organisation stands you can expand and have significant impact.
Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this is likely to form a barrier for transfer of this practice to other cooperatives.	++	When one takes the technical aspect out of consideration but focus on the package deal approach and the process can be implemented as a measure everywhere. It can for example also be used for retrofitting houses.
<b>Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.</b>		
Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in place or that they can be implemented in any regulatory context.	++++	No regulations needed for the package approach. District heating depends on national regulations.
Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	+++	No specific legal entity or structure needed. The fact that it is a cooperative is an extra benefit to the project but not essential.
<b>Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.</b>		
Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	+++	The district heating is owned by the cooperative. Members have direct control in the organisation.
Transparency: Is it clear how governance structures or cash flows are organised	++	Due to the cooperative control of the members this is clear
Data management: How is data of the tools managed. Is there for example a privacy policy in place?	+	National privacy regulations for the cooperative are in place.

## EXPERT INVOLVED

### RIE KRABSEN

Holds a bachelor degree in Social Science from the University of Roskilde and a master degree in Cross-Cultural Studies from the University of Copenhagen, and she has followed business courses from Copenhagen Business School. She has mainly worked with issues in Social Science, international trust-building, diversity management, cultural, and behavioural differences and change. Rie wrote her thesis for an international company, called Grundfos, where she analysed the behaviour of employees working in different cultural contexts in order to help the leading management team to change the business culture. She has also followed courses in behavioural economics, psychology, and 'nudging'. Rie has a lot of hands-on experiences working with qualitative and quantitative methods.



When studying, Rie worked in EBO Consult, where she has got a lot of knowledge about energy issues. She has worked 6 months in Spain, where she made a feasibility study of the Spanish biomass market, and she has been involved in the package solution model and the free technical service from the beginning. Today, she works as a fulltime employee in EBO Consult, where she combines her knowledge about human behaviour and energy issues. She works with communication, marketing and evaluation of district heating projects, and motivating consumers to become cooperative members, make sustainable and energy saving choices such as the package solution model or the free technical service. Rie has also arranged an energy community gathering where over 200 consumers – children and adults – voluntarily showed up.

Rie can help REScoops with the communication and marketing of large energy projects concerning the changing of heat sources.

# TECHNICAL SUPPORT TO MEMBERS “FJR-ORDNING”

RESCOOP: HVIDOVRE FJERNVARME, FDHVIDOVRE, AND AVEDØRE ·  
COUNTRY: DENMARK · THIRD PARTY INVOLVED: EBO CONSULT



## ABOUT THE RESCOOP AND THIRD PARTY

Hvidovre Fjernvarme, FDHvidovre, Avedøre and Rebæk Søpark are consumer-driven and consumer managed district heating cooperatives. These cooperatives supply heat to about 30.000 consumers.

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## DESCRIPTION OF MEASURE

The technical support is a check of the consumers heating installations every second year:

The first check is a check of their district heating unit and a thorough energy analysis of their houses, i.e. how the consumer can save energy in their house. After the check, the consumer receives an energy report of their house. In the report, the consumer is informed on whether their heating consumption is below or above the average consumption and it entails guidelines for what the consumer can do to optimize the energy efficiency of their house. This type of check is repeated every sixth year.

Two years after the first check, a maintenance check of the district heating unit is performed in order to adjust the unit in the most energy efficient and energy saving way. This type of check happens every second year.

## DESCRIPTION OF ACTIONS

The different checks of the heating installations are performed by authorized service engineers, found through quotations from local authorized plumbers. In Denmark, each utility company has to realize energy savings at the end users. Every year, the government sets an energy saving target, which each utility company has to obtain. In order to fulfil the energy saving target, the utility companies can implement measures themselves (FJR-ordningen) or buy energy savings at a liberal market, where different actors sell their energy savings at a fixed price.

The consumer cannot individually sell the energy savings at the liberal energy market when the consumer accepts the FJR-ordning. Instead, they obtain higher energy efficiency and an improved cooling of their district heating water. When multiple consumers accept the FJR-ordning it follows that the cooling in the whole district heating system improves, which ultimately benefits the consumers. It is due to the fact that Hvidovre Fjernvarme buys heat at a transmission company. The transmission company needs cold water to cool the electricity turbines in a CHP plant. Therefore, the transmission company has implemented a cooling tariff on the return water from the district heating system. One heating degree costs 26.889 euros. It follows that the cooler the return water is, the less Hvidovre Fjernvarme has to pay in cooling tariff. If the cooling in the whole district heating system is improved, it, therefore, reduces the production costs in Hvidovre Fjernvarme, which ultimately decrease the consumer's heating bill.

## IMPLEMENTATION IN ANOTHER RESCOOP

For the implementation of this best practice your REScoop needs trained engineers to assess the houses and make the reports on the improvements of the house. These do not necessarily be employed by the REScoop itself.

In order to give good advice, the REScoop needs to have a good benchmark between members EBO consult has the data of energy use from the costumers since they manage the district heating systems. When new REScoops do not have any data is advised to acquire them through other online systems like Dr Watt or Energie ID.

The regulatory context is very important for the business case behind these best practices. Due to the regulation the government sets an energy saving target for energy supplying companies. The advice of technicians helps consumers to reduce their energy which makes the supplying company reach their targets. Not reaching these targets would result in fines so the advice of technicians ultimately pays for itself. When this regulation is not in place REScoops can also offer this as a paid or subsidised service for their members.

## **COST OF IMPLEMENTATION**

Hvidovre Fjernvarme pays the service engineers to perform the checks at the consumers. The consumer does not have to pay anything for the checks. It is partly enabled by an energy saving agreement between the Danish government and the utility companies.

In 2015, the price for one kWh was 0.07 euros and the energy saving target for the district heating company was: 6.888.430,107 kWh. The target increases every year, and it is punishable, if the utility company cannot fulfil their individual energy saving target. Therefore, Hvidovre Fjernvarme is interested in achieving energy savings at the end users. Therefore, Hvidovre Fjernvarme offers the FJR-ordning for free, and in return Hvidovre Fjernvarme gets the energy savings that the consumer achieves.

## **IMPLEMENTATION IN PILOT RESCOOP**

This best practice was not implemented in a pilot REScoop in the project. The best practice needs an organisation of technical experts. The pilot REScoops were mostly starting organisations that could not have delivered the best practice in such a short time. It therefore needs to be taken into consideration when implementing this best practice, that it does involve a standing professional organisation.

## **LEGAL ENVIRONMENT**

To make this best practice financial sustainable, the legal environment of Denmark has an important role. In Denmark, an Energy Efficiency Obligation Scheme is in place. This EEO scheme is objectives-based. The savings target is determined by "The Energy Agreement" signed by the Danish political parties in 2012. The scheme includes a number of standard actions that may be put in place by the energy system operators (gas, electricity and transport). The objective is to reach a 2% decrease in consumption (3% without the transport). This scheme is offering a clear monetary value for energy savings actions (by awarding certificates), allowing for those to be included in a business model.

## **RESULTS AND IMPACT**

The actual consumption decreased in 2014, when the intervention was initially implemented. Since 2014, there was an increase in actual consumption, most likely related to a decrease in the average daily temperature (increase in heating degree days).

The behavioural research showed that members requested to receive the technical service to save energy. This means that part of the EBO respondents see an influence of receiving the technical service on their energy uses. In addition the fact that the service was free was an argument for using the service.

## **COMBINATION WITH OTHER BEST PRACTICES**

This best practice is an off-line activity that can best be combined with the package solution model and online best practices like Dr. Watt and Energie ID. These best practices give consumers a better insight in their progress of energy savings and are able to compare them with their peers. In case the REScoop does their own supply of energy and billing it can be combined with InfoEnergia.

Technical service to members	Score	Explanation of Score
<b>Effectiveness: The effectiveness of energy saving measures exists of different parts</b>		
<p>Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.</p>	<p>++++</p>	<p>There is a clear impact on energy savings. Statistical analysis shows 20% monthly kWh/(HDD) and kWh/(HDD*m2) consumption reduction for a typical consumer that has received technical support, with a p-value of less than 0.05.</p> <p>The efficiency is also large for the cooperative due to the lower temperature of the return water. This is having very significant financial savings for the cooperative.</p>
<p>Outreach efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach.</p>	<p>+++</p>	<p>Almost all households accept the service. The fact that the service is free contributes to the high impact</p>
<p>Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.</p>	<p>++</p>	<p>First visit is up to 1,5 to 3 hours per household including making up the report. Considering the impact this gets a positive score.</p>
<b>Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?</b>		
	<p>++++</p>	<p>The service is free for the members. If they implement the energy savings the customer benefits from lower energy costs. If the cooperative does not achieve energy savings it needs to pay the government this is why the service is free. The technical service makes sure it has a better cooling. Which creates a better business case in the heating district because of the cooling prices. When costs are lower, it follows that members pay less for their heating bill. Efficiency in cost is shared among the members.</p>

<b>Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.</b>		
Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	++	Technical service engineers fill in the report in a tool that gives an automated report. Administrative burdens are therefore almost non-existent.
Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	-/+	Technical service engineers are trained employees. Service engineers giving this service get a course on the district heating unit and how to install in an energy efficient way.
Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this is likely to form a barrier for transfer of this practice to other cooperatives.	+++	Especially in existing district heating it is an extra service to members. It is easy to implement.
<b>Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.</b>		
Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in place or that they can be implemented in any regulatory context.	--	The regulatory context is important. The energy saving target system makes it that the service can be given to members for free. There is a direct incentive for the cooperative to work on energy savings. However when the energy saving target system is not in place, the service could still be offered, but then the customer would have to pay for the service or the costs need to be included in the overall cost of the sale of energy.
Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	--	The business case of the district heating improves when the system is more efficient and has a lower cooling return flow. The cooperative needs to pay when the return water is too warm. This is a specific aspect for this district heating system. However it's not a determinant factor for the practice. It only adds as a financial argument to give the service for free to the members.
<b>Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.</b>		
Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	++++	It is not an obligation, customers are in full control. Also they are free to take up the advice given or not.
Transparency: Is it clear how governance structures or cash flows are organised	++++	Information about the governance structure is open to all customers especially in the cooperative. Information is given when asked.
Data management: How is data of the tools managed. Is there for example a privacy policy in place?	+++	Customer and service company can access the reports online. If data is used for other purposes it is aggregated and anonymous data.

## EXPERT INVOLVED

### ERIK CHRISTIANSEN

Holds a master degree in Law. Erik has been employed in the Ministry of Interior (municipalities and health), in a Mayor's office in a municipality (leader of department) and in a housing association (judicial director). For 21 years Erik has been CEO of EBO Consult ([www.ebo.dk](http://www.ebo.dk)).

Erik can consult cooperatives generally on helping their members from a transition to district heating. And specifically on the best practice "Package Approach". The package solution is a cooperative business model which is based on the idea of making it possible for all, i.e. poor and rich, to join the district heating system as member and consumer. The package solution is supplemented by the technical service which is free for all and therefore benefits all, independently of the individual consumer's income and social status.

Erik can help starting REScoops to implement the package approach in new REScoops and talk more on the regulatory situation in Denmark.





# ONE TARIFF STRUCTURE

RESCOOP: ECOPOWER • COUNTRY: BELGIUM • THIRD PARTY INVOLVED: -



## ABOUT THE RESCOOP

Ecopower is one of the largest REScoops in Europe. Ecopower uses various renewable energy sources. They started producing hydro-power from restored and modernized historical watermills, run several solar projects with schools and their members, and now owns twenty-two wind turbines. Membership grew from 47 members in 1999 with the initial hydro project to more than 53.000 members in 2017. The growth of this REScoop had two strong impulses. The first was the realisation of three wind turbines in the city of Eeklo, the second the 2003 decision of Ecopower's general assembly to become an energy supplier in the Flanders region. The REScoop is owned and managed by and the members.

## DESCRIPTION OF MEASURE

Ecopower cvba is a cooperative that sells electricity to its members. Ecopower has a different cost structure as other energy suppliers in Belgium. They have a "one price per kWh-policy".

There are no fixed costs. All taxes, grid fees and VAT are included in the price per kWh. And that price is always the same no matter when you consume (during the day or during the night). This makes the invoice very clear for the customers: 1 kWh is the same as approximately 25 cent.

This tariff structure supports the growth of photovoltaic installations on customers' homes and supports energy savings. Due to the variable costs it is very beneficial for small energy users. When you have fixed cost and you consume a small amount of energy, fixed costs are relatively high.

## DESCRIPTION OF ACTIONS

Members of Ecopower get a yearly settlement invoice of the cooperative (and monthly, bimonthly or three monthly advance invoices). The tariffs are set every year by the cooperative depending on tax, transportation costs and energy prices.

In terms of communication, understanding and explanation of the bill and rational energy-use, many cooperative members like to keep the simple and clear bill.

## IMPLEMENTATION IN ANOTHER RESCOOP

This best practice can only be implemented in REScoops that are energy suppliers. In addition, the tariff structure is often very dependent on national regulations. Experts of Ecopower can help your organisation to make your tariff structure more simple and understandable for your customers. When this is done while setting up a supplying REScoop it is advised to make the tariff structure as simple as possible. When this best practice is implemented in an existing organisation with an existing tariff structure, then you need to take into consideration that a change in tariff structure needs good transparent communication with your members.

## COST OF IMPLEMENTATION

In Flanders there are several grid operators (with a natural monopoly) with different tariffs. Ecopower calculates an average of all grid operator costs and uses that average to compose the price. The cost of the implementation in the systems in Ecopower is unknown. For Ecopower it was the way the company was set up and structured from the beginning. Because the system is simple, the cost is low. There is a payback, because it reduces costs for explaining how it works or explaining bills.

This original price-system came under pressure. Until a few years the spreading over the different grid operators was more or less equal. Unfortunately, there was one grid operator who became significant more expensive than the others. The difference was so big that a disparity had developed. The inflow of new members from the expensive grid area became too big. Actions needed to be taken to rebalance this disparity.

Ecopower therefore had to make a choice: raise the price (for everyone) or implement a separate price for that one area. The first choice will have the consequence of members leaving. The second one would mean a change of tariff structure (internally – for the customer it stays one price per kWh).

Since January the 1st of 2017 Ecopower uses a one price per kWh-policy depending on the grid area where you live. Prices variate from 0,22 euro per kWh in the cheapest grid area till 0,29 euro per kWh in the most expensive grid area.

## IMPLEMENTATION IN PILOT RESCOOP

This best practice was not implemented in a pilot REScoop. The implementation of a new tariff structure in the pilot REScoops was too invasive in the organisations.

## LEGAL ENVIRONMENT

Energy Tariffs are always based on national regulations of these tariffs. In Belgium a large factor responsible for the high prices in Belgium are the grid tariffs. Grid tariffs in Flanders are different in every sub-region.

During the course of the project significant differences in the grid tariffs occurred based on the regions. This forced Ecopower to abandon the single price practice for all its consumers. This change was implemented in order to avoid subsidization of consumers in certain regions by consumers from other regions, provoking an imbalance in the revenues of the cooperative.

## RESULTS AND IMPACT

The results of the behavioural research showed that members of Ecopower did save energy either by producing their own electricity or reducing their energy consumption. Since the tariff structure was the same for all members and all members were exposed. Unfortunately, members were also exposed to other tools and energy saving activities of the cooperative, making it hard to make a direct connection between the energy saving and the tariff structure. However the study results show that energy efficiency interventions of various types, such as technical support, special tariffs, energy generation schemes, and installing smart meters, were statistically related to substantial reductions in energy consumption.

## COMBINATION WITH OTHER BEST PRACTICES

Energy supplying REScoops with a simple tariff structure can be very effective in energy savings activities when they give their customers insight in their energy bill. With a simple tariff a saved kWh is easily converted into financial savings. This best practice can therefore be combined with one of the online tools in the toolbox like Dr. Watt, Energie ID or InfoEnergia.

Ecopower: One Tariff	Score	Explanation of Score
<b>Effectiveness: The effectiveness of energy saving measures exists of different parts</b>		
Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.	++++	The impact of the one tariff structure is very high. It is clear to consumers what they save if they save energy. After becoming a member there was an energy reduction of 22.85%. The structure is also beneficial for prosumers it let to more people producing energy themselves and thus an energy reduction of average 45.84%.
Outreach efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach.	+++	The invoice reaches all members of Ecopower.
Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.		
<b>Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?</b>		
	-/+	To cost of the implement a tariff structure is unknown at Ecopower since it was part of setting up the whole company. When the structure needs to be implemented in a new organisation this will also be part of the overall cost of setting up the energy supplying company. When an existing company needs to restructure it tariff structure this can be a costly endeavour since it may involve IT adjustments and it needs a lot of communication. Due to all these uncertainties we could not score this criterion.

<b>Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.</b>		
Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	<b>++</b>	Having a one tariff structure makes administration immensely easy.
Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	<b>++++</b>	Not only makes this system the energy bill transparent for the customer, also it makes it easy for employees to understand the energy bill. More important it is easier for the customer service to explain the energy bill to their customers.
Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this is likely to form a barrier for transfer of this practice to other cooperatives.	<b>---</b>	This is scored - because to implement a tariff structure one needs to be able to supply energy to your members. This by itself can take a lot of time to set up. On the other hand, once the legal hurdles of getting a permit to supply are taken the tariff structure can be implemented. When a supplying permit is already acquired, and a cooperative moves to a different tariff structure, it needs to be calculated what financial implications are for the organisation. This might include IT investments.
<b>Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.</b>		
Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in place or that they can be implemented in any regulatory context.	<b>----</b>	Tariff structures are heavily regulated. It depends on national regulations if this tariff structure is possible.
Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	<b>--</b>	To use this measure one needs to be an energy supplier that controls the structure of the tariffs and the invoicing to the members.
<b>Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.</b>		
Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	<b>+++</b>	The members control Ecopower and in the end they determine the tariff structures. It thus depends on its governance structure.
Transparency: Is it clear how governance structures or cash flows are organised	<b>++</b>	In case of Ecopower the governance structure and cash flows are very transparent. All is explained in their financial yearly statements.
Data management: How is data of the tools managed. Is there for example a privacy policy in place?	<b>0/-</b>	National data privacy regulations are in place.

## EXPERT INVOLVED

### JIM WILLIAME

Jim Williame was chairman of the board of Ecopower from 1999 to 2017. He is now general coordinator. He is an industrial engineer electro mechanics and has an MBA certificate. He has been responsible for the tariff structure of Ecopower and the structuring of the invoice IT system of Ecopower. Jim can help starting REScoops to implement a one tariff structure into their company and share knowledge of setting up the internal invoice systems. He can also explain the details of the regulatory system in Belgium to give a better context for your organisation.



# ENERGIEID

RESCOOP: ECOPOWER CVBA • COUNTRY: BELGIUM •  
THIRD PARTY INVOLVED: ENERGIEID CVBA



## ABOUT THE RESCOOP

Ecopower is one of the largest REScoops in Europe. Ecopower uses various renewable energy sources. They started producing hydro-power from restored and modernized historical watermills, run several solar projects with schools and their members, and now owns twenty-two wind turbines. Membership grew from 47 members in 1999 with the initial hydro project to more than 53.000 members in 2017. The growth of this REScoop had two strong impulses. The first was the realisation of three wind turbines in the city of Eeklo, the second the 2003 decision of Ecopower's general assembly to become an energy supplier in the Flanders region. The REScoop is owned and managed by the members.

EnergieID started as an initiative of Diedrik Kuypers en Vincent Dierickx in order to give others insight in their energy bill and create more awareness around the use of energy. In 2014 Ecopower started to work together with EnergieID. EnergieID is a cooperative owned by different organisations that use the online platform.

## DESCRIPTION OF MEASURE

EnergieID cvba was founded in 2014 as a cooperative under Belgian law. The organisation is active in Belgium and the Netherlands and recently Portugal and Italy and has one main goal: contribute to the transition to an environmentally sustainable, socially just and economically stable society by setting up services in the field of information technology. Cooperatives can become a member of EnergieID. It pays EnergieID to use the tool for their customers.

As a first service, EnergieID has set up a SaaS-platform (software as a service) to help families and organisations to manage their energy and water consumption as well as their transport kilometres and renewable energy production. For example, it can be used as a platform for an energy saving competition between schools. Users can create an account for free, compare their consumption with similar user profiles and can share their data with the service providers of their choice. Meter readings can be entered manually or automatically by compatible smart energy devices (e.g. Flukso.net, Smappee.com, Arcus-EDS KNX IP gateway, etc.) or smart meters (DSMR P1 Smart Meters).

EnergieID shares costs with its co-operative members and provide a shared and secure database to help as much users with their energy management. By sharing the platform, EnergieID can gather relevant data more quickly to compare and analyse. As of beginning of August 2017, almost 18.000 users are active on the platform.

## IMPLEMENTATION IN A NEW RESCOOP

The online platform is relatively easy to implement in your own organisation. The platform is an existing platform. You need to do is to create a new group and contact your members to join the group. When you are implementing EnergieID in a country where it is not operational it takes a bit more effort. First the website needs to be translated in the language of your country and EnergieID needs to adjust the climate data and postal codes for that region.

## DESCRIPTION OF ACTIONS

EnergieID is a platform for active customers of a cooperative. It is expected from those customers who want to participate to fill in their own data and for the cooperative to be the first line of support. Customers sign up with an account on EnergieID and on a monthly basis they fill in their energy use. Data-integrations are provided for some systems to automate data entry. Then together with the help desk service of Ecopower the invoice and consumption are analysed and discussed. This can be done by phone or email.

Questions by the help desk asked are for example:

- Are the meter readings real or estimated (correct or incorrect)?
- Does the meter function right? What to do when your meter appears to be defect?
- If there is a PV installation: do they function correct? Has the convertor broken down?
- Did you buy new devices last year? Were you home more? Did your family situation change?
- Did you use electric heating, airco, electric boiler, Jacuzzi, heat pump?
- Maybe there's an energy loss on some (old) devices?

The customers fill in the data. EnergieID follows up on the consumption of customers using EnergieID and compare it with similar households.

## IMPLEMENTATION IN ANOTHER RESCOOP

The online platform is relatively easy to implement in your own organisation. The platform is an existing platform. What you need to do is to create a new group and contact your members to join the group. When you are implementing Energie ID in a country where it is not operational it takes a bit more effort. First the website needs to be translated in the language of your country and EnergieID needs to adjust the climate data for that region. After that a small group of members will need to test the system. Once ready to implement the concept needs to be communicated to your members. This communication should not only be once but continued communication to keep the members interested in the system.

## COST OF IMPLEMENTATION

In countries where EnergieID is already implemented the licence costs for cooperatives are around €2000 to track 500 sites. It is expected that the service and first line of support is carried out by the local cooperative and not by EnergieID. For starting cooperatives, this amount can be lower and can grow along with the growth of the cooperative.

In countries where it is not implemented cost are around € 5000 to implement it in that country. This cost can be shared with multiple cooperatives. It is expected that the local cooperative does the translations themselves. This will take a couple of days work and translation support with new developments.

The costs of EnergieID can also be shared with local governments that want to promote energy efficiency among certain groups in their community, f.i. when the community joins The Covenant of Mayors. EnergieID is good tool to measure and compare either the effectiveness of energy savings program or as an incentive to start energy efficiency in schools, or local companies.

## IMPLEMENTATION IN PILOT RESCOOP

EnergieID was implemented in three pilot REScoops in Portugal, Italy and France. For all implementations the tool needed to be adjusted to the local context. The energy data in the tool needed to be changed to the local systems for example types of tariffs, types of households and weather data.

All pilot REScoops found that the biggest advantage of ID Energia is to be user-friendly where an energy consumption overview is given to the consumer in a simplified and easy to understand manner. The clients / members do not need to have a big understanding about energy consumption of their household to use the platform and see if their consumption behaviour has been positive or not. Finally, users can easily understand whether they should change their behaviours or not.

## LEGAL ENVIRONMENT

The implementation of the best practice in other countries showed that there are no legal barriers to implement the tool in other countries. The relevant legal issues that need to be taken into account are the data privacy regulations. Large part of data privacy regulations in Belgium come from European regulations. Therefore, there will be no major differences in most other countries. The new European Regulation 2016/679 will impact data privacy laws in Belgium and other EU countries.

EnergieID will be impacted by the new regulation on personal data, because the consumption data required from the users are considered personal data under the EU definition. However, Energie ID also benefits from this new regulation, because EnergieID is built on “privacy by design”, with for example a frame by frame consent required from the users .

## RESULTS AND IMPACT

The statistical analysis showed that there is a significant difference in actual consumption between the customers with EnergieID and those with no EnergieID. Customers with energy ID consume less electricity (2,023 kWh to 2,193 for those with no EnergieID i.e. 8,5% less) which is translated to almost 70 kg CO2 per customer.

In the 2018 survey of the 24% of the Ecopower respondents use or used EnergieID (Figure SAT 20) about 20% started but does not use the program anymore. A factor explaining the high drop-out rate could be that the respondents think that the tool is too difficult to use or too technical. The report produced by Ecopower in 2017, shows that the tool is considered as not to technical. The problem lies in keeping the discipline to gather the data, particular because part of the respondents have the idea that they know already what they need for efficient energy behaviour or already reached considerable savings

## COMBINATION WITH OTHER BEST PRACTICES

EnergieID is an online tool. In order to create more of a community, you can combine this measure with for example the training sessions of Dr. Watt. To create more awareness among the users of the online platform. When for example in large retrofitting projects or district heating projects this tool can be combined with the package approach or the technical service.

Energie ID	Score	Explanation of Score
<b>Effectiveness: The effectiveness of energy saving measures exists of different parts</b>		
Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.	+++	There is a clear impact on energy savings. Statistical analysis shows 11.42% yearly kWh consumption reduction for a typical consumer that has registered in EnergieID, with a p-value of less than 0.05. The members can therefore save on their bills and the cooperative can enjoy a better energy balance
Goal efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach.	++	When adopted by a cooperative it is very easy to reach a large group of customers. However, the incentive of the customer needs to be there.
Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.	+++	Energie ID is a developed platform. Participating is very easy for consumers and cooperatives.
<b>Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?</b>		
	+++	Cooperatives pay a fee depending on usage for using EnergieID. Ecopower considers this a service to the members and includes this in the overall cost. For members the use of the platform is free. First development of the platform is paid by early adaptors cover the exploitation of EnergieID and new developments.
<b>Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.</b>		
Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	++++	The system is mostly automated and relies on input of customers. There is almost no administration needed, apart from when one wants to use the data to improve service to members. EnergieID has three employees to keep the system working and bug free.
Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	++	The system is fairly simple to use and to understand. Small explanation of customer service is helpful to answer questions of customers using the system.
Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this is likely to form a barrier for transfer of this practice to other cooperatives.	++++	The system is a stand-alone system. It can be implemented in every country and every group of citizens. The system accounts for smart meters but also manual input. For energy suppliers input and production and sending of reports to customers can be automated.

<b>Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.</b>		
	<b>+++</b>	Implementation is possible in different countries. It needs extra development of the platform that comes with cost. Also the customer service of the system will need to be organised locally. EnergieID proved in Portugal that this is possible.
Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in place or that they can be implemented in any regulatory context.	<b>++</b>	It is a web based platform and a tool. National privacy regulations apply.
Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	<b>++++</b>	Any group can use the system, like schools or school classes or even football teams. Being an energy supplier makes it easier because data can be uploaded automatically.
<b>Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.</b>		
Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	<b>++++</b>	All users can access and modify their own data. EnergieID is a cooperative of different cooperatives and companies that use the system. This gives the groups that use the system control over the software company. Individual users can give permission to the admin to use its data or not.
Transparency: Is it clear how governance structures or cash flows are organised	<b>+++</b>	The business model is mentioned on the website and transparent for users.
Data management: How is data of the tools managed. Is there for example a privacy policy in place?	<b>+++</b>	Private data can only be used in the system and cannot be sold to third parties for commercial purposes. Data for research is sometimes used on an aggregated basis. This is stated in the internal regulations of the cooperative EnergieID.



## EXPERT INVOLVED

### VINCENT DIERICKX

Vincent Dierickx (°1978) works full-time on accelerating the energy transition. After studying civil engineering with major in mechatronics (KUL 2001), a malfunctioning torch at BASF Antwerp sowed the seed for his passion for energy efficiency. This resulted, after a stopover for artstudies (Jazzdrums) at the Lemmensinstitute in Leuven, in further specialization in energy monitoring and management. He worked in those years for diverse clients such as the Flemish Government, DSO Infrax, KBC, Medialaan, Brussels Environment, Intervest, Nike and Veolia.

His belief in cooperative entrepreneurship led him recently to co-found the co-operative EnergieID cvba-so (2014), provider and developer of the social energy monitoring platform energieid.be, and the engineering company Efika Engineering (°2015).

Vincent can help starting REScoops with the implementation of Energie ID in their organization and help starting REScoops and their members monitor their energy savings.



# DR. WATT

RESCOOP: ENERCOOP • COUNTRY: FRANCE • THIRD PARTY INVOLVED: -



## ABOUT THE RESCOOP

Enercoop was created in 2005 by environmental groups like Greenpeace, Biocoop and Friends of the Earth. In 2007 they started supplying energy to individual consumers.

In early 2018 they supplied energy to more than 50 000 consumers, have 29 000 members and have 150 employees in a network of 10 cooperatives.

## DESCRIPTION OF MEASURE

Dr Watt is a package of measures. It is an online tool including an offline training course to help consumers make a self-diagnosis of their specific electricity consumption as well as an online wiki on energy savings. The online tool is used by consumers to understand their consumption. With Dr. Watt you measure everything that has a plug. The diagnostics are made visually online via a report which gives consumers the opportunity to look at every appliance separately instead of only having access to general advices. This makes the specific advice very effective.

The service is offered to members and non-members of the REScoop. The aim is to help individual consumers reduce their energy consumption:

- By giving them the tools to measure their consumption and understand it
- By reducing their consumption while maintaining the same comfort level with personal advices from Dr Watt

The offline training teaches consumers how to use the tool in order to self-diagnose their energy consumption.

Outside of the training, consumers can use the online platform to visualize and evaluate their consumptions and get a report. They can also consult a wiki on energy saving that was set up by Enercoop. The wiki gives all kinds of information on how to save energy. The wiki has a forum where consumers can give ask questions and give each other tips on energy savings. Consumers can look for advice per theme, these themes are for example lightning, electrical appliances and insulation.

## DESCRIPTION OF ACTIONS

First there will be a training with an energy expert. A meeting with a group and an energy expert is organised during which the expert presents the importance of energy savings and explains how to do to the self-diagnosis by using a wattmeter (provided by the expert) and the online service.

Second, participants start doing the self-diagnosis for six weeks. The participants will measure the consumption of every electrical device with the wattmeter and put the related data on the online service (it does not register heating). Water electrical consumption and electrical heating of food are estimated by ratios. This data and the program will give the potential energy savings that can be achieved by the consumer and compare it to the other participants' results and tailor-made advices.

Finally, a feedback meeting is organized. During this meeting the expert will analyse the results of each participant and answer their questions. It is also the opportunity for participants to share their experience and ask for advices within the group. Participants are also given access to different sharing tools in the platform to give them the possibility to exchange experiences online, including the wiki on energy savings.

## IMPLEMENTATION IN ANOTHER RESCOOP

Dr. Watt can be implemented as a whole package, online tool, off line training and wiki or as separate parts. It speaks for itself that implementing the whole package will have more effect on energy savings of the participants. For REScoops in other countries it will take some effort to translate the website and the wiki in the language of their country. Experts of Enercoop can help the starting REScoops to train the trainers who can give the off-line workshops to participants and provide the original supporting documentation for these meetings.

## COST OF IMPLEMENTATION

The initial costs of the implementation and organisation of Dr. Watt is hard to measure. All time of the IT department and people working in Enercoop was not registered because it was seen as an extra service to the members of Enercoop. Also, it included a lot of voluntary work of members. It is estimated that the initial investment was 95.000€: 60.000 in R&D and 35.000 in IT. It is considered as an investment in the service for the members and there is no specifically targeted ambition to have a return on investment, it was simply taken up on the overall cost of the organisation and seen as a marketing investment.

There are also costs involved for the training of the experts. These costs are covered with the payments for individuals participating. One day training in total is enough where experts are trained in general knowledge of energy and energy savings and how to use the Dr. Watt platform.

The price to participate with Dr. Watt is 39€ for individuals, this includes the use of the online tools and the participation in the off-line trainings. Dr Watt is available to groups as well: local authorities, associations, businesses can buy a group training session for their employees for example. Group price is 500€ (up to 20 participants).

## **IMPLEMENTATION IN PILOT RESCOOP**

Dr. Watt was implemented by two REScoops, Coopernico in Portugal and Som Energia in Spain. In both cases the REScoops combined some of the measures of Dr. Watt with their own online platform. Coopernico used the Tupperwatt meetings in combination with the energy saving wiki.

Coopernico organized the first meetings in 5 different Portuguese cities (Montemor-o-Novo, Aveiro, Gondomar, Vila do Conde and Faro). These meetings were open to all Coopernico clients, especially with the members that are using ID Energia (local adaptation of EnergielD). These meetings will use the same approach as Dr. Watt meetings. Enercoop helped Coopernico with the content of the meetings.

Som Energia organised 5 TupperWatt Meetings in collaboration with 5 local groups all around Spain. In each meeting, 20 participants have been involved. Each local group organized the workshop in its city. Som Energia combined these activities with their Infoenergia system.

The two pilot REScoops considered it a big challenge to adapt the information to the national context. The different cities had different characteristics, so during the presentation we had to adapt the context and the speech. For example, a city with more apartments would mean more difficulty introducing solar thermal or isolation.

On the other hand the strong advantage of the Dr. Watt approach is the contact with the REScoop members and citizens. The direct contact has really good results to engage the members on the path of energy efficiency and to strengthen the link to their own REScoop. Another advantage of the program is that the participants learn from each other, by sharing their experience and talking about what they currently use and their own best practises. That would never happen if they were only reading a website.

## **LEGAL ENVIRONMENT**

Data Privacy is the most impacting topic for the best practice Dr. Watt. Due to the nature of this service and its heavy reliance on the processing of personal data, protection and transparency is crucial. Luckily, data protection rules in France re not very different than those provided for at the EU level. EU legislation on data protection is considered state-of-the-art, and therefore the French authorities mostly transcribe it into French law.

## **RESULTS AND IMPACT**

In the 2017 survey of the Enercoop respondents who indicate to use the specific measures Dr. Watt-training, advice, online wiki indicated to be satisfied with them. In 2018 the participants were in a large part satisfied with the program. A large majority would also recommend the program to others. Of the Enercoop respondents that used the so-called energy saving Wiki, a large majority was satisfied and would recommend the Wiki to their peers. Of the Enercoop respondents that used the so-called energy savings tip of the month a large majority was satisfied

Data research showed that there is a significant difference in total consumption between those who take part in Dr. Watt program and those who don't. The customers who take part in Dr. Watt program consume on an average 45 kWh less (305 kWh to 350 kWh for those who don't take part i.e. about 13% less) which can be translated to almost 35kgCO2 per customer.

## **COMBINATION WITH OTHER BEST PRACTICES**

Dr. Watt is in itself a larger package of multiple tools. When used not on an individual basis but in large retrofitting projects with members it can be a good tool to be combined with the package approach.

Dr. Watt	Score	Explanation of Score
<b>Effectiveness: The effectiveness of energy saving measures exists of different parts</b>		
<p>Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.</p>	<p><b>0/+</b></p>	<p>Statistical analysis was performed on only a small sample, since 6-monthly aggregations of measurements was required. Preliminary results show a 7.68% increase in 6-monthly kWh customer's consumption, but a 60.31% decrease in 6-monthly kWh/DD consumption. Both p-values are higher than 0.05, indicating insignificance of the results.</p> <p>The program is also quite costly to the cooperative that implements it. However, it allows to reach out to different organisations (companies and local authorities) that usually have a large impact.</p>
<p>Goal efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach. Important to note is that a measurement can have a specific goal in the energy saving process, for example visiting a website. We therefore look at the impact of reaching its goal.</p>		
<p>Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.</p>	<p><b>+++</b></p>	<p>There are two trainings. How to use the Wattmeter, and what is energy. After six weeks there is another training and sharing of knowledge. Consequently with the tool it is easy to support people in their energy savings advice.</p>
<b>Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?</b>		
	<p><b>++++</b></p>	<p>The initial investment to set up the online system was a big investment 90.000 but was considered by Enercoop as marketing cost. For customers it's a low investment to participate €39,-Also new cooperatives in the Enercoop network can use Dr.Watt for free.</p>

<b>Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.</b>		
	<b>++</b>	Experts need to be trained on how to use the platform. This training can be done in one day.
Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	<b>++++</b>	Once the system is set up the administration is very easy and reports on energy savings are made automatically. The personal reports are made automatically, but the group report/analysis is made by the expert trainer (it needs a half hour of work).
Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	<b>++</b>	Trained volunteers and employees as an energy expert is needed. This is not a high level education.
Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this is likely to form a barrier for transfer of this practice to other cooperatives.	<b>++++</b>	The measure is not dependent on any regulations or internal administration. It is a stand-alone solution that can be integrated everywhere. Well, it needs translations of course and also a contract of use between Enercoop and other cooperatives.
<b>Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.</b>		
Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in place or that they can be implemented in any regulatory context.	<b>++</b>	Regular national privacy regulations apply. Customers need to agree to general conditions proposed by Enercoop.
Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	<b>++++</b>	The measure is a stand-alone measure. Any cooperative or energy group in Europe can use it.
<b>Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.</b>		
Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	<b>+++</b>	Customers have a private login platform within Dr. Watt. They can change all information. Also they can erase all data on themselves by email the cooperative.
Transparency: Is it clear how governance structures or cash flows are organised	<b>++</b>	The small cash flow is used for the payment of the trainings. Which is clear to the customer + cooperative governance of the Enercoop network
Data management: How is data of the tools managed. Is there for example a privacy policy in place?	<b>+++</b>	There are general conditions set up by the cooperatives that customers have to agree to. Here the cooperative declares that they do not share or sell the data to third parties.

## EXPERT INVOLVED

### MOHAMED SIFAOU

Mohamed Sifaoui has a MSc in Energy and Advanced Materials, from the renewable energy section at the Université de Cergy-Pontoise, completed in 2013 and graduated from a MSc Management and Sustainable Development from the ISEADD, Marne-la-Vallée in 2014. He is the project officer on energy saving issues for the Enercoop network of cooperatives. Facilitating the integration of energy saving services (Wiki, Dr Watt, Accompagnement des professionnels, etc) to all cooperatives and all departments of Enercoop.



Mohammed can help other REScoops to

- Understand how the Dr Watt website/supercalculator works
- Understand how the Dr Watt training can be organized in local areas for residential clients and also for organizations
- Understand the arguments of Dr Watt's effectiveness and simplicity
- Understand how the Dr Watt physical (group) trainings are working
- Understand the costs and the benefits of Dr Watt
- Understanding the whole scheme of a Dr Watt training (communication, saleselling, customerlient relations, 1st physical training, wattmeter lending, questions/answers during the 6 weeks auto-diagnostic, 2nd physical training, accounting, etc).
- Understand how the Wiki on energy savings works and how to use it

# INFOENERGIA

RESCOOP: SOM ENERGIA • COUNTRY: SPAIN • THIRD PARTY INVOLVED: BEEDATA



## ABOUT THE RESCOOP AND THIRD PARTY

Som Energia is a consumer-owned cooperative. It started in 2009 with a group of students from the University of Girona. In 2018 it had around 42.000 members and 72000 customers. They also invested more than 12 million euro's in renewable energy production. Its goal is to produce as much renewable electricity as their members use.

Beedata is a private company owned by Beedata. Its owners and investors are Beegroup is the Building Energy and Environment Group. Which is an autonomous department of the International Center for Numerical Methods in Engineering (CIMNE) involving over 20 researchers, Cimnotechnology and InnoEnergy

## DESCRIPTION OF MEASURE

InfoEnergia is a service for all the customers of an energy supplying cooperatives or companies. It is a personalized energy awareness service. It provides information to consumers through two channels:

Quarterly and seasonal reports with benchmarking against yourself and similar customers and has useful tips. Customers receive this report once a month as e-mail attached PDF.

Customer portal where the monthly reports and extended information is available (i.e. smart metering measurements).

## DESCRIPTION OF ACTIONS

Som Energia started with InfoEnergia as an extra service for their members. Instead of just sending invoices Som Energia also sends reports on the energy use of their customers. In this report customers are compared with similar household benchmarks, with previous periods. They also get personalized energy saving tips.

The service desk of Som Energia is trained to know how the system works and how the reports are created. This way they can handle any questions from customers concerning the report.

The cooperative does not handle the data and the system themselves. They buy this service from a third party Beedata. BeeData is the Building Energy and Environment Group. Which is an autonomous department of the International Center for Numerical Methods in Engineering (CIMNE) involving over 20 researchers. The system was built in a project called Empowering, funded by the European program Horizon 2020. The cost of development was 1.5 M€. They implemented this tool in six countries with twelve partners on four pilot sites. In the project they serviced 344.000 users.

## IMPLEMENTATION IN ANOTHER RESCOOP

This tool takes quite some dedication to implement into your organisation. It is intended for larger supplying REScoops with enough capacity to implement this tool into their own systems. The full implementation of the system takes about six months including the start and validation of the system.

## COST OF IMPLEMENTATION

The tool is developed in a European research project therefore most of the development cost were subsidized. New cooperatives or energy suppliers only pay in the implementation costs of the tool these cost around €10.000 this does not include their own cost of IT employees for implementing the system in their invoice system. This does not include the yearly service cost of BeeData. This amounts for Som Energia (45.000 customers) to roughly €2,- per customer but is reduced as more customers are introduced. Different REScoops can join in the same system and add more customers, and in this way can share the discount.

## IMPLEMENTATION IN PILOT RESCOOP

The tool has not been implemented in a pilot REScoop during the project. The tool is meant for large energy supplying REScoops that have the capacity to implement a tool in their administrative systems. This tool also require the deployment of smart meter, which is not the case in a majority of European countries.

## LEGAL ENVIRONMENT

The management of data in Spain is rather similar to the one previously described in other countries. The data sets including personal data need to be declared to the AEPD<sup>41</sup>. The data supervisor must declare itself capable of handling those data sets. The data subject must be informed regarding the collection and processing of his/her personal data. The declaration must include: the granularity of the data, the processing intended and the type of data collected and obtained. The Spanish law is very strict on the consent of the data subject that must be obtained before any kind of collection, treatment or transfer. The only way to bypass this consent is in relationship with the performance of a contract with prior consent. It is then possible to transfer data to a third party without asking for a specific consent from the data subject.

It is to be noted, however, that due to the lack of information to Spanish consumers, in many cases specific consent is not given by the data subject. Many Spanish citizens are not aware that they need to give their consent for all transfers of their personal data. This is especially relevant for our best practice, considering that the consumption data used by Info Energia is smart meter data, and therefore with a very high granularity. The team at BeeData, working to collect and process those data, had to be trained to handle this type of personal data. Consent must be obtained at each step of the process. This can become quite burdensome for the team implementing the best practice in Spain. This fact can be also relevant for the implementation of other best practices of REScoop PLUS in this country.

## RESULTS AND IMPACT

InfoEnergia as a tool scored high in the study done on members of Som Energia.

81% of the 836 respondents said they used the recommendations of the Infoenergia tool for energy saving measures and 64% said they would recommend the tool to others.

## COMBINATION WITH OTHER BEST PRACTICES

InfoEnergia is an online tool. This online tool can be improved with offline activities like the Dr. Watt package. In large district heating projects or retrofitting projects this tool can be used as a follow up tool in order to prevent any rebound effects.

Som Energia - Infoenergia	Score	Explanation of Score
<b>Effectiveness: The effectiveness of energy saving measures exists of different parts</b>		
Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.	++	Based on the results from the statistical analysis, this particular measure has no significant impacts in energy savings in general, for all customer groups. However when tested on a small sample of a specific contract type (Contract B), significant reductions (almost 50%) have been demonstrated.  The results for the cooperative is an increase in the number of prosumers and a better handle on members' consumption.
Outreach efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach.	+++	Once the program is installed it is easy to reach a lot of people. Som Energia started with 1000 customers in the testing phase and reached 40.000 half year later.
Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.	-/+	Implementation depends on the strength of your IT personnel. However once it is installed customers receive the information directly and are urged to take action. Also once installed there is some effort and time needed by the cooperative itself. Advice is automated, but questions from customers and talking about their actions and help them takes some time. (About 10 questions a week)



<b>Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?</b>		
	+++	The development of the service was developed by the EU project Empowering. Now the data service is done by a (University) start-up company using the technology developed. SomEnergia pays Bee Data for the service. It is free for the customer.
<b>Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.</b>		
Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	-	The implementation takes time in your organisation. Especially for the IT personnel to implement it. However once it is installed into your system the reach can be big (all customers) and reports are automated. A service desk is needed to help people with questions and their proposed actions in the reports.
Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	-	Depending on your service organisation. In the case of Som Energia, all service employees are suppose to be able to answer all questions in order to give a direct and good service. So employees that deal with these questions need to be trained in the program and understand its reports.
Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this is likely to form a barrier for transfer of this practice to other cooperatives.	+	You need to be a supplier and have the data of your members. Data received from smart meters give better results but is not entirely necessary. Taking the implementation issue into account, the system works on all kinds of data systems and can be adapted by BeeData
<b>Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.</b>		
Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in place or that they can be implemented in any regulatory context.	++	Suppliers have to comply to personal data protection regulation set for all companies dealing with this kind of data.
Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	+	The system works for every energy supplying company.
<b>Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.</b>		
Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	+++	The cooperative has control on how the report looks like and what information is sent. Also the customer has its own customer portal where it can access its data.
Transparency: Is it clear how governance structures or cash flows are organised	++	Roles between Beedata and the cooperative are clear. Beedata is service provider to the cooperative.
Data management: How is data of the tools managed. Is there for example a privacy policy in place?	+++	Data is owned by the cooperative. There is an agreement with Beedata that this data is only used for InfoEnergia system. Customers themselves can choose not to have these analysis done by their own customer portal

## EXPERT INVOLVED

### LUCIA GARCIA

Lucía studied biology and took a master's degree in Multidisciplinary Studies in Environmental Sustainability, specializing in Industrial Ecology. Since graduating he has collaborated in different sustainable development projects in Latin America, related to sustainable tourism, community development, among other topics.

In Europe, she has been involved in the foundation of ICCERS, a project that puts environment, science and society into dialogue. During these periods has also been linked to the world of academia, always combining her commitment to social education.

At Som Energia, she is in charge of supporting the members in energy efficiency issues. Lucía can help you understand the concepts of the Infoenergia reports, as well as understand the logic of the Wheel of Moments of Infoenergia. Also she can share her experience as a result of her participation in the startup of this service in her Rescoop.



# OPTIMIZE RETURN-FLOW

RESCOOP: SÜDTIROLER ENERGIE VERBAND (SEV) • COUNTRY: ITALY •  
THIRD PARTY INVOLVED: SYNECO LTD



## ABOUT THE RESCOOP AND THIRD PARTY

The Südtiroler Energieverband (SEV) has been originally founded in 1998. It is an association of renewable energy producers and distributors in the South Tyrolean area and governed as a cooperative. SEV has 300 members. These members are producers and distributors of heat and electricity. Most of them are cooperatives, some public and private companies. Ten people are directly working for SEV, however, including also the members staff hundreds of people are involved in supplying and producing clean energy.

SYNECO Group Ltd is a consultancy company that supports SEV in with technical advice and is managing most of SEVs R&D project with their team of engineers. SEV is also a shareholder of SYNECO – a clear sign for the strong cooperation of these partners.

## DESCRIPTION OF MEASURE

SEV uses the measure of return flow temperature optimization to optimize their district heating system and save energy. This is a financial incentive to consumers to encourage them to use energy outside the peaks (implicit demand response). District heating plants work most efficiently if run at a constant baseline. Outside these boundaries the biomass district heating plants are working less energy efficient, that means they cannot convert the full amount of energy wood chips contain. The efficiency ratio can drop from 85% to 40%. To avoid this, a biomass district heating plant needs to have a well-balanced demand. However, demand of consumers varies a lot throughout the day and throughout the year.

One crucial factor for energy efficiency for a district heating plant is the return flow temperature. High return flow temperatures are an indicator for not optimal configured secondary circuits on the client side. Therefore, incentives for the final customer may be a chance to foster energy efficiency in a very transparent way.

Lower return flow temperatures have the following effects for the district heating plant:

- A reduction of the return flow temperature by 10 K reduces the demand for pumping by 20-30% (cutting the flow rate by half reduces energy demand by factor 8);
- Lower return flow increases the efficiency factor for flue gas condensation;
- Demand shifting (start heating earlier / later) is very effective for peak shaving;

## DESCRIPTION OF ACTIONS

A heating and cooling system should provide comfort to your household during summer and winter times. But comfort means more than just getting heat or cold and balancing the optimal temperature opening the windows. You want a balance of cosy warmth in your home then you should optimize your thermostats.

In most cases, an overheated or overcooled house is a simple case of a mistake in programming the thermostat or the correct adjustment of all valves. Just following some simple steps will help you lowering your energy bill on the long term.

In case of a private household, savings in a range of 10% to 20% are realistic, only by optimizing thermostats and valves. A more impressive example shows the savings of local school in South Tyrol. Conventional thermostats have been changed to smart ones. An intelligent temperature sensor is in contact with all other radiators in the building and regulates the optimal energy supply on the fly.

In a four-year period, this school was subject to a long-term optimization. Insulating pipes, optimizing heat plant, and in the last year, the introduction of a smart control system cut the costs in total by nearly 50%.

## IMPLEMENTATION IN ANOTHER RESCOOP

The implementation depends on the size and the complexity of the system. Your needs to have technical experts to help with the calculation of the energy and costs savings, communication employees to communicate the new tariffs to the members

## COST OF IMPLEMENTATION

Also, the cost of implementation depends on the size and complexity of the district heating system. First a technical analysis needs to be done in order to find out how to optimise the energy use in the system. Then the new tariff system needs to be implemented in the organisation. Finally the new tariff system needs to be communicated to members in order to convince them to take on the new tariff system (which is optional).

On average it is estimated that an implementation costs around €20.000 euro's. €10.000 for the technical analysis in order to know how to establish a better equilibrium of energy production and energy use. And €10.000 for the needed technical equipment. Depending on the size of the district heating system, this investment has a return within a year thanks to energy saving in the system.

## IMPLEMENTATION IN PILOT RESCOOP

Süd Tiroler Energie Verband is an umbrella organisation who helps local cooperatives. SEV has implemented the best practice in one district heating cooperative on two pilot site in Italy. During the implementation of the Best Practice something unforeseen happened: The whole regulation system of the heating broke down due to the much more sensitive and precise measurements of the water flow through the radiators.

The regulation system needed to be updated, meaning that the REScoop needed to get more financing from the municipality. It demonstrates that the theory and practice are far away from each other and every building needs to be treated individually and when implementing you need trained technicians to implement this best practice.

## LEGAL ENVIRONMENT

Since 2013, district heating and cooling systems are supported and encouraged by the government through a program called “Conto Termico”. Legislation also covers a “white certificate” program and several Energy Efficiency actions. Conto Termico provides “financial incentives on capital costs up to 40% on the eligible investment payable on yearly basis for a variable period of 2 to 5 years depending on type of improvement implemented, technology type implemented and its scale.”<sup>46</sup> This program places district heating development at the center of the energy efficiency strategy of Italy, which was published in 2013.

The white certificate program is not valid for the cooperative participating in the REScoop PLUS project. However, there is an opportunity to take advantage of the GME market to obtain and sell white certificates. The large projects like the one developed by SEV to deploy more efficient district heating is typically the type of larger scale project that could come within the scope of the scheme

## RESULTS AND IMPACT

The data analysis showed a noticeable difference in actual consumption before and after the implementation. In the first school (27.8% reduction on energy consumption) and this can be converted into 5.57 tCO<sub>2</sub> and in the second (17.6% reduction on energy consumption) and this can be converted into 3.21 tCO<sub>2</sub>.

Since the best practice was only implemented in two pilot sites (schools), an extensive behavioural study on the use of the best practice was not possible. The members of the cooperative were asked about the satisfaction of the overall energy saving services of the cooperative. 31% agreed and 18% strongly agreed of the German speaking members and 59% agreed and 12.8% strongly agreed of the Italian speaking members that the REScoop had contributed to an increased knowledge about renewable energy. Also the satisfaction with the services provided scored very high, 45% agreed plus 45% strongly agreed.

## COMBINATION WITH OTHER BEST PRACTICES

This best practice needs a lot of good communication with your members. This communication can be complemented with online and offline tools like Energie ID and Dr. Watt.

Dr. Watt	Score	Explanation of Score
<b>Effectiveness: The effectiveness of energy saving measures exists of different parts</b>		
Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.		Not available yet
Goal efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach.	+	Once implemented the savings of 10-30% will directly affect the customers bills.
Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.	++	Implementation of the measure will take around half a year, but results can be measured within the next half-year.

<b>Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?</b>		
	+++	The investments are done by the district heating company to implement the new tariffs. Members can benefit from the new tariffs and the district company from the energy savings in the system. In cooperative district heating companies this reflects in the overall price again.
<b>Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.</b>		
	-	
Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	-	The new tariff structure integration in the organisation should not be taken lightly. Once it is implemented administration will function as regular.
Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	-	It always requires a specialised partner
Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this is likely to form a barrier for transfer of this practice to other cooperatives.	++	Generally speaking the implementation of this measure is quite easy. For the initial optimization setup, however, a specialized company is needed.
<b>Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.</b>		
Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in place or that they can be implemented in any regulatory context.	-/+	Whether it is possible to implement it is dependent on tariff regulations on a national level.
Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	++	No organisational limitations. This best practise is independent from what legal structure the company is.
<b>Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.</b>		
Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	++	This depends on the legal structure. The company owns the data. When the company is a cooperative owned by the consumers they could exercise control.
Transparency: Is it clear how governance structures or cash flows are organised	+++	Cash flows and governance structures are clearly explained in the communication about the new tariff structure.
Data management: How is data of the tools managed. Is there for example a privacy policy in place?	+	Managed according to national privacy regulations.

## EXPERTS INVOLVED

### NICOLE HOFER

Nicole is one of our newest members and works in the service department of SEV (South Tyrolean Energy Union). SEV represents about 300 members including district heating plants, hydropower plants and photovoltaic installations. The members range from cooperatives, municipalities to enterprises and consortiums. Nicole is responsible for member services including administrative management as well as general assistance. Nicole holds a degree in Economics and Management from the Free University of Bolzano and spent one year studying International Management at Groupe Sup de Co in France. Nicole can help district heating cooperatives to implement other tariff models in order to make their system more efficient and save money and energy.



### THOMAS EGGER

Thomas has been in the energy sector since 1993, acting as project manager to build 3 biomass district heating plants in South Tyrol and bringing valuable expertise to SEV since his arrival in January 2017.

He attended various educational courses in energy, environmental and climate consulting for private and public bodies, certification for boiler attendance and project and process management.







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