RES-DHC

Transformation of existing urban district heating and cooling systems from fossil to renewable energy sources

GUIDE FOR STRATEGY DEVELOPMENT

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TABLE OF CONTENTS

1. INTRODUCTION

The RES-DHC project — Renewable Energy Sources in the District Heating and Cooling sector, kicked off in October 2020 focuses on increasing the share of renewable energy in district heating and cooling systems across Europe. Eight countries (Germany, Switzerland, Austria, Italy, France, Poland and Denmark) as well as the European umbrella organisation EuroHeat & Power, based in Brussels, Belgium have joined forces to drive the decarbonisation of the DHC sector.

The project started with surveys at regional level to analyse the current market situation as well as barriers and opportunities to the development of renewable district heating. The next step is to use this knowledge to develop concrete and detailed action plans to promote renewable district heating.

The point is to propose an adaptive methodology for developing regional market development strategies and planning the corresponding actions. The methodology presented in this document should bring support in the development of strategies that are adapted to the identified barriers, feasible and efficient. However, the process proposed is flexible to make sure that all regional particularities can be taken into account.

2. PROCESS DESCRIPTION

The process is divided in four steps. Each step is further detailed below. However, it is important to note that the result is not final. Step four takes place after implementation start: the action plan should be continuously and regularly updated to take into account new developments and concretise the actions further.

This process should be undergone taking into account the ideas and opinions of relevant market actors. In the RES-DHC project, Stakeholder Advisory Groups composed of relevant market actors at regional level have been set up. These groups should be involved, at least in step 1 and if possible, all along the process to consolidate the result and make sure that market actors endorse the defined strategy. However, we recommend to test the methodology in advance in a small group before moderating a larger event to the action plan.
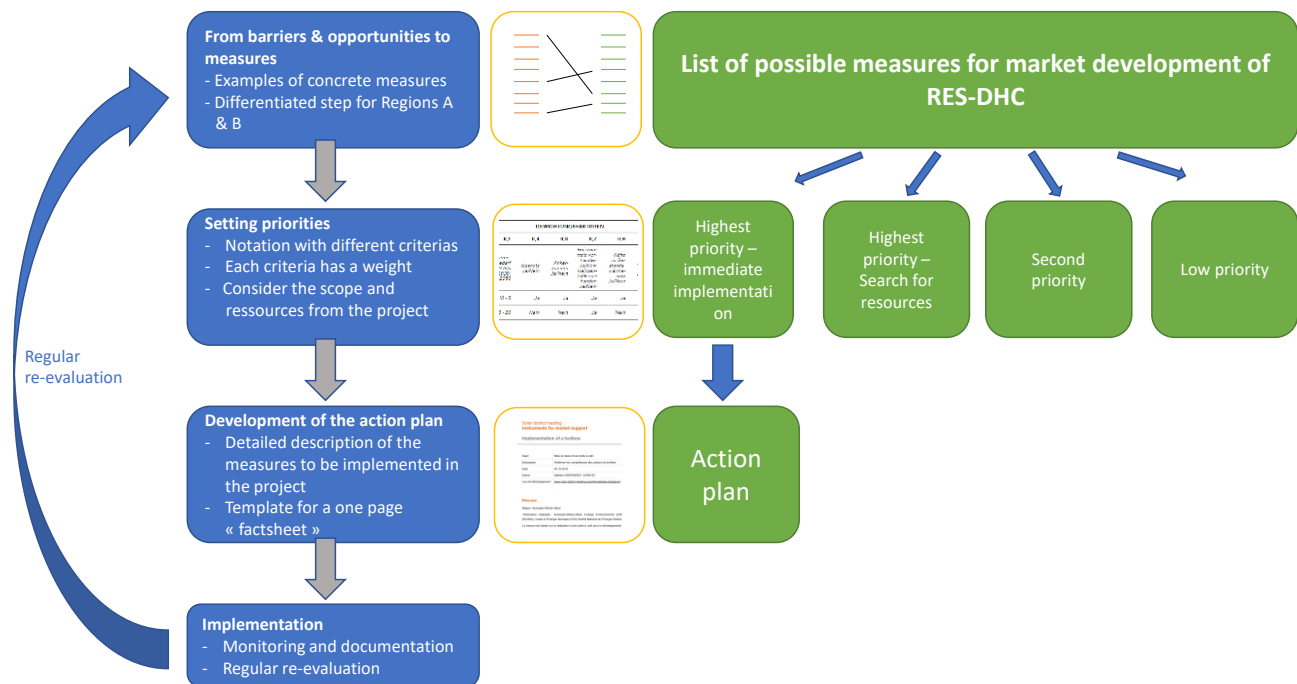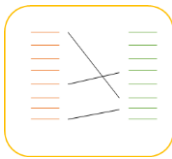

Figure 1 : Overview of the process

3. STEP 1: FROM BARRIERS & OPPORTUNITIES TO MEASURES

The aim of this step is to create a list of possible measures to tackle the barriers and make good use of the opportunities identified. Each barrier should be met with one or several concrete measures. This step should be dealt with in a "brainstorming" mindset. No budget or limits should be taken into account at this stage. The only criteria is that the measures proposed should be adapted to the regional framework conditions.

We recommend to involve market stakeholders at this stage to bring in a large diversity of points of view and ideas.

A preliminary step consists in classifying the barriers. The type of barriers identified within the RES-DHC project are listed in

Table 1: Types of barriers

TYPE OF BARRIER	DESCRIPTION
LACK OF KNOWLEDGE	A lack of information of the stakeholders is one of the most common barriers for renewable district heating. But it is often not expressed as such, especially if the list of barriers is made directly by the stakeholders. It is therefore important to identify if the know-how is available but not spread or if the issue has not been tackled yet.
ECONOMICAL	Economical barriers are also very common. In this case, the solutions exist and are well known but are not implemented because of economic feasibility criteria.
LEGAL / POLITICAL	The legal framework must be changed to tackle this barrier, or a change must occur at political level (i.e. new procedure, contracts etc.)
TECHNICAL	Technical barriers are very seldom and it is important to ensure that the solution is not already available, at least at international level.
ORGANISATIONAL	Organisational barriers concern communication between stakeholders as well as the organisation of the market sector in general.

A selection of possible measures to overcome the identified barriers are listed below, according to the type of barrier.

Basic measures

Following basic measures are planned for all regions in the RES-DHC project and should be considered for replicating regions:

- Creation of a regional / national stakeholder group gathering market actors with regular meetings and exchanges
- Setting-up an information point centralizing all resources on the topic (i.e. website)

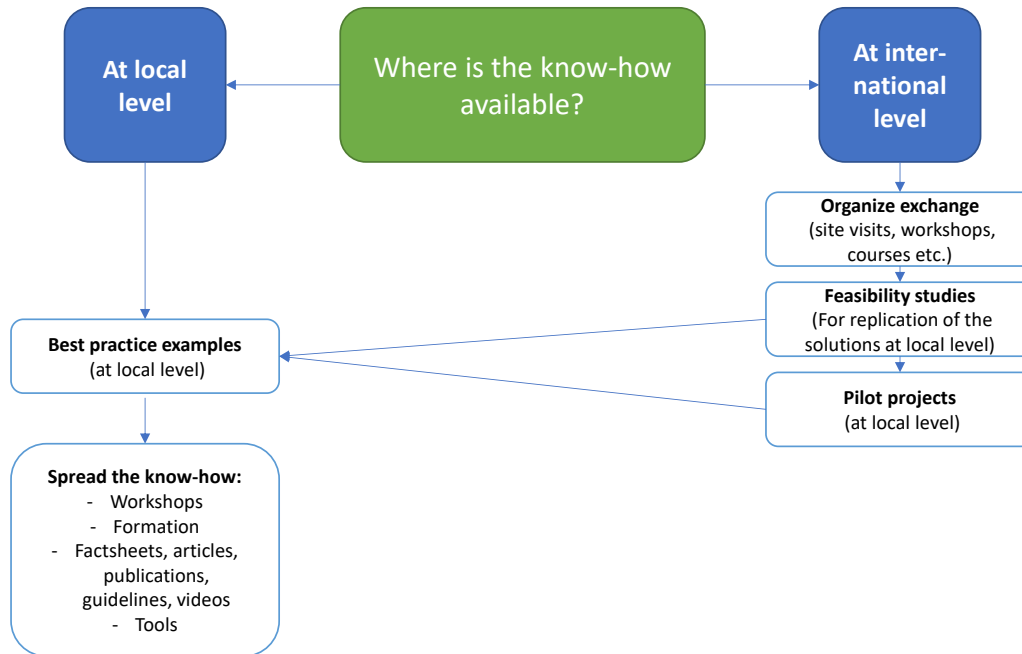Measures addressing a lack of knowledge / information

Figure 2: Matching barriers with adapted measures

The first point is to identify if the know-how is available at local level or not. If not, the scope should be broadened and the measure should consist in identifying external solutions, i.e., at international level and organizing exchanges: site visits, workshops, courses. Figure 2 shows the first steps to undergo in this case.

If the know-how is available at local level but the information does not circulate, for example in the case of the legal framework or financing opportunities, an information campaign should be started. The priority is to identify the stakeholder group (municipalities, DH operators, etc.) and to decide on the best supports (see list in Figure 2). The main actors who can help to spread the information should be identified and involved.

Measure addressing economical barriers

Economical barriers can mostly be addressed by:

- Finding and spreading the knowledge about possible sources for financing, innovative business models or quantifying the other advantages of renewable solutions
- Lobbying for incentive taxes on fossil fuels or any other change in framework conditions able to improve the economical calculation (see measure addressing legal barriers). Countries where the solution is more widespread can be studied to understand the levers used for market development

Measure addressing legal / political barriers

If the barriers are specific to the legal or political framework and the issue cannot be addressed directly, the stakeholder group is very precious. Indeed, with the support of professional associations concerned, a position paper can be published to propose a list of framework modifications that would ensure faster market development. Local political representatives can also be addressed directly to explain the necessary changes and their advantages.

<u>Measure addressing technical barriers</u>

Identifying a technical barrier, the first question to answer is: is it really a technical issue or does the solution already exist but is not well-known? If the solution is already implemented somewhere, measures addressing a lack of knowledge should be implemented. If no solution was identified yet, a research project is an appropriate measure.

<u>Measure addressing organisational barriers</u>

The DH market sector is organized quite differently in each country and this has an important impact on the market developments. The necessary measures are therefore very specific to the local conditions but as a rule, enhancing communication between market actors to share good practices, setting common targets, developing quality criteria or labels, organizing the sector thanks to professional associations or common innovation centers are efficient measures to promote market development of new solutions.

4. STEP 2: SETTING PRIORITIES

 The first step should have resulted in a list of possible measures for market development. The aim of this second step is to analyse each of the measures of the list in order to rate it and classify in a level of priority.

4.1. Evaluation chart

An evaluation chart should be defined. An example is given in Table 2. Working groups should feel free to add criteria or change their weight according to their local circumstances. In this proposition, available resources is not a criteria for defining the priority of a measure. Measures with high priority but no funding or not enough resources available stay marked as high priority, even if the funding has to be found first (see 4.3).

Table 2 : Example of evaluation chart

Criteria	Notation			Comment	Weight
Time horizon of the impact	Long-term 1	Mid-term 2	Short-term 3	Estimate how long the measure will take to be implemented and to show effects (ST < 2 years, 2 < MT< 5 years, LT > 5 years)	20%
Direct impact on the market	Low 1	Average 2	High 3	For example: investment triggered, number of plants taking action	30%
Indirect impact on the market	Low 1	Average 2	High 3	For example improvement of the quality level, know-how of stakeholders etc. A measure can have direct and indirect impact	20%
Opportunity	No 1	Unclear 2	Definitely 3	Is there a momentum around this topic at the moment or stakeholders ready to take action now? Is there a high public acceptance?	30%

The sum of the weights should add up to 100%. The weights are set here as an example. For example, in a country where the legislation will soon become very restrictive regarding fossil heating and measures with long-term impact might come too late, the weight of this criteria will be stronger than in countries where the efficiency of the measure could prevail over its rapidity of implementation.

4.2. Notation

Each measure should be evaluated according to the evaluation chart defined. The more stakeholders participate in this step the better consolidated the result will be. Each criteria receives an average notation taking into account all votes. This average notation is then taken into account in the global evaluation with the corresponding weight.

For example, if a group of stakeholders is asked to evaluate the following measure: "develop a CO_2-neutral label for district heating networks". Table 3 shows the result if three persons participate in the process and give the notes indicated in their column for one measure:

Table 3 : Example of votation and calculation of the global evaluation for the measure "develop a CO_2-neutral label for district heating networks"

Criteria	Person 1	Person 2	Person 3	Average	Comment	Weight
Time horizon of the impact	1	2	2	(1+2+2)/3 = 1.7	When will this label start to have an impact on the market? How long until customers are aware of it? (*long-term is 1, mid-term is 2, short term is 3*)	20%
Direct impact on the market	1	1	1	(1+1+1)/3 = 1	Will this label directly trigger new projects or change of energy in existing DH? (*yes, a lot: 3, maybe but not sure: 2, probably not 1*)	30%
Indirect impact on the market	3	3	3	(3+3+3)/3 = 3	Will this label improve the quality, image, and communication within the sector or towards customers? (*yes, a lot: 3, maybe but not sure: 2, probably not 1*)	20%
Opportunity	3	3	2	(3+3+2)/3 = 2.7	Are there other projects dealing with the topic or is a tool already available that could be adapted? Is there an interested stakeholder in the group who is ready to support this action? (*yes, clearly: 3, yes, but there are also a lot of barriers: 2, not really a topic at the moment: 1*)	30%
Total	-	-	-	**= 1.7*0.2 +1*0.3 +3*0.2 +2.7*0.3 = 2.1**		-

4.3. Classification

The global evaluation for each measure should help sort the measures in three priority levels. The exact limits of those categories should be defined according to the local situation. For example, priority 1 for projects with a global evaluation over 2 points, priority 2 over 1.5 points and priority 3 below. If there are too many measures or too few in category 1 for instance, the limits should be set differently, or the reasons should be discussed with the participants.

Finally, measures implemented in category 1 should be sorted out between measures that can be implemented immediately because resources are available (budget, stakeholder interest, etc.) and the measures for which resources should still be acquired.

At the end of the process, all measures from the initial list should be sorted into one of the following four categories:

1- Highest priority – immediate implementation
2- Highest priority – search for resources
3- Second priority
4- Low priority, to implement only in case an opportunity arises

This prioritized list constitutes the regional strategy for market development ore renewable district heating solutions. Category 1 will be further detailed in an action plan. Funding or resources will be actively looked for regarding measures in category 2. Measures in the other categories should be documented also to be evaluated again further on.

5. STEP 3: ACTION PLAN

Once the priorities have been defined, each one of the measures ranked 1 according to the previous step should be described in detail to enable implementation and monitoring of the impact.

The description of each measure should contain following information:

1) General information:
- Title of the measure
- Short description
- Date of the last update
- Author

2) Detailed information:
- Geographical localisation
- Partners involved at local level
- Description of the initial situation and addressed barriers
- Addressed target group(s)
- List of objectives
- Detailed description of the implementation plan
- Monitoring strategy for the impact

The collection of these description constitutes the action plan for the region/country. As far as possible, the measures should be endorsed by all partners involved in the implementation. For example, the action plan could be published presenting the logos of all partners involved.

Within the RES-DHC project, action plans will be developed for each region involved. A summary report of the regional strategies and action plans will then be published and made available on www.res-dhc.com.

6. STEP 4: REGULAR UPDATE

Two types of regular updates should be planned:

    1) <u>Update of the descriptions of measures</u>

Depending on the measure, a rhythm should be defined in the monitoring strategy for a regular update of the description, including a feedback on the impact of the measure and lessons learnt from the implementation.

    2) <u>Update of the action plan</u>

A regular update of the whole action plan, i.e. yearly, should be planned. The process should be repeated to take into account the evolution of framework conditions, check if the priorities are still valid or if new measures can be put in motion. This process results in the confirmation of the current action plan or its update.

7. CONCLUSION

The proposed methodology should support market actors in their market development goals by helping to clarify their strategy, plan and monitor the implementation. Key success factors are the participation of experiences market actors, flexibility and adaptation of the methodology to the framework conditions and regular update of the results.