ROME WAS NOT BUILT IN ONE DAY - Future-oriented regional development towards energy-efficient residential areas

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ABSTRACT

Often, there are visions about the desired future also in the case of energy efficient of residential areas but the challenge is how to reach that vision. The research question in this paper is how to transform the vision into practical actions applied in regional development. As a methodological tool we apply “steps towards the vision” framework. It includes the action proposals to reach the vision but it also defines the responsible actors and timing of the action proposals. The results consist of the vision and steps towards the vision for a general energy-efficient residential area in Finland. In general model, the planned actions will start from national level and they will continue via municipality level to local level and finally to individual level. As a practical example, we will also introduce the steps towards the vision in the case area of Engelinranta located in the city of Hämeenlinna. In that case, the future is highly dependent on the decisions of city concerning e.g. town planning, plot completion and technical plan. As a conclusion, it can be said that “steps towards the vision” approach helps to manage the long term time frame by dividing the future development path to smaller steps with action plans, where also the responsible actors will be defined as well as the timing of actions.

INTRODUCTION

The vision of the world 2050 highlights the climate change and the need to decrease CO_2 emissions at all levels. The importance of energy efficiency has been recognized both in EU and national level (Ministry of Economic Affairs and Employment 2017). The energy efficiency of the buildings, and broadly thinking residential areas, has a remarkable role when looking for solutions to the problems caused by climate change because 40% of the energy consumption and 36% of CO_2 emissions in the EU related to the buildings (European Commission 2016). Approximately 70 – 80 % of greenhouse gas emissions of buildings are from usage phase energy consumption and the remaining 20 – 30 % from building materials and construction. In addition to technical performance, when evaluating the energy efficiency and carbon footprint of buildings, other important factors are user-oriented de-sign, solutions that prolong the lifetime of the building, quality of construction, users’ consumption habits and solutions that increases use efficiency (Sarapää 2014).

In this paper we will focus on energy efficiency of residential areas with their desired futures. Often, there are visions about the desired future also in the case of energy efficient of residential areas but the challenge is how to reach that vision. Thus, our research question in this paper is how to transform the vision into practical actions applied in regional development. In practice, it’s not always so clear how to fulfill the needed requirements to reach those visions.

This paper first introduces the research design behind the paper including the framework and the methodological process. Then we introduce the results that consist of the vision and steps towards the vision for a general energy-efficient residential area in Finland. We also complete the general results with a pilot residential area to understand more deeply local conditions. As a conclusion, we introduce the general requirements to future-oriented regional development. Finally we will make some methodological considerations of this steps towards the vision process, including the coverage of participants, the role of facilitators as well as the background information needed concerning the future alternatives.

RESEARCH DESIGN

The framework for this paper consists of futures research combined to co-creation process and the timeframe is reaching up to the future for the next 20 years. The data to this research paper has been collected in during 2016 and 2017 in the ongoing ELLI project (Figure 1). At first, change factors related to the future energy efficient residential were recognized. Then, alternative scenarios were created based on the chosen driving forces. The scenarios were created for three different case areas: Askonalue in City of Lahti, Engelinranta in City of Hämeenlinna and Peltosaari in City of Riihimäki. In addition to three case areas, scenarios for a general energy-efficient residential area in Finland were created during the process, too.

The focus in this paper is the last step of the process in which the vision and the steps towards the vision were defined. As a methodological tool we apply “steps towards the vision” framework. It includes the action proposals to reach the vision but it also defines the responsible actors and timing of the action proposals. Theoretical and practical background for the process will lie on action scenario approach (Meristö 1991), where the aim is not only to create alternative scenarios for the future, but to make decisions based on those scenarios. It means, that every scenario alternative have to be analyzed carefully, including threats and opportunities as well as interest groups in each scenario. Then, for strategic decisions the actors have to estimate for each alternative required resources & skills and timing, but also attitudes towards each scenario especially in case it is not the desirable one. Actions based on threats and opportunities recognized in scenarios can vary from offensive to defensive, and the strategy development at regional level can be a challenge, if the shared vision not found (see e.g. Meristö, Kettunen, Hagström-Näsi 2000).

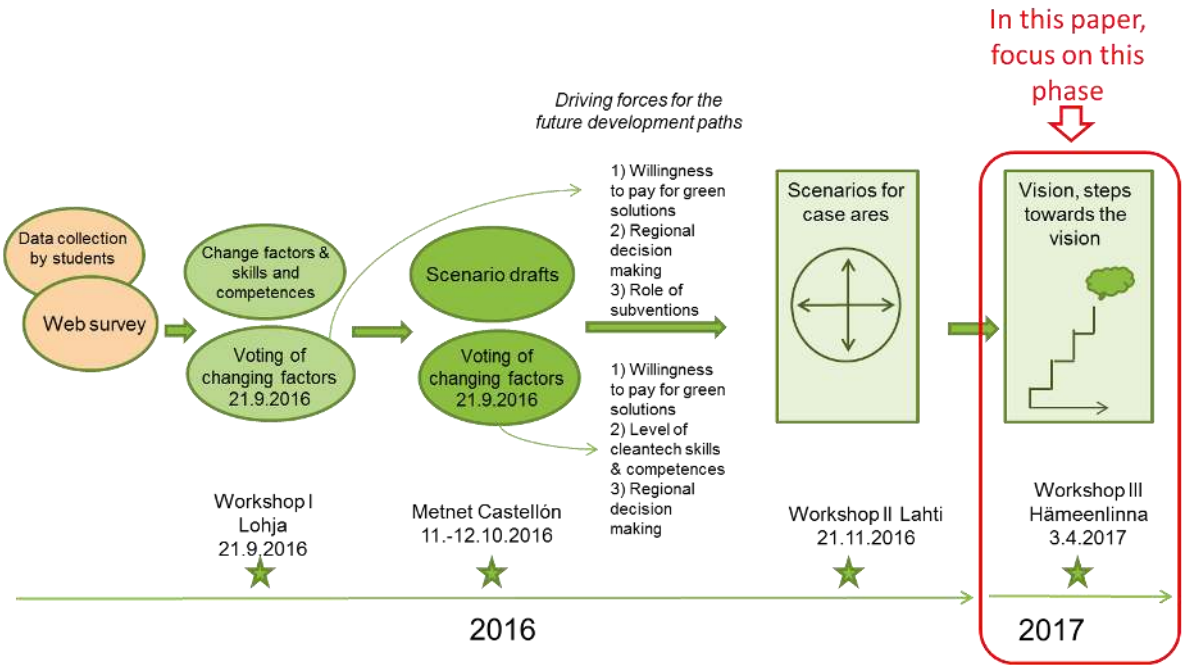

Figure 1. Background for the paper: process and focus.

In practice, we have approached the problem of energy-efficient residential areas in two levels: first, the general level of the theme and then, the implementation level in each case area, three altogether. In this paper we will introduce *first the results of the general level group work*, including the vision and steps towards the vision following the most desirable scenario path, where both consumers and state will pay for and support development and implementation of green solutions. In general model, the assumptions will start from national level and slowly they will continue through society via municipality level to local level and finally to individual level, where the last step towards the vision in the best case will be an integrated view from sustainable and responsible resident areas including e.g. construction with materials, energy alternatives, city planning and ways of living and consuming. After the general description we will *focus on practical steps towards the vision in one specific residential area* as a case study, namely case Engelinranta in City of Hämeenlinna. As a basis for this case study will be the most realistic scenario selected in a practical group work during the futures workshop held and facilitated in spring 2017. One of the hidden basic assumptions there is that the national decisions will support energy-efficient residential area development e.g. in taxation policy as well as in rules and regulations.

RESULTS

In our scenario process, alternative scenarios for the future energy efficient residential areas were created before the steps towards the vision were defined for the chosen scenario. The driving forces for the scenarios were the role of subventions and residents' willingness to pay for the green solutions. In the case of a general energy-efficient area in Finland, the vision will be achieved best in a scenario in which both the society and the consumers are participating to the costs. Due to the shared interests and proactive attitudes of the society and consumers, sustainable construction and carbon neutrality realize more probably compared to other alternative scenarios. On the contrary, if consumers are reluctant to spend money for green solutions and the society is not supporting energy-efficiency, the development leads easily to traditional solutions with high carbon footprint.

In our project, the vision of the future energy-efficient residential area was defined as follows (Meristö & Laitinen 2017):
"The future energy-efficient residential area is located in a city which aims to carbon neutrality and applies the values of sustainable construction. The residential area is economically, socially and ecologically sustainable including workplaces, many kind of residents and safe & accessible environment. The residents are seen as a resource – citizen driven innovations create user friendly solutions for living, services, logistics, heating and recreation".

When aiming to reach the vision, actions need to be planned properly. The implementation of actions requires real actors with well-defined responsibilities. The timing of the selected actions is important, too. Figure 2 illustrates the steps towards the vision in the case of a general energy-efficient residential area. Every step describes the needed actions, responsible actors and the timing of those actions. In this case, the time frame is 20 years to the future but the step-by-step approach helps to achieve the vision. The order of the actions is also essential. If the actions of some certain step are not implemented, the vision will not be reached.

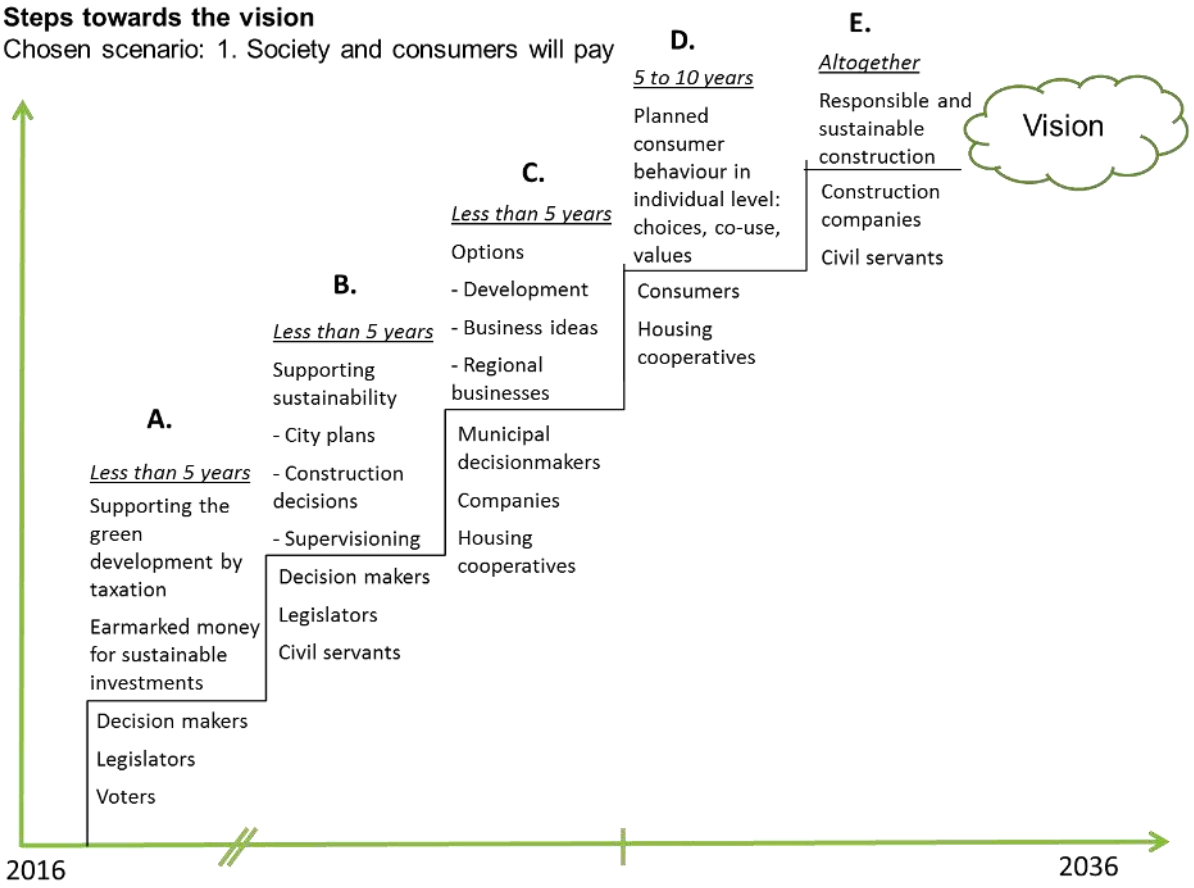

Figure 2. Steps towards the vision: actions and responsibilities (a general energy-efficient residential area in Finland).

Stairs towards the future can be divided into five steps (from A to E) when approaching the vision. First, the national level decision-making process (A) has to take into consideration support activities for green solutions by taxation, investment subventions or even direct investments to promote that kind of work. That has to happen during next 5 years, otherwise the favorable development is not possible in a wide scale during the given time horizon, i.e. next 20 years. Also, in less than 5 years´ time period have to be taken the next two steps (B, C) at municipal and local level to promote the sustainability in city planning and in construction business in practice, too. Consumers and citizens (D) are in the key role, when trying to generate *design for all solutions* in this field. Without individual choices and preferences no change in the mindset will happen. This will require a longer time, from 5 to 10 years, because of the diversity of people even in Finland. Finally, all different actors need a shared vision to go further, i.e. an integrated ecosystem (E) towards eco-efficient residential area is necessary for continuous co-creation process to achieve to vision in the course of time, at least from 5 to 10 years ahead.

The baseline scenario for this step by step approach is scenario number 1, where both society and consumers are willing to pay for green solutions (Meristö & Laitinen 2017). What if –questions for the other scenario alternatives are e.g. what it the society is not supporting, what if the consumers only promote sustainability but the acceptance in real life is low, what if the local regulations and practices vary from case to case? Navigation marks for the next 5 years concerning the first three steps A-C is needed, otherwise the favorable development in practice is not possible.

During the Elli-project the “steps towards the vision” approach was applied also to the real case areas. Figure 3 illustrates the steps towards vision in Engelinranta area which is located in the city of Hämeenlinna. The steps are defined for the scenario in which citizens are not willing to pay much extra for the green solutions and the government subsidizes green development only a little, so the solutions are mainly market driven.

However, the implicit assumption in Engelinranta case is that society is still taking care of basic preconditions for the sustainable development.

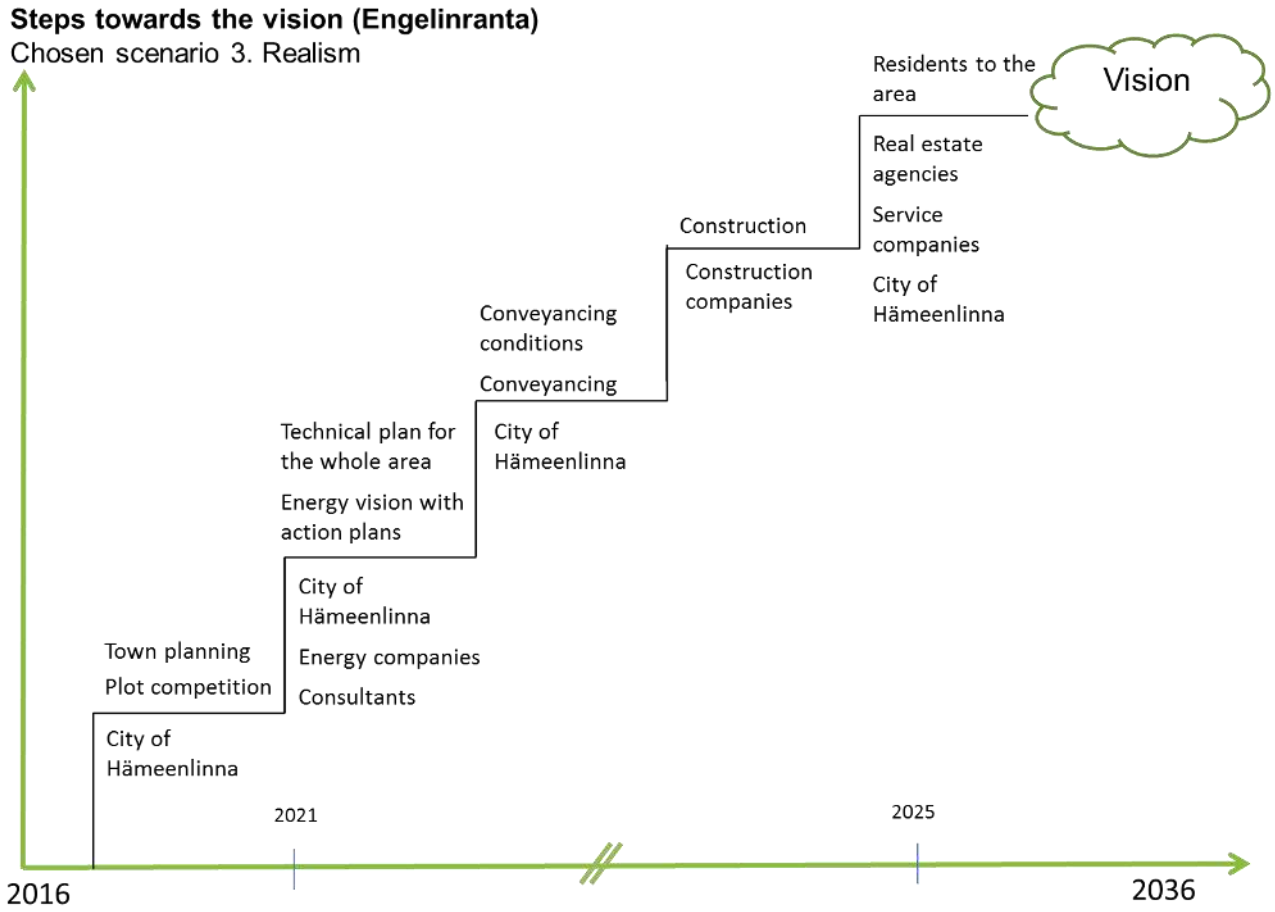

Figure 3. Steps towards the vision: actions and responsibilities (case Engelinranta).

The future of Engelinranta is highly dependent on the decisions of city of Hämeenlinna concerning e.g. town planning, plot completion and technical plan. However, commercial actors have also an important role in many phases in cooperation with the city of Hämeenlinna. For example, energy companies and consultants participate to the energy vision and the plans related to it.

CONCLUSIONS

In the future-oriented regional development it is important that wide range stakeholder groups are participating to the process. Active participation enhances the dialogue between actors, enables to achieve the shared vision of the future and also improves actors' commitment to the regional development. In Elli project we have applied the action scenario process (Meristö 1991) and many kind of actors have been involved, including companies, municipal decision makers, regional development organizations and researchers. The role of facilitators is also important in the future-oriented regional development process because they give guidance to participants and collect the background information needed concerning the future alternatives. Facilitators can also as outsiders rise up the discussion above the everyday problems and focus more on the holistic view of the future, too.

In the regional planning the time frame is often very long, especially in the case of planning future energy-efficient residential areas. "Steps towards the vision" approach helps to manage the long term time frame by

dividing the future development path to smaller steps with action plans, where also the responsible actors will be defined. The steps also improves the timing of actions. Often steps may have different requirements for the time because different actors have different time frames: e.g. political decision makers may plan the future considering the election periods. On the other hand, private commercial actors may have shorter time frame depending on profit potential. Research community quite opposite to these can rise up long-term issues challenging e.g. the next generation, as it has happened e.g. concerning the discussion about climate change or megatrends like urbanization at world level, which both are relevant when planning energy-efficient residential areas for the future. Although the length of steps can vary, they all have to be accomplish to achieve the vision. Time-line in the picture is illustrative and in real life the time frame can be shorter or longer depending on the speed different actors will take care of their responsibilities.

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