CORVINUS UNIVERSITY of BUDAPEST

Doctoral School of Economics, Business and Informatics

THESIS COLLECTION

András Márton

for the Ph.D. dissertation titled

Foundation of the environmentally sustainable strategic management by integral futures

Supervisors:

Erzsébet Nováky, Doctor of Sciences at the Hungarian Academy of Sciences
professor emeritus
and
Éva Hideg, Doctor at the Hungarian Academy of Sciences
university professor

Budapest, 2021

Department of Geography, Geoeconomy and Sustainable Development

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Content

1 RESEARCH BACKGROUND AND THE RELEVANCE OF THE TOPIC

There are topics of three different fields of science combined in my dissertation: environmental economics (sustainable development), business economics (strategic management) and futures studies. The aim is to reform some elements of corporate and public decision making in a way that more sustainable for the economy and the society. Sustainable development and how the people care for their future manifest in their future orientation, and in the stakeholders' needs taken into account by the company or the society. Sustainability faces complex social and economic challenges which require a multidisciplinary approach and a wide variety of methods to handle in the long run.

The global climate change and its local effects are everyday topics in both the scientific discourse and the civil communication (media). Undoubtedly, climate change has anthropogenic roots to an extent. According to the statistics, 35% of the total CO_2 and CH_4 emissions in the world in 2017 was caused by only 20 companies which operate in oil, natural gas or carbon industries (Heede, 2019). Besides, our civilisation pollutes directly as well, even in those geographic territories to where pollution reaches through wind, sea, or rivers. For example, there is a great waste island floating on the Pacific Ocean that contains cc. 79,000 tons of plastic waste and covers 1.6 million km^2 of ocean surface (Lebreton et al., 2019), and the cetaceans and fish which live nearby consume a considerable amount of plastic together with their natural food (Gibbs et al., 2019).

Besides pollution, the rapid consumption of natural resources would also lead to their depletion in the foreseeable future, and that would cause instability in the economy and the society. Apart from the periods of crisis, the ecological footprint of humanity increases year by year – though not equally in the different regions –, and this means that today we would need almost double the land that we actually have to maintain our lifestyle (Lin – Wambersie – Wackernagel, 2021). It is clear that we must take action now if we want to behave responsibly towards the future generations.

Unfortunately, economic growth and many other economic concepts ignore – or handle superficially – the global crisis that has the greatest complexity and effect on us: the environmental crisis. Environmental crisis covers global warming, overconsumption, the growth of ecological footprint, and other types of human pollution. Environmental economics try to deal with natural processes and pollution (mainly through externalities), but it is not reflected in the dominant paradigms of corporate strategy and public planning.

According to some scientists, nature is mainly a type of resource since companies extract their raw materials from it. Despite its simplicity, this gained a formal description only in the 1990s when Hart (1995) published his resource-based theory. He argues that the main goals for a company are minimising the emission of pollutants and negative environmental effects, the continuous development, the

integration of stakeholders into corporate processes, and the prediction of future competition (Hart, 1995).

Other economists (e.g., Chikán, 2005, Post et al., 2002, Freeman et al., 2007) think that nature is rather an external stakeholder and mainly a passive risk-bearer of a company. This viewpoint, however, was extended in the 2000s with some new concepts: business ethics, corporate social responsibility, environmental protection. There was also some advancement in public planning in this regards: environmental law and environmental policy both deals with sustainability concerns (from the 1960s) in the international discourse, and the European Union has been playing a leader role since its establishment by creating detailed directives and laws for environmental protection (Wood – Richardson, 2006). Nevertheless, the ever-growing environmental degradation and global warming, and the decrease in biodiversity indicates that all these concepts and policies were not enough to realise sustainable development.

The key to sustainability lies with the future orientation of stakeholders and decision makers, and this topic belongs (also) to the futures field or shortly futures.[1] Futures deals with future processes, events, conditions and connections (Hideg et al., 1992), and how different future alternatives can evolve by the weak signals and wild cards (Mehrabanfar, 2014), nowadays using mainly foresight techniques based on stakeholders' participation. (Slaughter, 1995, Hideg, 2002, Hideg, 2013). It is rather these foresight methods where futurists can discover, measure, and analyse future orientation.

Besides psychological and cultural circumstances, it is mainly a person's interest, thinking, activity and expectation that determines his or her future orientation (Nováky – Hideg – Kappéter, 1994). It is difficult to measure though, just as to enhance or strengthen it. Some futures studies methods can tackle certain aspects of future orientation, but systemic approach is better when doing multidisciplinary research in sustainability and strategic management, therefore, I created an integrated method system in my dissertation to analyse the different aspects as a complex process.

One can tell by experience that present times, many economic, political or social decisions are made without considering their long-term consequences, even if the seeds of sustainable development can be found in the principles of future orientation. The future-oriented person (human element) is an important factor both in strategic management (decision maker) and from a social approach (stakeholders), and this is the main research topic in my dissertation using the framework of environmental sustainability. The future oriented individual or group (organisation) who behaves responsibly towards the nature and the future generation is the creator of or contributor to the manifestation of sustainable development.

[1] In this science – and in my dissertation –, "futures" cover the following concepts: futures studies, futures research, futures field, foresight, etc.

In my dissertation, my goal is to crystallise the mutually beneficial synergy between the different fields of science, and to identify the contradictory elements as threat factors. These fields are very broad topics on their own, thus, I focus only on those common areas that can be analysed by the means of futures. However, these areas are part of the preferable future domain of the broader society, and I demonstrate it in the case study of Székesfehérvár.

The mission of the research described above can be interpreted into a system of research questions. The research questions that I answer in my dissertation are the following:

1. It is an important element and condition of sustainable development that strategic management (both in the private and the public sector) consider the natural environment as one of its primary stakeholders.
2. From the strategic management's side, environmental sustainability can be realised by enhancing the future orientation.
3. One optimal step towards sustainability is to use renewable energy resources (locally), and that requires cooperation between the different stakeholders.
4. Sustainability and the renewable energies can gain significant social support if the stakeholders are involved in the futures research process. Thus, consensus can be made on an acceptable or preferable future variant.

2 THE UPGRADED AND APPLIED INTEGRATED FUTURES METHOD

I analyse the research questions with a goal-oriented combination of quantitative and qualitative forecasting and foresight methods integrated in a process system that is based on the integrated futures paradigm and participative methods involving stakeholders. By answering the research questions, I argue that the environmentally sustainable strategic management is at the cross section of the three fields of science, and that encompasses the participation of the future oriented stakeholders, the consensus on the preferable future and the realisation of sustainable development.

The following research activities were carried out to achieve my research goals:

- literature review in the fields of strategic management, futures field and environmental economics (focusing on sustainability), identifying connections;
- data collection about energy industry;
- exploratory futures to identify key elements and stakeholder groups (horizon scanning and survey);
- structured interviews with stakeholders;
- combination, analysis and conclusions of the different methods.

The synthetised theories were underpinned in the case study of Székesfehérvár, which is an efficiently analysable target in economic, sustainability and futures sense, and of which I have former research experiences and local knowledge. The most of the methods used are qualitative ones, the smaller portion are quantitative ones. The multidisciplinary nature and the broad theoretical background of the research made it necessary to integrate various futures methods, by which it became possible to analyse corporate and public strategic planning, create scenarios and conclude horizon scanning in parallel. Consequently, the goal-oriented futures methodology adopted to sustainability researches is dominant in my dissertation that helps to create preferable, acceptable and non-preferable future alternatives formed by the stakeholders in a rather qualitative approach.

The ideas and opinions of the different stakeholder groups that are interested in sustainable development are analysed and discussed in the dissertation by using the following qualitative and quantitative methods – which make it possible to explore the consensual elements of the preferable future, and later to use sustainable strategic management:

- horizon scanning: it is a method to discover the elements of the farther future, and that is capable of exploring current and new trends, weak signals, breaking points and other specific attributes of the future;
- review of planning documents: this includes mainly the critical review of different planning documents that express the vision and strategy of corporate and political decision makers;

- scenario survey: the theoretical background emphasises the importance of external stakeholders, therefore, I measured the future orientation and attitude to sustainability and renewable energies of a broader group of external stakeholders who bring relevant insights into the study;
- stakeholder interview: I used this method to analyse the corporate and public decision makers' opinions and thoughts about the preferable future in Székesfehérvár.

The mathematical-statistical methods lost their significance in futures field in the last few decades. Yet, I still found the quantitative methods useful to depict certain tendencies and trends – which are part of the ongoing future – in my dissertation, just as the integrated futures supports their use when the goal and circumstances of their application can be identified (Hideg, 2012). I conducted research about renewable energy potential and its applicability – using literature and own calculations – to empirically support my dissertation. The capacity of resources, pollution and waste generation, energy consumption and other relevant processes can efficiently and reliably be forecasted using mathematical-statistical methods.

There are three methodological novelties in my dissertation. First, I used a multidisciplinary combination of futures methods, that is, the aim of the methods was common but the context I used them was different. Futures field is often multidisciplinary because even if we do a research in a specific topic, we usually must consider the broader scientific plane to find connections and mechanisms. By the combination of futures methods I mean that both the horizon scanning and the measuring of future orientation were conducted as different events (in time and target group) and with minor methodological differences, but I summarised and concluded the results trying to find interactions between them. This application made it more time-consuming and labour-intensive than a single-method research, yet it also made it more focused to the main target group and the three scientific topics.

The second methodological novelty is the integrated system of methods that I created. This integrated methodology made it possible to draw complex, systematic conclusions to the research questions that required multidisciplinary approach.

The third novelty is a new method called scenario survey which is built of both quantitative and qualitative elements. I used the online survey format because of the higher reach and easier filling (that presumably increased participation). The name refers to those short, literature-based scenarios about which the participants had to answer various sustainability-related questions in different time intervals (5, 15 and 30 years). But the next scenario the respondents encountered depended on how they answered some critical questions, and that could be either a business-as-usual scenario or a greener alternative. Thus, the combination of the answers and the respondents' anticipations in the different times were recorded in the database.

I created this method to explore how non-professional stakeholders think about sustainability and renewable energies, and what are the characteristics of their future orientation. Unlike horizon scanning, this method cannot be used to describe stakeholders' future images in details, but it is better than a simple survey on future orientation because it can simultaneously measure future orientation and stakeholders' expectations in a more specific topic like sustainability.

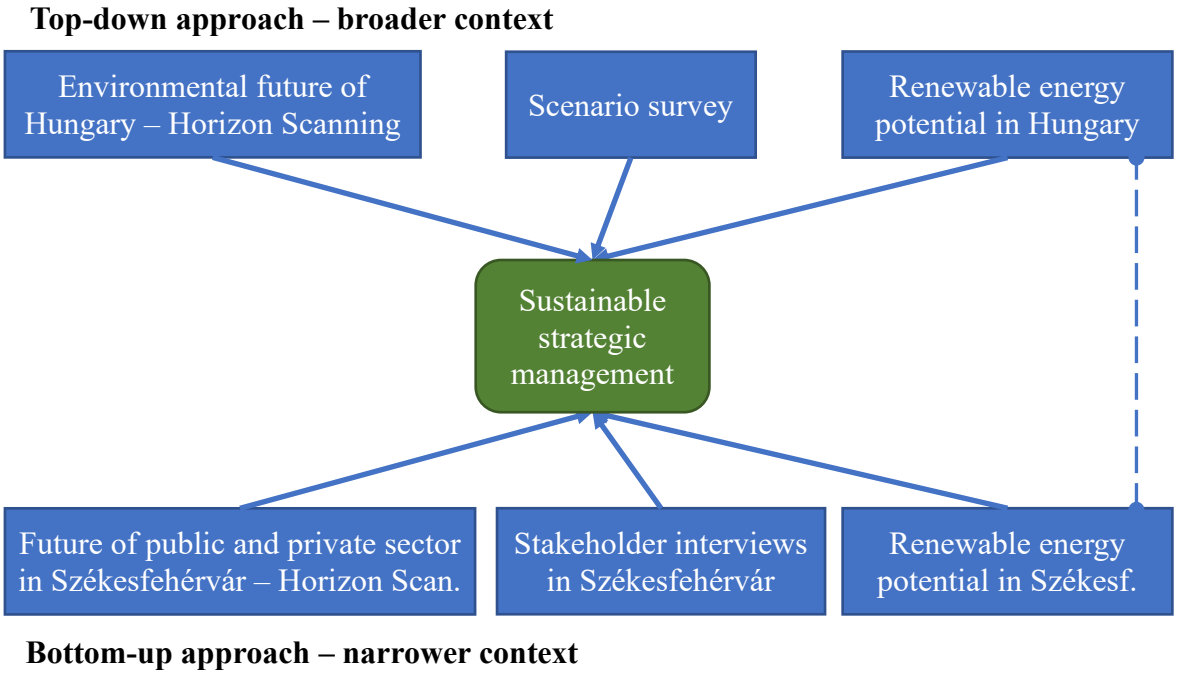

Figure 1. The integrated system of futures methods, and their connection to the sustainable strategic management

Source: author

3 RESULTS OF THE DISSERTATION

The manifold topics of the dissertation required the review of a wide theoretical background. Finally, I created a complex, yet compact sustainability management theory exploiting the synergies.

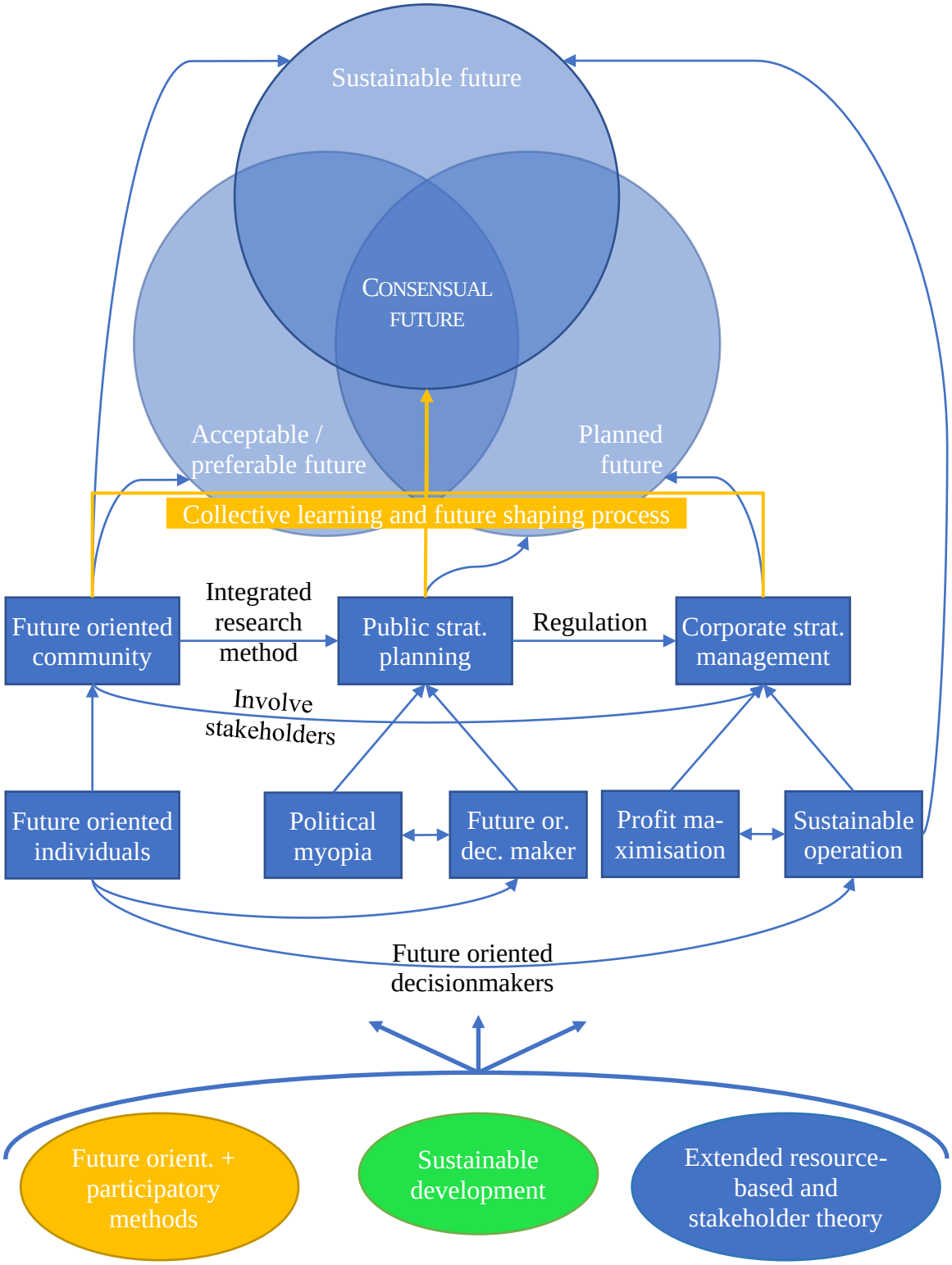

Figure 2. Theoretical foundations of the sustainable strategic management and planning to create a consensual future

Source: author

The practical application of the theoretical synthesis was done by developing and applying the integrated system of methods. The main parts of the methodology were the two horizon scannings, the scenario survey, and the goal-oriented case study that resulted a consensual and complex future description with sustainability approach.

When one analyses the maturity of sustainability at a company or its strategy, it is important to describe the relationship between the company and its (natural) environment. Only a small proportion of organisational theories deal with this issue. The classical theories – in line with the classical economic approach – assume that nature is a scarce resource, besides, it can absorb almost any type and volume of pollution emitted by human production and consumption. Environmental economics, industrial ecology and other fields of environmental studies partially refined this approach (e.g., by incorporating externalities), but these rather tackle the symptoms, not the core problem. The fundamental principles in organisational (or management) theory must be changed to realise sustainable development: **companies must handle natural environment equally to the other stakeholders** that has limited capacity and rises interests.

Unfortunately, corporate and (in some elements) national strategies are created only considering a relatively short time interval, while the nature's reaction to pollution may take decades. This is why it is very important for the individuals to be future oriented, because this will determine the acceptable or preferable future alternatives. **The scenario survey and the stakeholder interviews proved that non-experts (internal and external stakeholders in Székesfehérvár) are willing to participate in the formulation of their own future regarding the questions of sustainable development, green economy, and the use of renewable energies. This means they are future oriented**, and this may move the relationship between the economy and nature towards a greener future. Consequently, sustainable development is supported by the stakeholders.

Renewable energies play an important role in the greening of the economy. The technological penetration and dependence is deepening in our civilisation, and this – together with the increasing population and the global economic growth – causes a growing energy demand. So far, we have been able to meet these needs using fossil energy resources, but if tendencies go on, we will need to find new solutions in the 21st century. **The macro-level horizon scanning pointed out that it is the renewable energies – mainly the solar, hydro, wind power and geothermal energy – that can provide us with sufficient green energy in the frames of sustainability, and these are all accessible in Hungary** (Sáfián, 2014) **and in the region of Székásfehérvár, that my calculations also support.**

One of the biggest advantages of the use of renewable energies is the (partial) independence of the region, local area, or even the city or company from the national energy industry (Gasparatos et al., 2017). But it has two criteria to be realised: first, an available capacity of the renewable resource, and

secondly, the openness, preparedness, and "culture" of the public and private sector, including the acceptance of the consumers. **The target region of the case study, Székesfehérvár, resulted a mixed outcome in the local horizon scanning: (1) the main threats of the continuing future plane (in the stakeholders opinion) is the lack of skilled workforce, and (2) the local companies don't show much interest towards sustainable solutions, unless they benefit from it financially, although some clues to sustainability, and the openness to the use of renewable energies showed up at certain organisations.** Companies are profit oriented organisations, and there is no economist who would doubt this rationale, yet, one of the main messages of my dissertation is that this approach is not future oriented in the sense of sustainability (and in futures studies terminology), therefore, we must change this point of view to a less harmful one that still satisfies the owners' and the customers' needs.

By analysing the relevant planning documents of the public sector, and the interviews conducted with public associates in Székesfehérvár, I argued that public sector (including municipalities) could effectively support the transition of the economy to greener solutions (e.g., renewable energy sources), and they would also be open to cooperate with the private sector to search for the optimal solutions. Their experiences show, however, that even their supportive attitude change but little to move the companies' profit-oriented point of view to a more sustainable one. Note that municipal and governmental planning and development also follows the political cycles of 4-5 years, and that the green policy or even green political communication is sometimes only a result of international or social pressure (or hype), but not necessarily made happen, and this is also a barrier to the quick green transition. Consequently, **the decision makers of the public sector are also only slightly future oriented, though to a positive direction.**

The results of my researches show that if corporate and political (public) decision making would rely more on future oriented thinking and the involvement of stakeholders (by using participatory methods) – as opposed to profit orientation and robust financial planning –**, green solutions and renewable energies will spread faster and more deeply** both in individual use and in the energy system. Renewable energies, selective waste collection and recycling/reusing, and the long-term thinking are all key elements of the green transition, and **support the sustainable development** of the regions, nations and the entire civilisation after all.

The limitations and the uncertainties of the methods must not be forgotten, and should be handled in future research. Though it is indeed one of the advantages (and goals) of the integrated method system that the different methods mutually and systematically minimise the risks, the following threat factors are prevalent in this approach:

- not all the ideas were discussed in the ecological horizon scanning, and there was a significant standard deviation between the future statements' evaluations made by the ecologists and the futurists;
- there was a relatively low number of scenarios in the scenario survey method;
- the horizon scanning in Székesfehérvár focused dominantly on on-going trends, and no weak signals or wild cards were explored;
- in the stakeholder interviews, the most relevant actors regarding sustainability questions were represented (mostly public organisations and big multinational or Hungarian companies), but the SMEs were underrepresented.

A possible way to develop the integrated futures methodology is to avoid the above-mentioned uncertainties and reduce the risks, e.g.: retake the non-discussed ideas in the ecological horizon scanning, analyse further scientific literature, create more scenarios for the survey, new rounds of research in Székesfehérvár focusing on weak signals and wild cards, involve a broader spectrum of SMEs into the interviews. It is usually true to method systems that they can be developed by developing their elements or correcting the shortcomings and uncertainties.

The stability of the integrated futures methodology can be improved by the strengthened connections between the methods as well. The connections were shown on Figure 1 with sustainable strategic management in the centre. However, I concentrated on concluding and analysing the combined results of the methods instead of planning the intersecting points between the methods carefully. It will be useful in future research planning and method selection to identify methodological intersections which help the more goal-oriented and focused process of the entire research project not only at the analysis, but also during the research phase.

It is important to follow the future shaping activities of the stakeholders, and to take feedback into account. Thus, the integrated futures methodology can be enhanced also by involving the widest scale of stakeholders possible, and the potentially missing or underrepresented groups can participate in later sections or in repeated surveys. It is possible, of course, that a stakeholder group does not provide with useful information about its preferable or acceptable future because its members are not future-oriented enough (the individuals in the group don't want to think about their future, nor they are interested in it), then this is what should be reported in the research results. In my dissertation, this was the procedure in the horizon scanning in Székesfehérvár and in some cases in the interviews.

From futurists', politicians' and managers' point of view, the measuring of future orientation and future shaping behaviour is better if conducted repeatedly and done as a process than conducting only once. Repeating the research process supports the continuous development of the integrated system of futures methods, and it also makes it possible to monitor the changes in future orientation of the analysed

target groups. Besides decreasing the uncertainties coming from the errors of the singe use of a method, repeated research process have other advantages as well:

- exploring new needs, weak signals (bottom-up),
- keeping the consensus alive,
- continuous learning, and
- intervening of decision makers when necessary, mostly in a supportive manner (top-down).

Consequently, participatory research methods must be included in the integrated system of futures methods.

4 CONCLUSIONS AND SUMMARY

It is humanity's interest and a condition of the healthy and liveable future on Earth to realise sustainable development as soon as possible. Global warming and environmental pollution have numerous global and local effects, therefore, not only the nations and the international organisations are responsible for taking the necessary steps against those, but also the regions, settlements, communities. Indeed, local level actions for environmental protection cannot stop global processes on their own, but in case there are enough regions participating in green transition, it will cause a significant change towards sustainability on the planet.

Sustainable development is partly based on non-growth, the use of green technologies, and environmental protection directly. But this goes against the classical logic of economics that handles nature as a resource or a "landfill," besides, its main mission is to generate economic value (for the owners and the customers). Although environmental policy plays a considerable role in protection, and corporate social responsibility and business ethics mean an important step towards sustainability, still the green technologies and environmental-friendly industrial solutions are very capital intensive, and there are a very few companies which use these instead of maximising profit. This economic, social and environmental situation – we can call it a problem – can be solved only by holistic, multidisciplinary approach where both the individuals and the different entities of the economy and the society (communities, companies, decision makers, politicians) take a role. Starting from this point, I conducted a research where sustainable development is an important element of the future, and I aimed at identifying those factors which foster sustainability on individual, corporate and public levels, using a futures research approach.

Because of the comprehensive nature of the research, I reviewed many scientific literatures in the relevant fields to find the shared points. From the literatures of strategic management, futures field and environmental economics, I drew the conclusion that **future orientation and the involvement of the stakeholders are key elements in strategic thinking and in taking environmentally sustainable economic or social decisions**. It must be added that **to realise sustainability, it is also important from companies' point of view to handle natural environment not only as a resource, but also as a special stakeholder**. Thus, the first research question in my dissertation is solved.

By synthetising the theories in the literature, I discovered that it is a common goal of the actors – individuals and decision makers – who are interested in sustainability to creating an acceptable, or rather a preferable future. But this preferable future has many elements, and I focused on those mostly which share common components with the sustainable future dimension. To achieve this, I analysed the conditions of formulating a consensual future among the different stakeholders.

The more significant activities for sustainability – such as the renewable energies highlighted in my dissertation – are capital-intensive investments that only a small portion of companies can afford. Even so, non-professional and professional stakeholders can participate in the transition in other ways. It is not an easy task to build a fruitful socio-economic cooperation so widely, but strengthening future orientation seems to be a promising approach by conceptualising the main steps toward a preferable future alternative. **The future oriented stakeholders can offer their cooperation, while the future oriented public decision makers (who are also stakeholders) can offer governmental or municipal support that may manifest as financial, professional, legal or other types of knowledge.**

The synthesis of the theories was as difficult to underpin as the finding the connections between the arguments in the literature. **Since I aimed to analyse the future of a wider group of social and economic stakeholders, I created and used an integrated system of methods based on different futures methods in order to get a complex yet understandable, and acceptable future vision. To make the research more practical, I chose Székesfehérvár and its region as a target place for the case study.**

To discover the events, trends and weak signals of the farther future, I conducted a more general horizon scanning where professionals of different scientific areas were involved, and a horizon scanning that focused on the social and economic challenges of Székesfehérvár where local stakeholders (small and big enterprises, public actors) were involved. These researches identified a wide variety of future elements, but with different results: while the professionals considered that sustainable development and growing energy demand will be important challenges of the future, the stakeholders of Székesfehérvár concerned almost exclusively the lack of skilled workforce in the region. Though from different angles, but both of these researches drew my attention to future orientation: the scientists were more future oriented because they actively engaged sustainability (and renewable energies) as reasonable topics of the future, however, the stakeholders of Székesfehérvár were less future oriented (and the representatives of SMEs were future shocked) because of the seemingly unsolvable employment problem that overshadowed any other issues, including environmental protection.

I used scenario surveys to unfold the characteristics of the wider range of non-expert stakeholders' future orientation. This new futures method was based on a questionnaire that contained business-as-usual and sustainable scenarios (which described briefly the life, the technology and the energy sector in the future) of the 5, 15 and 30-year future depending on the respondents' answers. The analysis showed that those who were initially future oriented kept their positive future orientation in all time intervals, but a growing proportion of respondents were optimist regarding the farther future. This result may indicate a stronger support towards the renewable energies, besides, it proves that statement in the

theoretical synthesis that future orientation correlates positively with sustainable development as a part of the preferable future.

I used both quantitative and qualitative futures methods to explore the renewable energy potential of Székesfehérvár. **The results of the quantitative analysis were in line with the conclusions of the development strategies and planning documents of the region, claiming that Székesfehérvár could benefit from the use of certain types of renewable energy.** Furthermore, the public and private interviews revealed that some typical green solutions are more-or-less widespread among the companies and the public institutions, mainly the ones which are relatively cheap or do not require significant workload or expertise. More advanced sustainable solutions can be found only at larger companies, but not everywhere: it depends on the corporate strategy – or in case of the multinational companies, the parent company's expectations – and the corporate social responsibility. It manifested in a circumspect waste management in some cases, the security of the workforce, or initiatives supporting local society in others, but the use of renewable energies was very rare.

It is promising for sustainable development and the formulation of the preferable future that the different stakeholders are open and willing to cooperate within and between the sectors regarding green solutions. Most of the contacted companies had (mostly good) experiences in the past, but these initiatives broke off or cut for various reasons. Actors of the private sector widely agreed that they would warmly welcome any support and guidance from the public sector. These statements above are the answer to the third research question.

A conclusion can be drawn from the research results – that answers the second research question – that future orientation must be enhanced in the decision makers at both the public and the private sector to put renewable energies, green economy and sustainable development into practice. A stronger future orientation would also imply an advanced strategic point of view that would join and effectively support all the processes above. The operations of the actors in the economy which follow the proper strategies would keep bottom-up projects alive, while the regional and local strategies would actively and practically foster sustainable development.

The social legitimation of the cooperation between economy and municipality can be reached by involving the stakeholders. **Non-professionals who are (mostly) future oriented and able to articulate relevant opinion consider that green transition is an acceptable, in fact, preferable element of the future, therefore, economic development of this kind may expect social support.** On the other hand, the participation of stakeholders may prevent the development of top-down projects – or rather their failure – which are accepted by the decision makers and follow a well-structured strategy, but do no fit the preferable future domain of the community and consequently would raise a considerable resistance or unwanted conflicts. This is the answer to the fourth research question.

In my dissertation, I proved from a scientific point of view that the future orientation of non-professionals, experts and decision makers contributes significantly to environmental sustainability, and the use of renewable energies may foster the creation of a preferable future for both the society and the economy along the principles of sustainable development.

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