THESIS SUMMARY

to the PhD dissertation entitled

Comparative Analysis of University Sustainability Initiatives

by **Mónika Besenyei**

Supervisors:

**Dr. Sándor Kerekes, professor, and
Dr. Ágnes Zsóka, professor**

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**Institute of Geography, Geoeconomy and Sustainable Development /
Department of Marketing**

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Table of Contents

1. Research background and justification for the topic

The individual and social benefits of education are extremely diverse. Knowledgebase (and culture, traditions, relations and organisational knowledge), which, together with the competencies can be the key to the success of a particular community (region, country), is not just an abstract concept but a significant economic factor.

Income is highly correlated with educational achievement (OECD, 2018). More educated people pay more taxes and contributions and receive fewer social benefits than the less educated. (Ma, et al., 2016) In addition, there is less risk of becoming unemployed among those with higher educational achievement. (Bonin, 2017)

Higher education is also one of the economic sectors that can be named as a winner of the fourth industrial revolution. Researching the different aspects of higher education is experiencing a golden age. The situation and perception of higher education institutions are favourable at the social level and the responsibility of the universities is also significant due to the appreciation of knowledge. The institutions are operating with different educational offers and ambitions in countries with different social, economic and cultural backgrounds, yet they must become more competitive in the fight for the best students and teachers due to globalization. Despite the many differences, there are common traits that characterize all higher education institutions and there are initiatives with identical objectives although their implementation may differ. Sustainability is a process of transformation that is a challenge for all higher education institutions, regardless of academic profile, culture or economic conditions.

In the process of becoming an intellectual (educated leader), higher education is usually the last stop before entering the labour market. This is the environment where the knowledge acquired so far is synthesized and put into context. With luck, the previously acquired knowledge elements are put in their place while the approach of the institution concerned exercises a decisive influence on the students' approach and often their subsequent career as well. (Gorman, et al., 1997)

One of the biggest tasks of the 21st century is to manage the challenges related to sustainable development. "We have only one globe with which to experiment." (Ostrom, et al., 1999, p. 282.) In addition to scientific research, the education system plays an important role in raising awareness among the young generation by integrating the knowledge required for sustainability and developing responsible thinking into the curriculum. (Csáfor, 2008) Even if we do not want to be too strict, we have to say that the responsibility of the leaders, the intellectuals and higher

education is also important. Although transferring the knowledge on sustainability and education for sustainability are the duty of not only the universities, it is inconceivable that higher education does not play its part. (Khalili, et al., 2015), (Sedlacek, 2013)

My research required the examination of three large areas (Figure 1). In processing the literature, I examined the linkage of the sources found in the different areas to the topic of the thesis.

Figure 1 Areas of research on which the dissertation is based
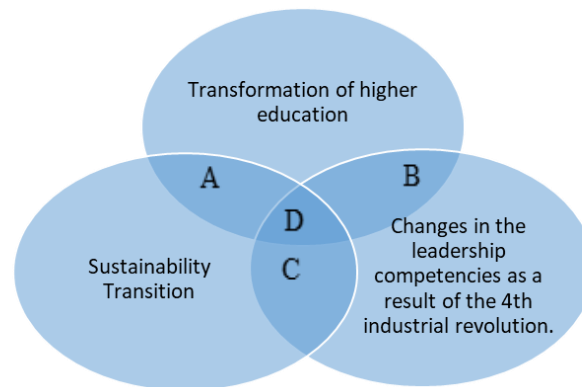
Source: Edited by the author.

Previous research has mostly examined the interrelation of two of the above areas (see the areas A, B and C). Thus, the framework was provided by these empirical data. On the other hand, a major added value of my thesis is the fact that I examined the correlation of the three areas, that is, sustainability transition, the transformation of higher education and changes in the leadership competencies, simultaneously (D). The fulfilment of the hypotheses formulated for the research question (Table 1) was examined in the course of empirical research, while questions 7 and 8 were answered based on the literature.

Given that the subject of my thesis is the examination of the correlations of the transformation of higher education, sustainable development and leadership competencies, I will present their background and evolution, as well as their impact on economic and social development in the theoretical chapters, first individually and then taking into account their effects on each other.

In examining the triple correlation, I will study if higher education, transforming as a result of the sustainability transition, is able to respond adequately to the development of the competencies required for leaders. Considering that one of the primary forms of the economic contribution of higher education is the provision of highly skilled human resources, a key issue is the relationship of the instructed skills with the competencies that are necessary for the suitable management of current or upcoming challenges.

2.   Methods applied

I set as the aim to study the triple-section of three major thematic areas. To be able to do this, I will make the study first on the macro level, meaning, that I will present the current trends that take place in each thematic area and have an effect on each other, thus shaping the boundaries and the contents of the triple section. Then, I will narrow the investigation to the level of higher education (using the finest universities based on international academic rankings and, as a concrete example, the National University of Public Service, as the basis). The narrowest dimension is the examination of individuals. The competencies and attitudes were mapped by using qualitative and quantitative methods. Examining the topic on a level-by-level basis has allowed a gradual understanding of the sustainability aspects of higher education in the deeper layers.

During the research, I applied the following research methods in the relations shown in Figure 2 to answer each question:

- A questionnaire survey among the citizens of the National University of Public Service,
- Q methodology research among the senior staff at the National University of Public Service,
- International survey filled by voluntary respondents,
- Text analyses, comparison of sources of literature with respect to sustainability and education, as well as competencies.

Figure 2 Research process
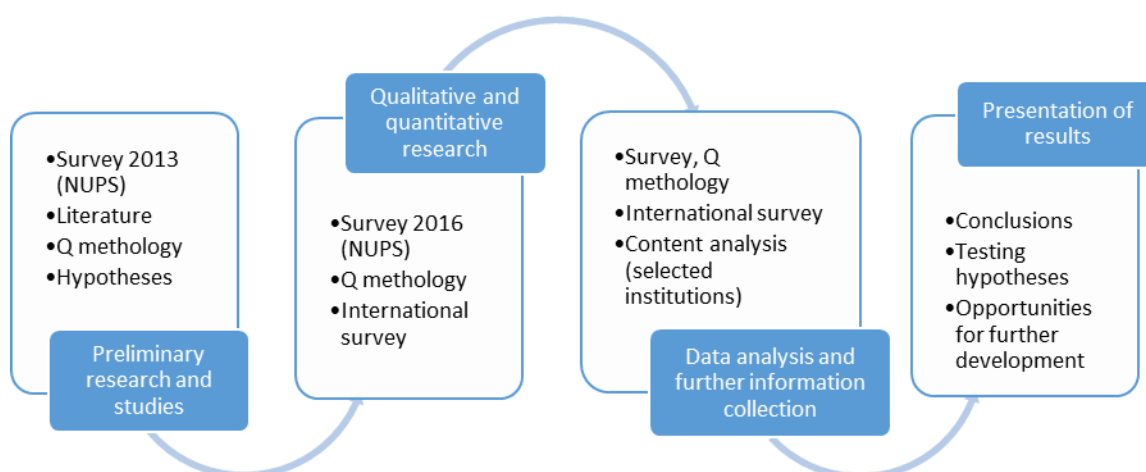
Source: Edited by the author.

2.1. Questionnaire survey (NUPS)

The target group of the online questionnaire survey was the teachers, students and administrative staff of NUPS, that is, all university citizens. Using this method, I wanted to map the opinions, attitudes and existing knowledge of the participants regarding sustainability, sustainable development and sustainable university.

Following a multi-round consultation and building on the experience of similar research conducted in 2013, I tested the questionnaire both before and after its online programming to understand the length of the questionnaire and the clarity and adequacy of the questions and the possible answers. After the testing, I distributed a link to the finalized and programmed questionnaire, accompanied by an explanatory letter. During the time available for filling, I sent two reminder emails to those concerned. The evolution of the number of fillings clearly indicated the dates when the reminder e-mails were sent.

The questionnaire, comprising approx. 60-70 questions (which also depended on whether it was filled by teachers, students or the administrative staff, as different questions related to each topic were asked along the branches), was filled by the NUPS students and employees voluntarily and anonymously. 614 fillings, which can be evaluated and analysed, were received by the end of the period available for filling. Although it was possible to enter personal data if someone wished to express his willingness to cooperate in subsequent periods, less than 10% of the respondents lived with this opportunity.

With regard to the method used, it is important to note that the research cannot be considered representative. It is assumed that those interested in the sustainability themes more than the average or more committed to the organization were over-represented among the respondents. Due to the above, the data can be interpreted with caution taking into account the relevant number of elements and should be regarded as high-end and low-end estimates according to the research question.

The questionnaire consisted of five major blocks.

1. Personal data
2. Knowledge about sustainability
3. Training experience
4. Environmental awareness at home and on the campus
5. Suggestions and opinions on sustainability

Based on the answers of the respondents, the questionnaire contained branches that ensured that everyone answered only the questions adequate to him. It was asked, in the case of the students, if they had sustainability courses and how satisfied they were with them, respectively, in the case of the educators, if they held lectures on such issues, how interested the students were in this and if there was any obstacle to incorporate sustainability topics in the curriculum, etc.

Having evaluated the responses to the questionnaire, I carried out the encoding by using the SPSS programme.

2.2.   Use of the Q methodology (Analysis leadership attitudes at NUPS)

The Q-methodology was developed by the British psychologist William Stephenson (Stephenson, 1993) and is mainly used in psychological research and to determine the various opinion groups. More and more domestic application examples are available, such as in healthcare (Gulácsi, et al., 2011), psychology (Suplicz, 2012), marketing (Hofmeister-Tóth & Simon, 2006) and the research of environmental awareness (Nemcsicsné Zsóka, 2005). The research results of the Q-methodology are quantified and can be analysed by statistical methods. However, this is fundamentally a qualitative method because it is not intended to formulate universal findings, so classifying the participants into test groups based on representation criteria is not necessary and their cardinality may also be low. So, it is not necessary to have a large number of fillers against the number of statements (between 40 and 80) (Watts & Stenner, 2005) (Coogan & Herrington, 2011).

The research section conducted by using the Q methodology is designed to assess the attitudes of the university officials in decision-making positions and how they see their roles. In addition to the general attitudes towards sustainability, I also examined the specific university experience on the subject matter of those I asked.

The survey was conducted among the management of the National University of Public Service (middle managers and those in higher positions), based on the list received from HR (110 persons). The survey was filled online on a specially programmed interface. The participants could reach the interface and fill the survey via a link sent by e-mail. As regards the leaders, as the target group, the advantage of the methodology was important, namely, that those asked could deal with the survey when time allowed. Filling the Q form was voluntary and anonymous (although it was possible to enter personal data). An advantage of anonymity is that the willingness to fill was greater, however, identifiability reduced at the same time.

Since the participants were informed about the person conducting the research both in the case of the questionnaire and the Q methodology test, they had the opportunity to personally turn to me with any issues. Indeed, this happened on a number of occasions while filling the Q form. Although I did not analyse the effect thereof, the fact that I asked them on such a topic was perceived as an internal stakeholder dialogue by the university citizens already in the preliminary study in 2013.

Anyway, it was an important experience that research has shifted the institutional integration of sustainability in the right direction.

2.3.   International survey

In addition to the research carried out at NUPS, I also conducted an international survey. The international survey aimed not only to assess foreign universities but also those that operate in Hungary and already have a significant track record in the implementation of sustainable development. I tried to address the most possible universities via several networks (STARS, Sustainability Transitions Research Network[1], HuSUN[2]).

The more detailed analyses aimed to examine the maturation process based on the questionnaire. The results may provide answers to the questions as to why exactly these institutions have achieved outstanding results in the field of sustainable development. (Lozano, et al., 2015). I also tried to answer whether academic excellence is related to how the institution in question handles the issue of sustainable development.

The (English language) international survey asked about the main themes of the research conducted at NUPS, giving priority to the topics that are required to develop a successfully deployable sustainability strategy.

The 40 responses received were not suitable for making an analysis by using statistical methods, so I used them as an illustration for answering each research question.

I intend to continue the international questionnaire survey because I am convinced that a broader survey may provide information. I think that addressing the most excellent universities can, in particular, be useful, as analysing their example is an important pillar of my dissertation.

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[1] The Sustainability Transitions Research Network unites more than 1500 researchers who are interested in the sustainability transition. https://transitionsnetwork.org/

[2] HU SUN (HUngarian Sustainable University Network), is a forum consisting of students and volunteers, which aims to facilitate cooperation and exchange of experience among the local youth organizations working on making their own communities sustainable. It was established by 4 domestic institutions (BME, CEU, ELTE, SZIE) in October 2014.

2.4.   Analysis of the literature

The skills needed to become a successful leader are not eternal. Although there are elements that are needed for efficiency in all historical periods, economic sectors and organizational life cycles, most of them are dependent on the external conditions in which the organization or country concerned is functioning.

In the last phase of the research, I tried to analyse the indirect future effects that can be triggered by a university which is integrating sustainable development into more and more levels of its operation. These effects are also interesting because they occur as "side effects" of a kind and, taking the global trends into account, I hope to be able to prove that they are indeed very logical consequences and not coincidences only.

There are already some studies on that the capabilities and competencies that have an exclusive position in terms of sustainability will benefit in the future and make the labour market outlooks more stable.

While analysing the literature, the main areas that I subsequently compared with each other, have become distinct. This is nothing else but the competencies that can be developed by the university sustainability initiatives and the skills addressed as the key competencies of the future. For example, according to a study analysing the labour market, the application of collective experience, social intelligence, adaptive thinking, new media literacy, transdisciplinarity, creative thinking and the capacity for virtual collaboration (Davies, et al., 2011) are important components of the kit successful future employees and leaders will need. The competencies that come in the forefront of the sustainability transition, such as the ability for interdisciplinary cooperation, susceptibility to social issues, holistic system approach and creativity (Wiek, et al., 2011), show towards a similar direction as the competencies of the future.

Based on a review and comparison of the available resources, I studied how much overlap is shown by the key competencies of the future with the competencies that are needed to implement sustainable development (at the personal and social levels) so they can be improved through education for sustainability.

Any competency can be developed in some way; the question is how much energy these developments require and what tools are necessary for a successful implementation, which greatly depends on whether the competence is functioning at the conscious or the subconscious level.

Based on the iceberg model, knowledge and skills, which are most obvious to the individual and his environment, are at the conscious level, while competencies like social role, self-image, character and motivations are at the subconscious level. Table 1 shows that the competencies that are essential for success in the future are all located in the part of the "iceberg" that is not visible (subconscious level).

Table 1 Competencies of the future and the iceberg model

Giles (Giles, 2016)	Bach (Bach, 2017)	WEF (WEF, 2016)	Iceberg model (Spencer, et al., 1990)
Hight etical and moral standards			Traits
Goals and objectives with loose guideline		Managing people	Social role, values
Clearly communicated expectations, Communicates often and openly	Collaborative approach		
Flexibility to change opinion		Creativity	Traits
Nurtures growth	Forward-looking, future-oriented		Self-image
Open to new ideas and approaches	Globally oriented and culturally tuned	Critical thinking	Traits
"Shared successes and failures" mood	Team building	Alignment with others	Social role, values
Self-improvement	Technical competence	Solving complex problems	Self-image
Safety to trial and error		Emotional intelligence	Traits

Source: Edited by the author.

It follows from all this that, in addition to education and the possession of knowledge, a number of competencies are required for successfulness, in respect of which possessing the latest information is not sufficient. I am addressing in the study the relevance of competency development in higher education, including the realisation of the sustainability transition. I will examine the possible effects thereof in the context of future competencies.

3. Results of the thesis

Sustainable development and the environmental, economic and social phenomena now appear in everyday life and play a role not only in strategic decision-making. Ordinary people can also access information of adequate quantity and quality on the subject if they are open to it.

Education plays an important role in achieving sustainable development by deepening the necessary knowledge and hopefully the development of required competencies. Higher education plays a key role in this area because it has a direct connection to the labour market so that the effects can materialise in the short term. Beyond the social responsibility of the academic institutions, university education has an impact on the social processes at the individual level as well.

When designing the research, I relied on several methods (Q methodology, questionnaires, literature and text analysis) in order to get answers to my research questions. To analyse the functioning of the universities and, thus, the transformation of sustainability, it is essential to come to know both the operation of the organisation and the attitude of the main stakeholders. Taking into account the social (including the individual) aspects is one of the pillars of the sustainable development considerations in addition to economic sustainability and the environmental considerations. Taking into account the needs of the stakeholders is a key indicator of socially responsible operation (a condition for sustainability). "... we indispensably need factual information and continuous exchange of information because the consequences will be not only individual but also collective." (Barát, 2012, p. 48.)

The research focused on three main areas. First, I surveyed the views and attitudes of the university's internal stakeholders, how actively the leaders are committed to the implementation of the sustainability transformation and I was also focusing on the importance of integrating the sustainability topics into education. The second major area was the comparison of the external stakeholders' expectations and the factors motivating the implementation of the transformation. I studies whether there is a correlation with excellence and if the institution has integrated sustainability. Finally, I examined, in the context of higher education and the labour market, if the introduction of sustainability and the competencies that can be acquired in university studies constitute an advantage for graduates. I examined utility from the point of view whether the graduates with their knowledge and competencies can be successful amid the changes triggered by the fourth industrial revolution as well. The expected

success is related to what extent they possess the competencies essential for their careers after obtaining their university diplomas.

3.1. Research questions and hypotheses

Table 2 summarizes the research questions and related hypotheses.

Table 2 Research questions, hypotheses and methodology

Research questions:	Hypotheses
1. Do higher education leaders understand the importance of sustainable development? 2. Do they understand the importance of their own role and are they willing to take a proactive role in the transformation process?	1. **The existence of a university sustainability strategy reflects the commitment of the leadership.**
3. What actions were taken by the universities that were the first to take the road to become sustainable? 4. What are the characteristic patterns of achieving university sustainability?	2. **An essential component of integrating sustainability at the institutional level is the conscious integration of the topic of sustainability into education.**
5. What are the typical catalysts and obstacles? 6. What is the reason for an institution's devoting resources to introducing sustainability?	3. **The sustainability of higher education institutions has become an element of excellence today.**
7. What can a university win in the long term by integrating sustainability? 8. What can be the social benefit of the sustainability transformation of universities?	4. **A legacy of the integration of sustainability: marketability of the skills that can be acquired.**

Source: Edited by the author.

As shown in the table above, I formulated four hypotheses on the basis of the eight research questions, which I tested based on the methodologies described above during the research. Although I usually applied several methods to verify each hypothesis in order to properly support the result, there was a typical method in each case, which was the backbone for testing the hypothesis.

In the case of the first hypothesis, it was the Q-method because it is the most suitable for revealing the most hidden motives and filtering out the biases caused by common talk.

In the case of the second hypothesis, I mainly relied on the NUPS questionnaire survey.

As regards the third hypothesis, my methods were the studying of international documents and analysing the data of the most distinguished universities.

In respect of the fourth hypothesis, I analysed the results of relevant articles that can be found in the referenced journals.

3.2. Results of the testing of the hypotheses

During the examination of the **first hypothesis**, I analysed if the sustainability strategy, which is often in place, means that the leadership of the university is committed to sustainability transformation.

The survey conducted at the National University of Public Service refutes the first hypothesis. The research showed that the existence of a strategy does not reflect the commitment of the leaders if commitment involves assuming a leadership role in this area by the university citizens.

It can be declared based on the Q-method analysis of NUPS that although the leaders consider the topic of sustainability important and have the relevant knowledge, they do not intend to take the initiative.

We can establish based on the data analysed during the examination of the **second hypothesis** that the appearance of sustainability in education (both vertically and horizontally) reflects the stakeholders' expectations. The institutions that have already started working on the transformation have implemented the integration of the topic of sustainability into education, mostly as one of the first steps.

So, it can be stated that the second hypothesis was confirmed and that integrating the topic of sustainability into education is an essential component of the institutional level integration of sustainability.

This does not mean that integration into education does not run into difficulties. As seen from the results of research conducted at the National University of Public Service, although the instructor and student colleagues support the principle of integrating sustainability, a bigger share of them is opposed to its appearance in the courses. It is important to note also that its

appearance as a course in education is considered a less efficient method for developing sustainability skills (see Figure 3). This result also raises the question what tools, other than courses, can lead to success that if there is a demand for integrating the knowledgebase and developing the skills.

Figure 3 Impact of the various factors on the students' culture of sustainability
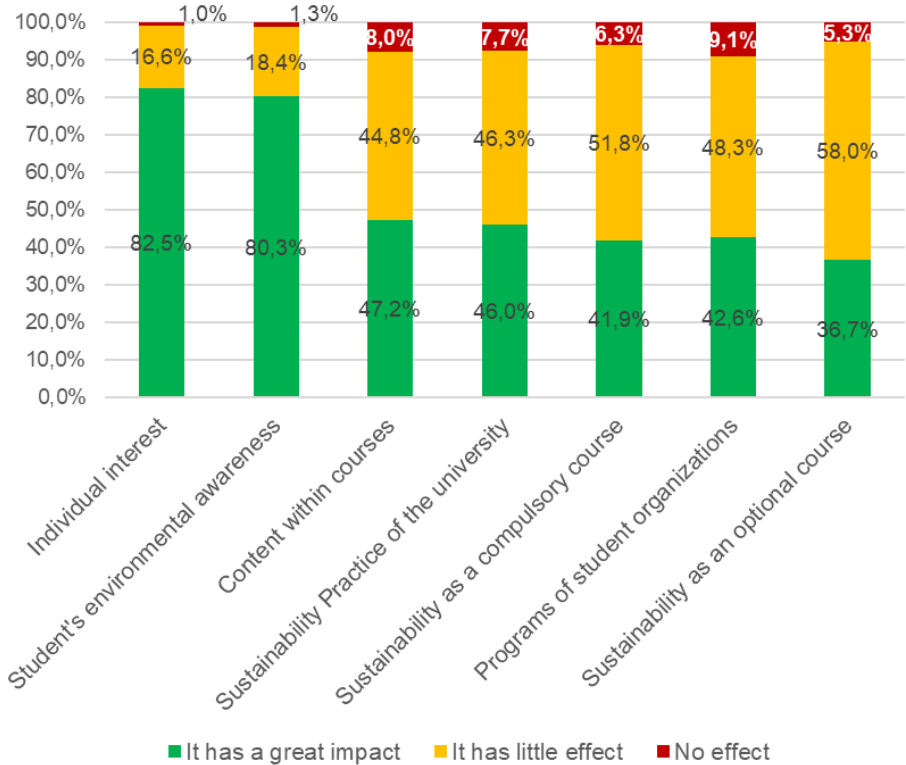
Source: Own research (NUPS questionnaire).

In the context of the **third hypothesis**, I examined the correlation between academic excellence and sustainable development. In doing so, it has been established that the institutions at the top of the university scientific rankings have integrated the sustainable development issues at the strategic level. The process goes back several years and sustainable development has been treated as a priority by these institutions from the beginning of the 2000s. Currently, there are both initiatives operated on the campuses and bustling sustainability life at the level of communication and the social media in all universities under examination.

The development, namely that the major higher education ratings (such as AACSB, EQUIS and AMBA), as external stakeholders, have also reacted to the global challenges and laid a strong emphasis on the issue of the institution-level integration of sustainability, is motivating for the institutions that begin the process now, respectively, reassuring for the other institutions.

It can be stated that excellence is associated with the institutional integration of sustainable development (as we have seen in the example of the best universities). Supported by this and the external stakeholders' expectations, those striving for excellence are reinforced in the integration of the topic of sustainability.

In examining the **fourth hypothesis**, it was confirmed that the two sets of competencies (sustainability and future success) show a large overlap in terms of the content. The sustainability competencies form a significant part of the future competencies found in the literature analysed in the research. That is, skills can be developed and consolidated in the students through the development of sustainability competencies that greatly contribute to their success in the future, regardless of the science area.

The analysis also shows that certain features of the fourth industrial revolution enhance the sustainability competences becoming "mainstream". Some sustainability competencies that are now concepts of common theme belonged to the topic of the so-called "alternative" economic approach even 20 years ago (e.g. welfare, ecological footprint, ethical corporate governance). The spread of the sustainability concepts is also due to that "big data", which has become universal as a result of the fourth industrial revolution, helps the scientists integrate a long-term perspective and allows for the creation of more accurate and reliable forecasts.

Due to its nature, sustainability is a "long-term" concept, as it makes sense to talk about sustainable development only in the long term. Extending the time horizon for planning puts emphasis on new aspects that could not be interpreted in the short term. And this confirms the result that the competencies of the future (being, obviously, a concept which requires long-term planning) show considerable overlap with the competencies needed to achieve sustainable development.

Figure 4 Competency containment conditions
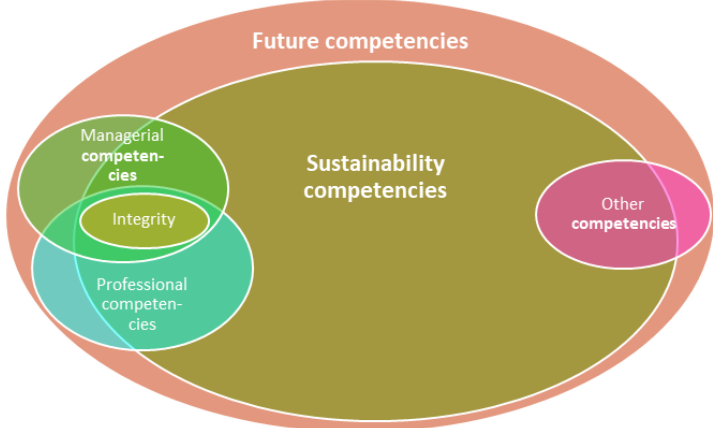
Source: Edited by the author.

The figure is based on data from the literature examined. The competencies that are not part of the sustainability cluster fall outside it only conditionally. It cannot be said about any of the listed competencies that it has nothing to do with sustainability, but the sources processed in this research have not mentioned them.

4.   Summary of conclusions

Based on its historical role, higher education has the moral obligation to lead the society towards sustainability. Sustainability transformation is justified, *inter alia*, by the expectations of the students (it is now a criterion for selecting the institution) and employers' preferences (they are looking for graduates holding sustainability competencies). (Waas, et al., 2012)

My research proved that the integration of sustainability into the curricula is one of the most common methods during the transition although the survey conducted at the NUPS showed that the introduction of the courses may not be the most appropriate way to improve the students' skills related to sustainability. Nevertheless, there was a consensus that the topic of sustainable development should be treated as a priority and that sall students should have an understanding of the fundamentals of sustainability and its important relevance in terms of their professions.

Further research is recommended to investigate how teachers can be better involved in the transformation process. It can be a critical factor both in terms of the introduction of new methodologies and the course contents that the teachers attach adequate importance to sustainability and have a clear view of the sustainability aspects of their own areas.

Given the flexibility of the universities in the field of the educational content and recognizing the importance of redesigning the teaching materials, this is definitely one of the areas where we should start integrating sustainability.

Universities are now institutions to be interpreted primarily in the international context. An increasing share of scientific and technical cooperation is implemented together with partner institutions in other countries. The pace of scientific development and globalization also require international cooperation. Sustainability matters, just as much as the students and science, do not stop at the national borders. So, while all universities aim to achieve excellence, the integration of sustainability has become one element of the steps taken to achieve this goal.

Sustainability is not just about knowledge but also about attitudes, emerging habits and competencies. The existence of knowledge does not induce changes. To implement sustainability, a number of skills are required beyond knowledge, such as cooperation, empathy,

future orientation or even responsibility-taking. It is also the social responsibility of the universities to train citizens and an intellectual elite who are empowered with the skills necessary for the implementation of sustainable development.

Beyond the social mission, the responsibility of the universities towards the students also lays the foundation for the success of the graduates in the labour market. Identifying and developing the required competencies are also particularly important as it becomes more common for the employers to define the ideal candidates along them. Over and above the fulfilment of these, as well as professional knowledge, competencies typical of entrepreneurs, such as innovation skills, risk-taking and proactive approach are also required to cover the road to success. (Szegedi, et al., 2016)

Thus, in addition to the delivery of technical knowledge, attention must be paid to the expectations of prospective employers, namely, that the graduates should have more useful competencies that will help them with becoming useful and effective employees.

The analysis of the competencies should form the subject of further research. Including additional literature may shed light on the missing links and help weight the individual competencies.

I consider it one of the most important results of the research that, having placed the higher education integration of sustainability in a new context, I proved that such a transition not only supports sustainable development but also improves the education and, thus, institutional quality of the given institution through the development of student competencies.

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