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THE CONTRIBUTION OF SYSTEM CHANGE TO THE ACHIEVEMENT OF SDG 4:  
STRENGTHS, WEAKNESSES AND KPIs OF THE METHODOLOGY

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## **Abstract**

System change is newborn methodology focused on the connections of the social systems to tackle wicked problems. Among the SDGs, this thesis focuses on education quality and the contribution of system change to its achievement. The case study of ICF, about education and disabilities, is analyzed through a qualitative methodology and semi-structured interviews. After a double-coding process and the analysis of the outcomes, four key elements of contribution are reported, as well as of strengths, weaknesses, and KPIs. To conclude, the analytical answers to research questions are given, the main limitations of the thesis are highlighted, and further research suggestions are presented.

**Keywords:** *system change, system transformation, system thinking, education quality, SDG 4, complex systems, sustainability, SDGs, disability, social entrepreneurship, non-profit organizations.*

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## **1. Introduction**

System change is the methodology that will help achieve the 2030 Agenda goals. In fact, the transformation that could lead to the accomplishment of the SDGs must start from the transformation of the system itself, where the problems related to the goals co-exist. How system change can contribute to the achievement of the SDGs is an only partly unexplored topic of the literature, that tends to focus more on the theoretical aspects and benefits it could bring without many practical indications. Besides, the application of system change could be the way to accelerate the achievement of the 2030 Agenda, by putting pressure and relying even more on SDG 17 (partnerships for the goals).

Besides, system change is an innovative methodology that aims to tackle all the connections of the system maps of the challenges, transforming the systems from its foundations, in order to solve wicked problems, like the ones proposed by the Sustainable Development Goals (SDGs).

The SDGs are 17 goals set by the United Nations (UN) to be achieved by 2030. These were adopted in 2015 as a universal call to action to end poverty, protect the planet and ensure peace and prosperity. (United Nations 2020) All the countries of the UN signed the 2030 Agenda to set concrete, people-centered, and far-reaching targets that focus on three dimensions (economic, social, and environmental) in a balanced and integrated manner. (United Nations 2015)

Nevertheless, according to Green, at this pace, the SDGs will only be achieved in 2073. (Green 2019) In fact, most of the time, the problems addressed are not tackled efficiently and the lack of collaboration among countries is drawing back the progress. For SDG 4 (education quality) there is a consistent lack of data that does not let have a comprehensive overview of the situation. Therefore, I have decided to base my research on system change with the

contribution to SDG 4 as a fundamental background for the increase of inclusion and awareness towards the topic of disabled people.

Besides, disability is a serious challenge incorporated in several SDGs that needs to be tackled from different perspectives. Among the 17 goals and the 169 associated targets, disability is included in SDG 4, as it aims to guarantee equal education by building inclusive learning environments and providing the needed assistance for people with special needs; SDG 8, as it promotes employment and access to the job market; SDG 10, as it emphasizes on the social, economic, and political inclusion of disabled people; SDG 11, as it aims to create accessible cities and transport systems; and SDG 17, as it underlines the importance of the collection of disability disaggregated data and the monitoring of the progress for disabled people. (United Nations Enable 2016)

Education is the key for disabled people to get access to the job market. In fact, literature reports different correlations between education and disabilities, but what emerges from Bengtsson and Gupta is that disabled people with more than 8 years of education are more likely to hold a job. (Bengtsson and Gupta 2017) Kidd, Sloane, and Ferko also found the presence of a substantial wage rate difference between able-bodied and the disabled, of which only 50% can be explained by the differences in the productivity of the two groups. The large unexplained wage gap is considered difficult to interpret because of the current context and the low control for the impact of disability upon productivity. (Kidd, Sloane and Ferko 2000) Besides, it is reported by Taubman and Bartel that having a disability is correlated with lower wages, reduced working hours, and a lower probability to get access to the labor market. (Taubman and Bartel 1979) However, the reasons are related to different obstacles: physical and social limitations, as well as the educational system towards disabled people. On one hand, the accessibility barriers still play a role in the employment of people with physical disabilities (Church and Marston 2003), as well as prejudices and discrimination, which, according to The Arc, are the

main causes of unemployment among disabled people. (Forbes 2019) On the other hand, Sciulli et al. made emerge that there is a negative correlation between years of studies and years of unemployment. (Sciulli, Gomes de Menezes and Cabral Vieira 2007) Interestingly, it comes out that having some intermediate educational level reduces re-employment probability by 15-20% because firms tend to present low skills requirements jobs, that do not fit for people that have a medium study degree. (Sciulli, Gomes de Menezes and Cabral Vieira 2007)

Because of the abovementioned reasons, SDG 4 can be considered the most relevant goal linked to disability. As education is the basis for employment, the educational environment plays a crucial role in the increase of awareness towards inclusion. In addition, according to Bengtsson and Gupta, a better education system for disabled people would raise their job skills and encourage them to enter the job market. (Bengtsson and Gupta 2017)

The research question of the dissertation presented is then the following: *How does system transformation contribute to the achievement of SDG 4?* Also, this research question leads to two more: *What are the challenges and opportunities of the application of the methodology in the achievement of the SDGs? And what are the main KPIs to be used to evaluate the impact of system change?* To give an exhaustive answer to the research question proposed, I used a qualitative approach based on the case study of Inclusive Community Forum (ICF). After interviewing three members of the project with a semi-structured format of 10 open questions, I double-coded the transcription of their answers, and then analyzed them to highlight the main key elements of the contribution of system change to the achievement of the SDGs.

ICF is an initiative of the NOVA SBE university dedicated to people with disabilities that aims to promote a more inclusive community. Since it was created, ICF has focused on two main topics: employability and education. The mission of the project is a call for the community's participation in the development of initiatives to remove obstacles for the disabled, while the vision is the one to be the driver for a more inclusive community where

people with disabilities can conduct a normal life. (Inclusive Community Forum 2021) Furthermore, the values are inclusion, equity, cooperation, and innovation. (Inclusive Community Forum 2021)

In April 2019, ICF started applying system change to the topic of education with the goal to “strengthen the empowerment of people with disabilities in working life”. (Inclusive Community Forum 2021) The intention was to develop solutions for the community to improve the current situation and to do so, system change methodology was implemented under the guidance of Professor Silvia Herrero. This allowed the community to be involved in the development and analysis of the current situation, and to design and implement solutions in the field. (Inclusive Community Forum 2021)

The analysis of this case study made strengths, weaknesses, and KPIs of system change arise. The outcome of the research contributed to the literature by pointing out four key points that support the application of system change to the field of SDG 4 only, but that could enlarge the research for its application to all the SDGs and fasten the achievement of progress towards wicked problems in general.

The following dissertation is divided into four parts. The literature review covers all the aspects already treated about system change and its correlation with the SDGs, including the importance of system thinking and complex systems. Furthermore, the methodology and data collection present the information gathered and the way it was organized and coded before the analysis. In this third step, the outcome of the interviews was investigated and applied to the general context of education to give the main key points of the contribution of system change to the achievement of SDG4. When drawing conclusions, the main limitations of the dissertation are highlighted, as well as some hints for further research.

## 2. Literature Review

### 2.1 System Change and the SDGs

Even though the topic is quite recent, there is a lot of literature about system change. In fact, it first became a mainstream subject in the field of sociology and complexity, and then started being applied to a broader variety of academic areas. It takes time to understand how this methodology can be applied to each field, but it seems very versatile for all complex problems. Besides, the literature about theoretical aspects of system change is very deep, as the topic started spreading in the 1980s. However, the practical implications find less space in the literature and are more recent. Stroh was one of the first to give concrete indications about the implementations of system change in real life, while others before were more focused on the effects of collaboration and multi-stakeholders collaboration in general. Besides Stroh, most of the practical contribution was given by Meadows, Ehrlichman, Sawyer, Spence, Kania, Kramer, Gopal, Pattberg, and Widerberg.

Meadows said that “a system is an interconnected set of elements that is coherently organized in a way that achieves something. If you look at that definition closely for a minute, you can see that a system must consist of three kinds of things: elements, interconnections, and a function or purpose.” (Meadows 2008) System change, also known as system transformation, has then been defined in different ways during the past years. However, the definition of Ashoka et al. seems to be the most appropriate and complete:

*“Addressing root causes rather than symptoms by altering, shifting, and transforming structures, customs, mindsets, power dynamics and rules through collaboration across a diverse set of actors with the intent of achieving lasting improvement of societal issues on a local, national and global level.”* (Ashoka,



Catalyst 2030, Co-Impact, Echoing Green, McKinsey & Company, Schwab Foundation, Skoll Foundation, SystemIQ 2020)

This definition highlights the importance of the collaboration of a diverse set of actors in order to achieve societal goals on different levels, which, in this case, is going to be identified as the SDGs. (Catalyst 2030 2021) It is also interesting to notice that the importance of ‘lasting improvements’ is pointed out, as system change aims to bring modifications in the long-term perspective, always keeping the eye on a broad setting as national or worldwide.

Moreover, systems are defined by Buckley as “a complex of elements or components directly or indirectly related in a network of interrelations of various kinds, such that it constitutes a dynamic whole with emergent properties”. (Buckley 1998) Because of that, a system is, by its nature, complex. Furthermore, complexity is a hard term to be defined and it comes from the Latin term *complexus*, which, in turn, comes from *cum*, which means ‘together, and *plècto*, which means ‘twisted’. Furthermore, complexity originally means ‘twisted together’, or ‘entwined’ and it is defined by the Oxford Dictionary as “the state of being formed of many parts; the state of being difficult to understand”. (Oxford 2021)

The first kind of complex systems were identified by Talcott Parsons (1902-1979) and were social systems. These should be analyzed in terms of three logically independent, but also interdependent, variables: the distinction between the structural and the functional, the distinction between equilibrium and change, and, lastly, the hierarchy of relations of control. (Parsons 1991) On top of the social systems, many more complex systems challenges were then identified during the following years. Climate change, environmental issues, food insecurity, gender inequality, health care, unequal education, and the other problems addressed by the SDGs are all examples of large-scale complex systems challenges. (Kuenkel 2017) These are problems that no one deliberately created, no one wants to persist, but they persist, nonetheless, because they are intrinsically systems problems. (Meadows 2008) They are also called ‘wicked

problems’, defined as “complex social policy problems that societies face which cannot be definitely described and do not have definitive and objective solutions”. (Zivkovic 2018)

Many of the problems that system innovation aims to address are complex, or wicked by nature, and, so, they lack a closed-form definition. (Hervieux and Voltan, Toward a systems approach to social impact assessment 2019) Furthermore, a key success factor for the social enterprises that try to tackle these challenges is “the encouragement of new network connections and social experimentation as a way to generate and share informational differences”. (Goldstein, Hazy and Silberstang 2010) Nevertheless, it is always hard to attribute big impacts to one organization only thanks to the number of interconnections with other contributors. (Goldstein, Hazy and Silberstang 2010) In fact, addressing these challenges means taking a systemic approach to leading transformation change, and it involves a shift in ways of thinking, acting, and enacting power. (Kuenkel 2017)

System change relates to system thinking, a new of processing information that differs from conventional thinking for the way it forces to see reality as an intricated network of connections. It is defined by Stroh as “the ability to understand the interconnections of the system in such a way to achieve a desired purpose”. (Stroh 2015) It is the way of processing information that makes the purpose of the system understandable, emphasizing responsibility and empowerment. Furthermore, thinking systematically impacts change through the motivations it gives to people by making them realize their role in the challenge map; catalyzing collaboration; focusing on the key connections of the problem, and stimulating continuous learning. (Stroh 2015) Even though system thinking can be applied to both small and big challenges, it is mainly used to tackle chronic problems, when stakeholders have difficulties in aligning their efforts, when the short-term efforts are higher than the long-term ones, when people are working on a large number of initiatives at the same time, and to promote more efficient solutions for continuous learning. (Stroh 2015) Even so, according to Paul Schmitz,

collective impact can better be implemented to enable leaders to overcome the challenges that lead to their success, to encourage organizations to have a wider perspective of the challenge, and to engage the community in problem-solving. (Schmitz 2015)

To implement system change, all individuals need to become system thinkers. In fact, system thinking needs to be acknowledged before being implemented and it means tempting to view system thinking as a mental discipline, but also the emotional, physical, and spiritual dimension of it. By combining all these dimensions, it is possible to develop a system orientation that leads to an effective application of system thinking. (Stroh 2015)

Compared to system thinking, conventional thinking is not suited to address complex causes, nor social and environmental issues, as the link between cause and effect is indirect and not obvious. (Stroh 2015) In conventional thinking, the roots of problems are identified outside the organization and the solutions are always short-term oriented, with every stakeholder tackling multiple initiatives at the same time. Conversely, system thinking focuses on indirect solutions starting from an internal change and involving the whole community to take part in the change. (Stroh 2015) The orientation is long-term, and the focus is on the optimization of the relationships to improve the whole system, and not just part of it. To do so, every individual addresses just one connection at a time. (Stroh 2015)

## **2.2 The arise of system transformation**

System change is a methodology that developed from system thinking and the idea of telling stories about problems. In fact, telling stories is a relevant part of system thinking, that consists of shaping the identity of the challenge and is a primary way of coding information in a memorable form. (Stroh 2015) This practice is very well used when addressing social issues, and it usually starts with a call for action, to then accuse of not making the desired impact, and finishes with pointing out the main connections of the system that are not being addressed yet.

(Stroh 2015) In order to be told, a system story requires three shifts in whoever is hearing it. First, people should move from seeing just their part to seeing the whole system; secondly, people should switch from waiting for others to change to be that change they want to see in the system; and thirdly, the focus should move from the individual elements to the deeper structure of the system. (Stroh 2015) An interesting example is the Indian one that uses the elephant as the challenge to be understood ([Appendix 1 – The Blind Men and the Elephant](#)). Different blind men touch the elephant in different parts and try to understand what it is, but as they do not have an idea of the whole, they cannot see the bigger picture and make assumptions only based on what they feel. (Stroh 2015) In 2012, Tafel also pointed out how the different opinions of the different men were affecting each other's, which is an example of how, sometimes, someone's work gets invalidated by the work of someone else. (Tafel 2012)

Meadows pointed out the main reasons why systems work so well and why it became such a popular topic in the literature. These are (1) resilience, which measures the ability for a system to survive in a mutable environment; (2) self-organization, which is the ability to learn, diversify, and evolve; and (3) hierarchy, also known as the aggregation of subsystems into larger subsystems. (Meadows 2008) Furthermore, Meadows pointed out that the reason why systems gained a foothold in the literature is that everything we think we know about the world is perceived through models, that have a strong congruence with the world itself and therefore are always used, but do not fully fairly represent the world. However, when thinking with models, it is possible to keep into account only a certain number of variables at a time and, so, because some aspects of the systems are not considered, we fall into errors. (Meadows 2008)

System change has great applicability in the approach towards leading transformational change for the SDGs. This is mainly due to its link with SDG 17 and collaboration among different sectors. However, system change can be applied to all the different fields of the SDGs, creating the system maps of all the issues, and trying to address all its connections. (United

Nations 2020) Moreover, the idea that partnerships have a role to play in global environmental governance is hardly contested, even though literature also sustain that the contribution of partnerships only arise under certain conditions. (Van Huijstee, Francken and Leroy 2008)

### **2.3 Practical applications of system change**

The practical application of system change is done through a four-stage process that is triggered by energy. According to Stroh, the energy for change is released by establishing a discrepancy between what people want and where they are. The creative tension that arises is the energy needed to change. Once the energy is created, people need to realize where they are, which is the top of the iceberg (Appendix 2 – The Iceberg) and create a common understanding of why the situation exists (system structure) and what is really happening (trends and patterns). (Stroh 2015) The process of understanding can be seen as a four-stage change process, where stakeholders build a foundation for change, clarify their current reality at all levels of the iceberg, make an explicit choice towards the approach, and begin to bridge the gaps. (Stroh 2015) The first stage is about developing a collective readiness for change through the engagement of key stakeholders, the establishment of a shared vision of the ideal outcomes and the current situation, and the development of people's capacities to collaborate with each other's. (Stroh 2015) The second stage is meant to help people face current reality through leadership, identify the people who are worth being interviewed, gather information, engage people in developing their own analysis, and promote conversations that stimulate awareness. (Stroh 2015) Moving on to the third stage, this is meant to drive people towards what they really want. So, the desired outcome is the identification of the benefits of the current situation and the costs of changing, the comparison of the two, and the statement of the vision. (Stroh 2015) The fourth and last stage helps people satisfy their creative tension and move from where they are to what they want. The specific tasks of this stage are two: (1) propose and refine high-leverage interventions with community inputs and establish a process for continuous learning.

Collaboration is the key factor behind the four-stage process, starting from a common understanding of the challenge. While the reasons for collaboration differ widely, the process is surprisingly consistent. Moreover, according to Ehrlichman, Sawyer and Spence, there are five types of activities: (1) clarifying the purpose, (2) convening the right people, (3) cultivating trust, as people work together most effectively when the relationships between each other are stronger and more authentic, (4) coordinating existing activities, and (5) collaborating for systems impact, such as addressing root causes and tackle systemic and structural issues.

Besides, Pattberg, and Widerberg (2016) identified nine conditions for successful outcomes when moving to multi-stakeholder partnerships. These are grouped into 3 categories: (1) actors, with optimal partner mix and effective leadership; (2) process, with stringent goals setting, sustainable funding, and regular monitoring, reporting, and evaluation to support organizational learning, and (3) context, with active meta-governance, favorable political and social context, and fit to problem-structure. (Pattberg and Widerberg 2016)

After Stroh, Pattberg, and Widerberg, also Gopal and Kania focused on the practical application of system change. Taking into account the four steps highlighted by Stroh, the main support comes from the existing trends and momentum in the system. They highlighted the importance to identify where the momentum and the energy lie, especially considering the long-term track records, and without forgetting the adjacent social issues. To do so, the stakeholders need to contribute to the process, share their views about the current situation, and employ the trend-mapping and tools. (Gopal and Kania 2015) To be consistent and effective, the approach needs to focus on the connections and interdependences of the system, or lack thereof, in order to address the single causes of the wicked problem. (Gopal and Kania 2015) The main tools of system change to do so are system mapping, which is the system visual depiction, and social network analysis (SNA), which is the process of investigating social structures with the use of networks and graphs. (Tyson and Bloch 2020) The tools need to be adapted and redefined in

time, as new connections and factors may arise. Lastly, the measure of lasting system change is crucial to have real feedback on the impact that is happening on the system, as well as incorporating the change in the internal transformation, increasing self-awareness, and changing organizational structures. (Gopal and Kania 2015)

Besides, Van Huijstee, Francken, and Leroy gave evidence of the advantages and disadvantages of system change. The main reasons for the application of system change do not only stand in the commitment of humanity, but also in the advantages of the methodology itself. In general, literature is very optimistic about the possibilities and advantages of partnerships and collaborations. First, the main advantage comes from the financial means, the creation of new markets for sustainability, and the input of the experience of the community, and the knowledge of the partners involved. (Van Huijstee, Francken and Leroy 2008) Also, the solutions brought by system change have higher creativity, innovation, and a broader view compared to linear solutions. (Van Huijstee, Francken and Leroy 2008) Moreover, there is also a gain in legitimacy or credibility for governments and companies working towards the challenge. (Van Huijstee, Francken and Leroy 2008) On the other hand, Van Huijstee, Francken, and Leroy identified also some risks connected with intersectoral partnering, as the one of blurring of tasks and responsibility, the legitimacy loss when working on topics that are traditionally not a field of expertise, and the cultural differences, which is a container term for the fact that organizations may have different backgrounds, languages, and approaches. (Van Huijstee, Francken and Leroy 2008)

Regarding the KPIs, according to Stroh, there are five steps for the impact assessment of system change. Once the system change methodology has been applied, its effects must be measured in order to proceed with adjustments and have feedbacks on the functionality of the process. To do so, Stroh (2015) applied system thinking to the evaluation phase of the process and identified five key steps. First, (1) setting realistic goals is the starting point for an optimal

valuation of the effects. They provide milestones to strive for toward realizing the vision and it is a recipe for stress and broken agreements, especially when complemented with (2) clear indicators and metrics. Furthermore, there should be a clear divergence between (3) short- and long-term goals, and (4) a clear look at the consequences along multiple dimensions, which include the short- and long-term effects, but also all the unintended repercussions on the system, both positive and negative. Lastly, the (5) commitment to continuous learning is fundamental to keep the solutions up to date with the evolvement of the system and its connections over time. (Stroh 2015)

In 2016, Chmelik et al. proceed with the investigation by identifying three categories of performance measures for assessing systems change. There are KPIs that focus on internal evaluation and are used for decision-making and operations, those that measure social impact and value, and those targeted at investors requiring a social return on investment (SROI). (Chmelik, Musteen and Ahsan 2016) However, in 2019, Hervieux and Voltan pointed out some limitations of the metrics for system change. In fact, the measures tend to focus more on the economic impact than on the real capacity of capturing nuanced effects on system change, which leads to poor estimates of collective effects and benefits. (Antadze and Westley 2012)

The existing literature presents a wide and deep amount of information about system change, complex theory, and the SDGs. The theory of this methodology is fully covered, and it has also been written about the practical steps for the applications of system transformation to real cases. Moreover, the literature about the SDGs is very exhaustive, as the goals became a real trending topic and acquired great approval. However, there is a gap in the literature concerning the contribution that the methodology could have on the achievement of the goals, as these are all related to wicked problems and complex situations. Because of that, with the following research, I would like to contribute to the literature examining possible further links between system change and its application for SDG 4.



### **3. Methodology and data collection**

#### **3.1 Methodology of the research**

To conduct the research, I used a qualitative approach based on the case study of ICF. The methodology implemented is a qualitative analysis with semi-structured interviews and a coding breakdown study. The reason behind the choice of a case study is defined by Cousin, that said that these aim to explore and depict a setting with an advancing understanding, having data collection and analysis proceeding at the same time. Furthermore, a qualitative approach was chosen as it is the most privileged methodology for system change approaches, as it is possible to observe in the work of Herrero (2013). For what it concerns the coding process, this is a simple and effective way to organize data, as demonstrated by Williams and Moser (2019).

Moreover, the three levels of the methodology have a reasoning behind their choice. In fact, the qualitative approach was chosen as the interviews were the best way to obtain a comprehensive perspective and a clear idea of how they faced the methodology. Furthermore, interviews produce qualitative data that needs to be analyzed and, even though it could be converted into a quantitative perception of parameters, fully analyzing the transcripts was the best way to avoid losses. Moreover, the reason for the choice of a case study is that I wanted to catch the stories behind the implementation of system change and I needed testimonies.

#### **3.2 System Change in ICF**

The case study of ICF was selected to be analyzed for different reasons. As it is a project from NOVA SBE, I had more chances to get in touch with its workers and have more than an interview to satisfy the requirements of triangulation. Furthermore, ICF is working in an academic context where system change is studied, embedded, and then applied, so that I could be sure about the careful application of the methodology and the fairness of its outcomes. Besides, the project about education was strictly connected with the SDGs, in this case SDG 4.

To apply the methodology of system change, ICF followed the steps mentioned in the literature. The diagnosis was made based on interviews and focus group sessions, where more than 60 people were contacted and 28 were gathered in four groups that related to the school environment (higher education, social institutions, and companies). Furthermore, the diagnosis lets create the systemic map of the issue, which is composed of different variables that relate to each other's (also called connections of the systemic map). This permitted ICF to find out which were the variables that most impacted on the empowerment of the education of people with disabilities and let the participants of the Inclusion LABs begin their work of developing possible solutions for each of the variables. (Inclusive Community Forum 2021)

I proceeded with three interviews, to best triangulate the answers, and with the data collection and treatment. More specifically, the interviews have been conducted with three different members of ICF (project manager, project coordinator, and project analyst), in a time range of two days, to assure the same circumstances, and with individual video calls to avoid anchoring bias and the influence of other coworkers. (The Decision Lab 2021) Also, the main reason for having three interviews is triangulation, which ensures the absence of subjectivity factor, and combined with a 'slow' interview technique, is proven to enrich data. (Jentoft and Olsen 2017) The interviews, to prior permissions, have been recorded and then transcribed to avoid losses.

The three participants were asked 10 questions about system change and its application and had no restrictions on time to answer (Appendix 3 – Interview Questions). Afterward, it was given all the participants time to add anything that they felt relevant and did not come out from the abovementioned questions, which was labeled as question 11. In the Appendix, it is possible to find the full transcript of the interviews (Appendix 4 – Interview with Project Manager, Appendix 5 – Interview with Project Coordinator, Appendix 6 – Interview with Project Analyst).

To proceed with the analysis of the data, the answers of the interviews were analyzed, and a double coding procedure was applied. First, the most effective parts of the answers were extrapolated from the dialogues and filled in a table to have a clear idea about the outcomes and to ease the comparison (Appendix 7 – Coded Data from Interviews). In fact, according to Sutton and Zubin, coding is the “identification of topics, similarities, and differences that emerge through the participants’ narratives and interpreted by the researcher”. (Sutton and Zubin 2015) Even though it is commonly made with research software, as there was only a sample of three, the coding process was done by hand on a hard copy of the transcript. Afterward, a second coding process was applied to identify the main key points of the answers and ease their comparison (Appendix 8 – Coded Data from Interviews 2). The responses were analyzed to capture both the explicit and implicit meaning, as, still according to Sutton and Zubin, the “interpretative phenomenological analysis is about getting underneath what a person is saying to try to truly understand the world from his or her perspective”. (Sutton and Zubin 2015)

The literature review covers widely and deeply the aspects of system change, but I wanted to contribute by bringing to light a more practical case. In fact, even though there is a lot about applications of the methodology, there is not much about case studies implementing it already. Moreover, I decided to do so because I think this methodology could enlighten new aspects coming from the voices of workers, people that switched to system change and had to deal with all its phases.

On the other hand, this approach presents limitations that I tried to mitigate in different ways. First, one case study only is taken into account, which may not be enough to make general assumptions for other possible cases. To overcome this limitation, I interviewed people with different and complementary roles to capture the wider picture possible and to catch the different perspectives about the application of system change. Furthermore, the analysis is very deep and tries to understand all the possible facets of system change.

## 4. Analysis

When analyzing the answers given in the interviews, it is important to consider the three perspectives of the three different interviewees as three different sources of the same case study. In fact, the three answers are not compared on a truthful level, but with an aggregated analysis. They are expressing different points of their roles and, therefore, contrasts among the answers are accepted and used as a strength of the triangulation outcome. On the other hand, the possible aggregation of answers, and so the alignment of the three perspectives, gives more emphasis to the common thoughts about the specific topic and make the statement more reliable.

Considering the type of methodology applied for the research, the analysis should be done taking into account the answers to every single question in order to avoid jumping to conclusions without a deep study of the backgrounds. Furthermore, the detailed analysis of each answer can be found in the Appendix ([Appendix 9 – Analysis of Answers](#)).

Besides, the strengths, weaknesses, and KPIs of ICF need to be moved to a general application of SDG 4. Regarding the strengths, system change can help achieve better results in education quality through its involvement of the community on different levels. In fact, to achieve better results it is important to have all the figures around education committed. Students, parents, educators, teachers, school boards, and other stakeholders need to be involved in the process of system change to achieve long-term results. Moreover, the challenges of the methodology involve a complicated and time-demanding transition for the education structures to a system change model, especially considering that the involvement of the government in many countries would slow the transitioning process, even when having a coordinator role. Furthermore, the complexity of the system and the time needed to implement system change in the business model are a weakness in the achievement of SDG 4. Lastly, the KPIs for SDG 4 when the methodology is implied could be given by the number the ratio of the projects implemented out of all the projects ideated, as well as the participants' satisfaction

about the experience in the project ideation. Moreover, the KPIs could include the effectiveness of the methodology by a comparison of the KPIs results of SDG 4 in an estimated normal context and in a system change scenario.

Concluding the analysis, according to the literature review, it is possible to see that the main contribution of system change to the achievement of SDG 4 comes from the possibility of collaboration on different levels towards education quality. The methodology made interesting points arise, that led to the surface of strengths, weaknesses, and KPIs of system change with application to SDG 4. In fact, the contribution of this process to the achievement of quality education would be extraordinary, creating long-lasting and effective results in all countries. It was useful to see how system change was put into practice on a daily basis with a social purpose, as this could contribute to the literature and inspire others to implement it. Therefore, this analysis helped to shorten the gap of the literature about the possible contributions of system change to the achievement of the SDGs.

Besides, system change can contribute to the achievement of SDG 4 in four different ways. First, private-public partnerships (PPP) play an important role in the collaboration among different institutions, both governmental and corporate ones. As highlighted before, ICF already works with 33 different types of organizations at different levels, and according to the research and analysis made, it is fundamental to create a link between the public and private efforts towards the achievement of the same goals. (Inclusive Community Forum 2021) In fact, the alliance between the private and the public sector that system change creates in the education quality achievement would have a strong impact on SDG 4, especially through the implications of governmental institutions and funds in private projects developed through system change processes.

Secondly, system change would contribute to the multi-stakeholders collaboration for ecosystem building and the co-creation of solutions among the different stakeholders of

education. As seen in the case study of ICF and from the data gathered from the interviews, the involvement of the community is the main benefit and added value of the application of system change for the solution of system problems. In fact, all the three interviewees pointed out how the engagement of the individuals strictly related to the problem in the development of the solutions leads to more concrete, more applicable, and more efficient solutions. Furthermore, the involvement of new systemic solutions would be the added value of the community in the development of projects that would benefit the achievement of SDG 4.

Thirdly, system change would lead to an acceleration of international collaboration that could provide an increase in the collection of data. As came out of the ICF KPIs analysis, the implementation of system change in the field of education forces the development of measurement metrics for progress and improvements. Besides, system change leads to a new way of creating data, which is crucial to compensate the lack of information about SDG 4, as reported by Cázarez-Grageda and Zougbede and the SDG tracker, where it is shown that more than half of the UN countries do not provide any data about education quality. (SDG Tracker 2021) Moreover, the collaboration on an international level through system change would force the involved countries to provide data about their internal situation and share it with the other UN countries. This would help to have a clearer and more defined view of the situation and therefore push towards the achievement of the fourth goal.

Lastly, the implementation of system change in the achievement of SDG 4 would also accelerate the achievement of other SDGs. The system map implemented by ICF for the problem of quality education to develop the diagnosis has connections in common with other wicked problems, such as income disparity, gender equality, and reduced inequalities. Consequently, the application of system change in different fields would have indirect positive effects on the achievement of other SDGs, by triggering a virtuous cycle that would accelerate the effects of the solutions to all the wicked problems tackled.

## **5. Conclusions**

### **5.1 Answer to the RQs**

The research presented gave interesting input when compared with the literature review in light of the research questions addressed. The strengths pointed out are all connected to the topic of collaboration and the benefits that come from working with the community and its involvement from an early stage of the process. In fact, compared to a regular approach, the stakeholders are playing an important role in the education quality development and strongly affect its result. The outcome is consistent with what was found in the literature, but the research does not highlight as many strengths as expected. This can be due to the short term in which the methodology was applied and the lack of confidence in the interviewees. In fact, it is possible to find a lack of faith between the lines due to the low experience.

Regarding the weaknesses of the method, the research was able to highlight interesting points not brought up by the literature. In fact, the practical application of the method differs from what is found in the theoretical literature for the complexity of the tools and their practicability. Furthermore, the time of the application of system change is not taken into account, but, according to the results, is a crucial component of the methodology. In addition, system transformation is a relatively new way of addressing problems that require adequate knowledge from who intends to implement it in the educational field, and this becomes a crucial factor since there is a need to study its application before trying to put it into practice.

For what it concerns the KPIs, the study was not giving great results as ICF has not started the impact measurement yet, as it applied system change for the first time at the beginning of 2020, but some metrics were given. In fact, the ratio of the projects implemented out of all the projects ideated could be an effective measure, as well as the participants' satisfaction about the experience in the project ideation. Moreover, some more KPIs could be incorporated for the

quality education SDG, especially focusing on the final impact of the project, such as the number of people involved in the process on different levels (as teachers, students, parents, and school board members); the willingness to participate of the community in the topic of education; and the measurement of the results obtained with a traditional approach compared to a system change methodology. Besides, the development of new projects forces the gathering of data that could be used and compared with the existing one of the SDG trackers and added in case of lacking to prepare a horizontal analysis over time.

The urgency of achieving the 2030 Agenda by the fixed time is another reason to implement system change for the SDGs. In fact, according to the SEI (Stockholm Environment Institute), there are only three ways to get the SDGs back on track: set priorities; focus on harnessing the environmental dimension of the SDGs; and understand how the SDGs work as an indivisible system and look for synergies. (Grunbuhel, et al. 2020) Consequently, system change is the answer to accelerate the process and achieve the 17 goals. In fact, it forces to deepen each problem, understand it for all its connections and roots, and then tackle each of the conjunctions that creates it to modify the system and solve the issue.

Going back to the main research question of the thesis, system change can contribute to the achievement of SDG 4 in the abovementioned four ways. In fact, multi-stakeholder collaboration, the collaboration for ecosystem building, and the acceleration for international collaboration are the three main key factors accelerating the achievement of education quality. In addition, the implementation of the methodology is related to the solution of other wicked problems and the trigger of a virtuous cycle for the acceleration of the SDGs in general, and so SDG 4 too.



## **5.2 Limitations and further research**

This research has several limitations. First, the analysis was conducted on the achievement of one SDG only, which is number 4. In order to have answers about the impact on all the SDGs, further research needs to be done. In this case, also, the focus was on disabled people and the quality of their education, which is a very specific topic and cannot be generalized. Moreover, the case study taken into account is ICF, which is a university project that started implementing system change only in the past months and does not have completed the maturity to be considered a comprehensive example. The fact that it was newly launched affected both the experience of the members and their opinion about the methodology. Furthermore, ICF has not started the impact assessment yet and this cannot lead to further data to be analyzed, such as the impacts that system change had compared to the traditional approach that was applied for the employment topic.

That being said, it would be interesting to complete the study by finding more cases that have implemented system change for a longer time and see how they dealt with it after the transition process. Does the experience with the methodology (variable time) modify the answers about strengths, weaknesses, and KPIs? In this case, there was a lack of reliance on the method transpiring from between the lines and it would be important to see if it is due to the short time in which system change was applied or if it is constant over time. Also, the relationship between time and outcomes of the methodology could also be analyzed in terms of complexity perceived by the users.

Another type of research that could be undertaken is the comparative one. The two approaches – system change and linear approach – could be analyzed through two different real case studies and compare their valuation assessment to catch relevant differences in the outcomes. Moreover, when examining the two approaches, it would be interesting to also deepen the research of possible creation of indirect positive effects in the system. This study

should be done among two implementations working towards the same wicked problem in order to ensure an adequate level of coherence.

Lastly, this research is based on SDG 4, but it should be considered to be retaken for other SDGs to see if the impact of system change varies across different fields. Even though literature makes it seem that it is suitable for all complex problems, there may be differences in the outcomes depending on the topic of application. In fact, system change may have different outcomes, strengths, weaknesses, and KPIs when applied to fields other than education quality. This should be taken into account and deeply analyzed in further research.

To conclude, the thesis presented started with an introduction about the importance of the problem of education quality, the relevance of system change in the world of SDGs, and the link between disability and SDG 4. It proceeded with a deep analysis of the existing literature about system change and its connection with the 2030 Agenda, which gave the basis for the analysis of the case study of ICF. First, a deep analysis of the case study was done, followed by general considerations about its application to SDG 4 and the answers to the research question and sub-questions. Lastly, the thesis concluded with the main key outcomes of the contribution of system change to the achievement of education quality, the main limitations, and possible hints for further research.

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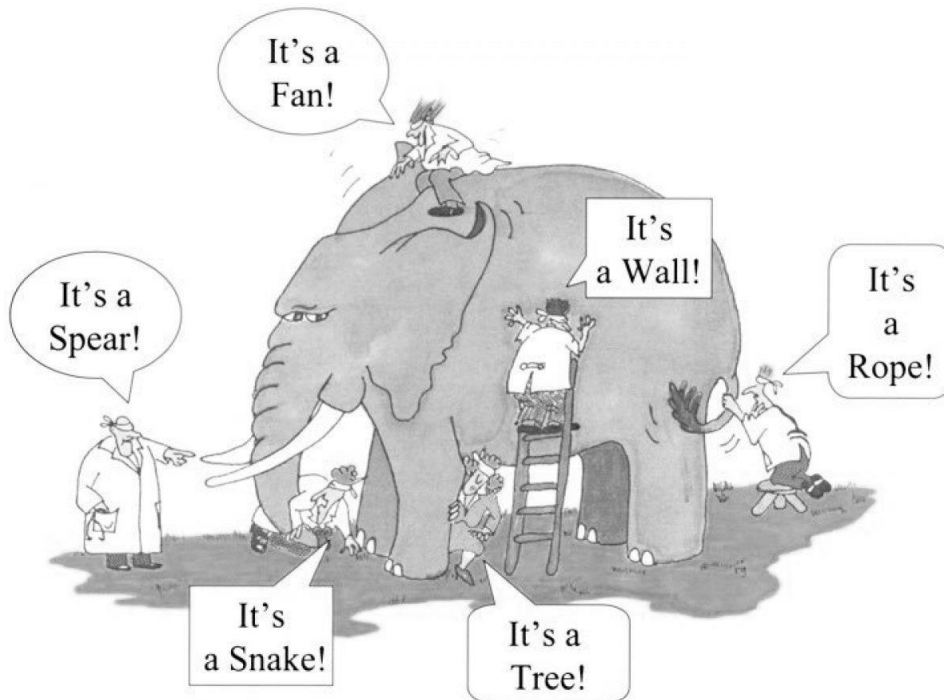
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## Appendices

### Appendix 1 – The Blind Men and the Elephant



### Appendix 2 – The Iceberg (Stroh 2015)



### Appendix 3 – Interview Questions

1.	ICF stand out from the majority of other disability associations through of the importance it gives to the partnership of different organizations. How did you come up with this idea? And how do you put system transformation into practice in your everyday work?
2.	How much do you think the networking and the collaboration between institutions is important in the achievement of your goal?
3.	The collaboration between different institutions that you coordinate through your projects can be related to systemic transformation, but what do you think could be the biggest strengths and opportunities of partnerships and collaborations in your field?
4.	And what are the main weaknesses and challenges that you have to face while reaching system change?
5.	What do you think can be considered the added value of system transformation in the achievement of the SDGs regarding disabilities?
6.	Also, what do you think can be considered the main elements and KPIs of the system change in the field of disabilities?
7.	Inclusive Community Forum is working hard on the inclusivity of disabled people and the help of the community towards the goals. How much do you think system change method can be applicable to the achievement of social inclusion and an equal education?
8.	Regarding the COVID-19 pandemic, what were the main effects it had on your organization and how did system transformation helped dealing with it?
9.	In a long-term perspective, how do you think system transformation can have an impact compared to a more individualistic approach?

<b>10.</b>	How much do you think system change can impact on the achievement of SDG 4 (education quality)?
<b>11.</b>	Open question. Do you feel like there is anything relevant you want to add that did not come up with the previous questions?

Appendix 4 – Interview with project manager

<b>1.</b>	<p>The idea of ICF did not come from the team but from Rui Diniz that 8 years ago, with his wife, adopted a child named Bernardo that has a lot of difficulties. He has 99% of disabilities and, as a parent, he had to face a lot of challenges he was not ready for. He thought that a lot of parents had to face the same challenges, but he felt like there were no solutions on a bigger scale, only local solutions. So, he developed this project driven by the wish of creating solution in the context of people with disabilities trying to see what the biggest challenges were and so find solutions that could also be scalable. Nobody expects to have a disabled child until it happens.</p> <p>The team was born like this, and we make transformation in the community looking to the context, which is huge, and then focus on two topics: employability, in the first stage, and then on education. This would let us have a focus among all the possible topics regarding disabilities. So, we understand the context through interviews, what already exists, what is missing, what are the biggest challenges, what is great in this context to see what our role could be and then we proceed with the analysis of the diagnosis, and we come up with solutions. The way we develop our work in the employability field was very different compared to how we started working for the education sector, where we applied the system change.</p> <p>We implemented systemic change in this topic because we hoped that it would be easier to deliver to the community all the solutions we come up with. In fact, ICF was born with a horizon time and not to be there forever. And so, we aim to deliver all our solutions to someone else that can implement it. With education we wanted to do the same, but what we faced in employability was that it was hard to deliver the projects because we still needed to follow them and we had the feeling that if we stopped</p>
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	<p>following the projects, companies were not bringing them on. When we changed to systemic change, we had the hope that, as the solutions are created by the community, they could be more easily handled by the community. In reality it did not turn out to be exactly like this, but it was the main hope that made us changed methodology.</p>
2.	<p>It is very important to work together. It is crucial because if there is a problem among all the stakeholder, then you need all of them to solve it. The collaboration is difficult though.</p>
3.	<p>First, system change needs collaboration, but collaboration does not always require system change. In the case of employment, we worked with collaboration without applying system change for example. We developed our solutions with the collaboration of companies, partners, corporate companies, schools, etc. There can be collaboration also without systemic transformation.</p> <p>Regarding the strengths, the biggest one is the involvement of the community. The involvement is fundamental. The community needs to be there. The opportunity then comes from the strengths and in this case is a strong collaboration when there is the presence of a good coordinator. In fact, coordination is very important to make the method working. ICF tries to tell the community where to go, but, in the end, we are not the ones developing the solutions. We can tell the community where we think it would be best to go, but we cannot then control the path they decide to follow.</p>
4.	<p>The application of the system still has a lot of weaknesses. Not everyone has the ability to be a project manager, nor to tell a story. You need to be a project manager to implement a project and if, on the side of the community there is not one, it is very unlikely that the project can go any further. Also, if you do not have someone controlling everything, you just have a lot of people working together without a leader, which makes it complicated.</p> <p>Also, the tools of the systemic change are very different from the ones we were used to use before, and the transition was hard. When you do the diagnosis, you look at the main challenges, its causes and effects. You create a problem tree. In systemic change you have a system map, which is circular and have more connections and so it's way more complex to conclude the analysis. Sometimes it happened that we had the</p>

	<p>system map, but we could not understand what the causes were because of all the relations within all the variables in it.</p> <p>It was hard for people to understand the tools and tell the story. It is a complex language.</p>
5.	<p>The added value is the involvement of the community, which applies in the achievement of the SDGs, as well as other goals. It is the added value of the method. You can put everyone around the same table, have different perspectives and find some solutions.</p>
6.	<p>We do not have clear KPIs. Of course, we measure what we achieve, but we haven't started the impact measurement yet. What we can measure is how far and how implemented are the solutions that came up from the systemic change. To give some context, we created the inclusion lab, which is a group of 40 people that come together and, in smaller groups, they focus on a specific variable (problem) that needs to be addresses. So, each variable has a solution but from ideation to implementation there is a big need of time, more than the one we had. Furthermore, a KPI that we implicitly use are the project implemented out of the one ideated.</p>
7.	<p>This methodology is applicable almost to any field. I don't think it is specifically good for disability, but any topic can work on this, with its weaknesses and challenges for the specific case. So, I don't think that the field in which it is applied really matters.</p>
8.	<p>In the context of COVID-19, system change did not help. In fact, the impact of the pandemic was even greater on us because we were using system transformation. Why? Because we are working with the community, and we need its involvement and the solutions it provides. If the solutions were made by us, it would have been way easier and it would not have impacted so much. We also adapted with online groups, but if they do not have the chance to know each other's in person is harder.</p>
9.	<p>We probably had a bad experience, but in order to make system change work you need the right stakeholder. You need to have people with a project manager mindset, not necessary an expert. You need to be structured and a lot of people cannot do. You need to have the right people representing the right institutions. The organization has</p>

	to be involved as much as the people we have to face because in case we need someone with different skills, the institution needs to contribute.
<b>10.</b>	As said before, this methodology is applicable to almost any field, education included. It still has weaknesses and challenges to face, but it fits for education as well. The fact that we treat education for disabled people does not affect the application of the methodology.
<b>11.</b>	We developed the diagnosis and then presented to the community and asked them to work on the variables, choosing them according to which one they thought they could have had a better impact on. But who piloted the variables was ICF because the community may identify or not with the variables. So, it may be better if the community themselves made the diagnosis and point out what was missing in the framework, instead of working on the diagnosis that someone else developed.

#### Appendix 5 – Interview with project coordinator

<b>1.</b>	<p>When ICF was launched we started the project with the idea that we did not want to have a project or initiative that was already existing, nor we wanted to try something that had already been tried but failed. We wanted to learn from the community and project that already existed bringing something new, a new added value. Also, we wanted to make sure that our initiative was answering an existing problem in a concrete way, complementing something that already existed.</p> <p>Secondly, when we had our first presentation to the public there were around 200 people attending the event and the feedbacks were very positive. We wanted to provide an answer to all the people that wanted to get even more involved and had the willingness to be included in the project. We wanted to provide a way for people to get involved. The councils of families and institutions are the way we worked with them and include them in our work. Also, we collaborated with different companies to implement pilot projects, because ICF was created with the idea to structure and bring solutions and give them back to the community. In the end of the day, we could stop existing, but leave something to our stakeholder. So, when implementing pilots,</p>
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	<p>we always look for organization that would then have the power to continue our project on their own.</p> <p>We did not know how to put system transformation into practice at first because we are part of the LFI (Leadership for Impact) knowledge center and it was required that we had an academic director, in order to balance the action project with academic research. So, the idea was to pair the project with a professor. Our researcher had strong knowledge on system change, but we did not. We started applying it with the inclusion lab, after we finalized the diagnosis on the education process.</p> <p>When we were about to start ideation, we met Silvia Herrero and we decided to move to a system change approach and so use the system map. From that moment on, we had the inclusion lab and we started calling people to get involved and then generating ideas. It was a big shift.</p>
2.	<p>Collaboration can be even more important than networking because the simple fact of knowing each other's does not assume that they will then work towards the same goals. Collaboration, on the other hand, is very important. Different institutions have a role to play according to their specific knowledge. I think that different knowledges can complement each other's. Collaboration between social organizations is important, but collaboration between social organizations and companies is even more important because they are two worlds that don't often meet nor speak the same language, but that need each other's. It is important to provide the situation in which they can work together to exchange different points of view and different understanding of the same realities, which makes collaboration easier on a second stage.</p>
3.	<p>Strengths and opportunities are the reasons why people start using this methodology, which is building solution with the social organization you want to work with. So, in a theoretical way, the project is already theirs. You should not face so many challenges, but in practice it is different because the participants still connect the project with us and do not feel it like if it was theirs. At the same time, it is a big opportunity to have the people you want to deliver the project to be involved from the very beginning.</p>
4.	<p>Regarding the challenges, the application of system change took us a lot of time. We had 40 people divided in 7 groups to be coordinated, which was very challenging</p>

	<p>because it takes time for them to make decisions. They have to connect and start knowing each other's and they may have different backgrounds, ideas, and opinions. It takes time to get thing started and the process can be slower also going on, which influence the types of projects we then delivered. Also, we then had to understand the type of project they wanted to develop and there was still a gap between the idea of the group and what was then developed, which can be very frustrating.</p> <p>Time and people coordination were the biggest challenges of the application of the methodology.</p>
5.	<p>The added value of system change in the achievement of the SDGs is the complementation of people working together and with different backgrounds, that work for projects that will then have an impact on themselves. In practice the application is different than in theory and the transition to our previous method to the one of system change was very challenging.</p> <p>It made me lack confidence because I had to start learning everything from the beginning. So, it would have probably been better to start with it before, since the very beginning.</p>
6.	<p>It is still early because the one of COVID was a tough context. We could not really count on the community anymore, especially schools, professors, and students because they all had new problems to face. People kept working online, but it was hard to implement ideas. It is early to evaluate what we did in the past months. If we have to choose how to evaluate the outcomes of the system transformation, we could base on the experience of the participants, how they valued the experience, if they thought it was useful to participate. Also, the types of projects and the key variable can be KPIs. We ended up having 4 projects out of 7 ideas. in this field it is really hard to have a KPI that gives an overall idea of the situation of the progresses.</p>
7.	<p>I think we have a lot of potential to grow, but we struggle to move from theory to practice. It has lot of potential because if you want to change you have to involve all the people that need to change and make them work together to build stuff basing on their abilities to contribute, influence and act. On the other hand, it has to be implemented in a different setting.</p>



<b>8.</b>	We had to move everything online and we were just about to implement a peer-to-peer program and we had to cancel it because it was based on workshop between NOVA SBE students and people with disabilities. We then had to re-invent it online, being aware of the issues of people with disabilities and technology. The interaction between a face-to-face contact brings more value than an online meeting. Also, the session was shorter than expected. People still participated but it took even more time to create interactions and create a bond. With the test of the project, it had to stop because of the lack of availability of students and professors.
<b>9.</b>	Even before applying the system change, we always worked with families and other stakeholder, never built the project only basing on ourselves. The long-term potential is that you have multiplier effects directly from the start, as you have a lot of people involved and then use the network to understand how to increase the effects. Also, the solutions are built on their knowledge.
<b>10.</b>	It has a huge potential, even though in practice is very hard. We implemented it, but I still have doubts about it. It should be explained and taught to people in a simpler way. The way we used before was still effective anyway.
<b>11.</b>	It was challenging but everyone tried its best to make it work. There is potential and this method has potential to create big effects.

#### Appendix 6 – Interview with project analyst

<b>1.</b>	We started with employability of disability, without applying system change, but when we moved to education, the leadership of our project implemented system change. As it was a good way to work with the community, we decided to implement this methodology.
<b>2.</b>	It is super important. Before working with system change, we already had the councils to let the member talk to each other's and communicate and work with us. Collaboration is important both among social organization, but mostly between institutions and social organizations. They are complementary and they can give a

	good picture of the situation. Also, schools and the education system side play an important role and it has to be connected with the other organizations.
<b>3.</b>	The community engagement can be considered a strength, maybe even more in another field. Also, we had to face the COVID pandemic, which made everything way more complicated.
<b>4.</b>	We needed time to change to the system change from our previous method. It took us some time but mainly because it was in the middle of the process. If we had started already with it, it would have been better. The community involvement seems to be better in theory, because in practice it was not that easy as expected. The community was not as engaged as we were expecting. Another weakness could be the complexity of the system. It is used for complex problems, but it is very hard to tell a story about the correlation of all the problems. There were a lot of problems while working on the education topic. We had to settle the system map and find a way to tell people a story.
<b>5.</b>	Having the community working on the project is the main added value of the methodology. People have a lot of knowledge to share on the topic and this could be the added value of its implementation.
<b>6.</b>	We are still implementing the project, so we have not measured any impact yet. We would do it with the impact assessment.
<b>7.</b>	We implemented this on the educational field, but in a particular timing. In theory, system change can be applied to every complex problem. In this case we had a lot of problems, but a lot of them came also from the fact that there was COVID arising. In the end, we did not implement all the solutions that were presented in the Inclusion Lab. In the diagnosis we found 7 problems, that were tackled by 7 different groups in the Inclusion Lab. Out of those, only 4 survived.
<b>8.</b>	We had to adapt. System change needed people to work with each other's, but it was harder than people thought. The best part of the methodology was having people working together and this was very impacted by the pandemic. Working with this method was not the problem, the problem was the crisis itself.
<b>9.</b>	It is always better to work with other people and institutions. This methodology put people and organizations working together with different backgrounds, and this

	perspective in a long-term time is going to be introduced also by other organizations if they want to succeed. It is a strength of the methodology.
<b>10.</b>	It depends on the problem that wants to be tackled. System change works for complex problems, not for simple ones. It depends also on who is addressing the problem and how much time is available to solve it.
<b>11.</b>	System change needs time to be implemented. We did not have the time to develop the solutions with the system. The time is needed both to study the system and to implement it.

Appendix 7 – Coded Data from Interviews 1

	<b>Project Manager</b>	<b>Project Coordinator</b>	<b>Project Analyst</b>
<b>1.</b>	<ul style="list-style-type: none"> <li>• “We understand the context through interviews, what already exists, what is missing, what are the biggest challenges, what is great in this context to see what our role could be and then we proceed with the analysis of the diagnosis, and we come up with solutions”</li> <li>• “We implemented systemic change in this topic [education] because we hoped that it would be easier to deliver to the community all the solutions we come up with”</li> <li>• “In reality it did not turn out to be exactly like this, but it was the main hope that made us changed methodology”</li> </ul>	<ul style="list-style-type: none"> <li>• “We wanted to learn from the community and project that already existed bringing something new, a new added value. Also, we wanted to make sure that our initiative was answering an existing problem in a concrete way, complementing something that already existed.”</li> <li>• “We wanted to provide an answer to all the people that wanted to get even more involved and had the willingness to be included in the project. We wanted to provide a way for people to get involved.”</li> <li>• “Our researcher had strong knowledge on system change, but we did not. We started applying it with the inclusion lab, after we finalized the diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>• “As it was a good way to work with the community, we decided to implement this methodology.”</li> </ul>

		on the education process.”	
2.	<ul style="list-style-type: none"> <li>• “It is very important to work together”</li> <li>• “The collaboration is difficult though.”</li> </ul>	<ul style="list-style-type: none"> <li>• Collaboration can be even more important than networking because the simple fact of knowing each other’s does not assume that they will then work towards the same goals.”</li> <li>• “Collaboration between social organizations is important, but collaboration between social organizations and companies is even more important because they are two worlds that don’t often meet nor speak the same language, but that need each other’s”.</li> </ul>	<ul style="list-style-type: none"> <li>• “Collaboration is important both among social organization, but mostly between institutions and social organizations. They are complementary and they can give a good picture of the situation.”</li> </ul>
3.	<ul style="list-style-type: none"> <li>• “System change needs collaboration, but collaboration does not always require system change.”</li> <li>• “Regarding the strengths, the biggest one is the involvement of the community”</li> <li>• “The opportunity then comes from the strengths and in this case is a strong collaboration when there is the presence of a good coordinator.”</li> </ul>	<ul style="list-style-type: none"> <li>• “It is a big opportunity to have the people you want to deliver the project to be involved from the very beginning.”</li> <li>• “[A strength is] building solution with the social organization you want to work with. So, in a theoretical way, the project is already theirs.”</li> </ul>	<ul style="list-style-type: none"> <li>• “The community engagement can be considered a strength, maybe even more in another field.”</li> </ul>
4.	<ul style="list-style-type: none"> <li>• “You need to be a project manager to implement a project and if, on the side of the community there is not one, it is very</li> </ul>	<ul style="list-style-type: none"> <li>• “The application of system change toke us a lot of time. [...] It takes time to get thing started and the process can be slower also going on, which</li> </ul>	<ul style="list-style-type: none"> <li>• “We needed time to change to the system change from our previous method. It took us some time”</li> <li>• “The community involvement seems to</li> </ul>

<p>unlikely that the project can go any further.”</p> <ul style="list-style-type: none"> <li>• “If you do not have someone controlling everything, you just have a lot of people working together without a leader, which makes it complicated.”</li> <li>• “The transition [from the traditional method to system change] was hard.”</li> <li>• “Sometimes it happened that we had the system map, but we could not understand what the causes were because of all the relations within all the variables in it.”</li> <li>• “It is a complex language.”</li> </ul>	<p>influence the types of projects we then delivered.”</p> <ul style="list-style-type: none"> <li>• “Also, we then had to understand the type of project they wanted to develop and there was still a gap between the idea of the group and what was then developed, which can be very frustrating.”</li> <li>• “Time and people coordination were the biggest challenges of the application of the methodology.”</li> </ul>	<p>be better in theory, because in practice it was not that easy as expected. The community was not as engaged as we were expecting”</p> <ul style="list-style-type: none"> <li>• “Another weakness could be the complexity of the system. It is used for complex problems, but it is very hard to tell a story about the correlation of all the problems.”</li> </ul>
<p>5.</p> <ul style="list-style-type: none"> <li>• “The added value is the involvement of the community.”</li> </ul>	<ul style="list-style-type: none"> <li>• “The added value of system change [...] is the complementation of people working together and with different backgrounds [...]”</li> </ul>	<ul style="list-style-type: none"> <li>• “Having the community working on the project is the main added value of the methodology.”</li> </ul>
<p>6.</p> <ul style="list-style-type: none"> <li>• “We do not have clear KPIs. Of course, we measure what we achieve, but we haven’t started the impact measurement yet.”</li> <li>• “What we can measure is how far and how implemented are the solutions that came up from the systemic change.”</li> <li>• “Furthermore, a KPI that we implicitly use are the project</li> </ul>	<ul style="list-style-type: none"> <li>• “It is still early because the one of COVID was a tough context.”</li> <li>• “[...] we could base on the experience of the participants, how they valued the experience, if they thought it was useful to participate.”</li> </ul>	<ul style="list-style-type: none"> <li>• “We are still implementing the project, so we have not measured any impact yet.”</li> </ul>

	implemented out of the one ideated.”		
7.	<ul style="list-style-type: none"> <li>• “This methodology is applicable almost to any field. I don’t think it is specifically good for disability, but any topic can work on this.”</li> </ul>	<ul style="list-style-type: none"> <li>• “[The methodology] has lot of potential because if you want to change you have to involve all the people that need to change and make them work together [...]”</li> <li>• “It has to be implemented in a different setting.”</li> </ul>	<ul style="list-style-type: none"> <li>• “In theory, system change can be applied to every complex problem. In this case we had a lot of problems, but a lot of them came also from the fact that there was COVID arising.”</li> </ul>
8.	<ul style="list-style-type: none"> <li>• “The impact of the pandemic was even greater on us because we were using system transformation [...] because we are working with the community, and we need its involvement and the solutions it provides.”</li> </ul>	<ul style="list-style-type: none"> <li>• “People still participated but it took even more time to create interactions and create a bond. With the test of the project, it had to stop because of the lack of availability of students and professors.”</li> </ul>	<ul style="list-style-type: none"> <li>• “The best part of the methodology was having people working together and this was very impacted by the pandemic. Working with this method was not the problem, the problem was the crisis itself.”</li> </ul>
9.	<ul style="list-style-type: none"> <li>• “We probably had a bad experience, but in order to make system change work you need the right stakeholder.”</li> <li>• “The organization has to be involved as much as the people we have to face because in case we need someone with different skills, the institution needs to contribute.”</li> </ul>	<ul style="list-style-type: none"> <li>• “The long-term potential is that you have multiplier effects directly from the start, as you have a lot of people involved and then use the network to understand how to increase the effects.”</li> </ul>	<ul style="list-style-type: none"> <li>• “This methodology put people and organizations working together with different backgrounds, and this perspective in a long-term time is going to be introduced also by other organizations if they want to succeed.”</li> </ul>
10.	<ul style="list-style-type: none"> <li>• “As said before, this methodology is applicable to almost any field, education included. It still has weaknesses and challenges to face, but</li> </ul>	<ul style="list-style-type: none"> <li>• “It has a huge potential, even though in practice is very hard.”</li> <li>• “It should be explained and taught to people in a simpler way.”</li> </ul>	<ul style="list-style-type: none"> <li>• “System change works for complex problems, not for simple ones.”</li> </ul>

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it fits for education as well.”

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- 11.**
- “It may be better if the community themselves made the diagnosis and point out what was missing in the framework, instead of working on the diagnosis that someone else developed.”
  - “There is potential, and this method has potential to create big effects.”
  - “System change needs time to be implemented.”
  - “The time is needed both to study the system and to implement it.”
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Appendix 8 – Coded Data from Interviews 2

	<b>Project Manager</b>	<b>Project Coordinator</b>	<b>Project Analyst</b>
<b>1. System transformation into practice</b>	<ul style="list-style-type: none"> <li>• Look at the current situation before implementing solutions.</li> <li>• System change was implemented because considered easing the process.</li> <li>• Turned out to be harder than expected.</li> </ul>	<ul style="list-style-type: none"> <li>• Look at the current situation before implementing solutions to deliver concrete projects.</li> <li>• Give space to the community that wanted to be involved.</li> <li>• We had no background on system change, but our researcher did.</li> </ul>	<ul style="list-style-type: none"> <li>• Give space to the community that wanted to be involved. System change was implemented to give.</li> </ul>
<b>2. Networking and collaboration importance</b>	<ul style="list-style-type: none"> <li>• Importance of working together.</li> <li>• Collaboration can be hard.</li> <li>• System change needs collaboration, but not vice versa.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaboration over networking.</li> <li>• Collaboration between social organizations and companies over collaboration between social organizations only.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaboration between social organizations and companies over collaboration between social organizations only.</li> </ul>
<b>3. Strengths</b>	<ul style="list-style-type: none"> <li>• Involvement of the community.</li> <li>• Collaboration with a good coordinator.</li> </ul>	<ul style="list-style-type: none"> <li>• Involvement of the community from the beginning.</li> </ul>	<ul style="list-style-type: none"> <li>• Involvement of the community.</li> </ul>

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		<ul style="list-style-type: none"> <li>• Building solution with the social organization you want to work with.</li> </ul>	
<b>4. Weaknesses</b>	<ul style="list-style-type: none"> <li>• Lack of project managerial skills.</li> <li>• Lack of coordinator role.</li> <li>• Hard transition.</li> <li>• System map sometimes is not effective.</li> <li>• Complicated language.</li> </ul>	<ul style="list-style-type: none"> <li>• Long time required for the application.</li> <li>• Possible gaps between ideas and project developed.</li> <li>• Time and people coordination.</li> </ul>	<ul style="list-style-type: none"> <li>• Long and hard transition.</li> <li>• Lack of community engagement.</li> <li>• Complexity of the system and hard to tell a story.</li> </ul>
<b>5. Added value</b>	<ul style="list-style-type: none"> <li>• Involvement of the community.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaboration of people with different backgrounds.</li> </ul>	<ul style="list-style-type: none"> <li>• Involvement of the community.</li> </ul>
<b>6. KPIs</b>	<ul style="list-style-type: none"> <li>• Not started impact measurement yet.</li> <li>• Measure the implementation of the solutions.</li> <li>• Ratio of implemented projects / ideated projects</li> </ul>	<ul style="list-style-type: none"> <li>• Not started impact measurement yet.</li> <li>• Participants' experience.</li> </ul>	<ul style="list-style-type: none"> <li>• Not started impact measurement yet.</li> </ul>
<b>7. Applicability of system change to social inclusion and equal education</b>	<ul style="list-style-type: none"> <li>• System change is applicable to any field.</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable for any field with the involvement of the stakeholders.</li> <li>• System change is applicable to any field with different settings.</li> </ul>	<ul style="list-style-type: none"> <li>• System change is applicable to any field.</li> <li>• Problems due to COVID.</li> </ul>
<b>8. System change with COVID-19</b>	<ul style="list-style-type: none"> <li>• The impact was greater because the support of the community was lacking.</li> </ul>	<ul style="list-style-type: none"> <li>• Need of more time for interactions and bonding.</li> <li>• Lack of availability of students and professors.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact was greater because the support of the community was lacking.</li> </ul>



<b>9. System change VS individualistic approach</b>	<ul style="list-style-type: none"> <li>To have an impact, you need to involve stakeholders.</li> <li>Essential need of the involvement of the organization.</li> </ul>	<ul style="list-style-type: none"> <li>System change has multiplier effects in the long-term.</li> </ul>	<ul style="list-style-type: none"> <li>System change will be introduced also by other organizations if they want to succeed.</li> </ul>
<b>10. System change for SDG 4</b>	<ul style="list-style-type: none"> <li>System change is applicable also to SDG 4 with weaknesses and challenges.</li> </ul>	<ul style="list-style-type: none"> <li>System change has potential in the application for SDG4, but it is very hard.</li> <li>Need for simpler explanation.</li> </ul>	<ul style="list-style-type: none"> <li>System change works for all complex problems, like SDG 4.</li> </ul>
<b>11. Open question</b>	<ul style="list-style-type: none"> <li>The community should do the diagnosis.</li> </ul>	<ul style="list-style-type: none"> <li>System change has a big potential that needs to be expressed.</li> </ul>	<ul style="list-style-type: none"> <li>System change needs a lot of time to be both studied and implemented.</li> </ul>

Appendix 9 – Analysis of Answers

**Analysis of Answers**

<b>1. System transformation into practice</b>	<p>System change was not applied in first place for the employment topic, but only introduced when addressing education. The main reason of this change is that they “hoped that it would have been easier to deliver the community all the solutions” they were coming up with. Basically, the gap between problems and solutions seemed shorter when adopting the methodology, as the community was giving solutions for the community itself. Also, it was a way to involve and “work with the community”, giving space to “all the people that wanted to get even more involved and had the willingness to be included in the project”.</p>
<b>2. Networking and collaboration importance</b>	<p>All the participants agreed on the importance of working together, even though “collaboration can be difficult”. Furthermore, two interesting points arise: the difference between networking and organization, and the different possible collaborations for the sector. First, collaboration is “more important than networking because the simple fact of knowing each</p>

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other's does not assume that they will then work together" for the achievement of the same goal. This points out how much collaboration can be more impactful than just being aware of the existence of others in the market and their efforts to achieve a goal. Secondly, two out of three participants highlighted the importance of collaborations between social organizations and institutions, more than the ones among social organizations. This is due to the fact that, as supported by the literature abovementioned, in order to bring about change, there should be a solid connection between the ideas and good purposes of social organizations and the concrete application of the institutions (or private sector).

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### **3. Strengths**

All the three participants agreed on the main strength, which is the involvement and engagement of the community from the beginning of the development of the solutions. In fact, it was said that "it is a big opportunity to have the people you want to deliver the project to be involved from the very beginning". Furthermore, one of the interviewees added that "the opportunity comes from the strength, and in this case [it is possible to have] strong collaboration when there is the presence of a good coordinator". These answers are consistent with what brought to life by the literature, as they remind the importance of collaboration in the achievement of the goals.

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### **4. Weaknesses**

Conversely to what happened with the strengths, the opinions were different about the weaknesses. The main one seems to have been the time, as the application of the methodology implied more than expected, especially as "the transition [from the traditional method to system change] was hard". Furthermore, it was reported a lack of community engagement in the topic, which could actually be biased by the pandemic situation that impacted on everyone's life priorities at the time. Also, an important weakness came out from two different perspectives: the complexity of the methodology did not make the transition easier, especially because "sometimes it happened to have the system map, [...] and do not understand that the causes were because of all the relations within all the variables [...]". This complaint was accompanied by a linked one, which

is the lack of project managerial skills in people the ICF had to work with. In other words, the effort to implement a complex new methodology, with a complex language, did not have the support of leading position and good coordination at all levels among the partnerships.

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**5. Added value** The main outcome of the question is the involvement of the community and the “complementation of people working together and with different backgrounds”, on which all the three participants agreed. Furthermore, the gathering of different people with different perspectives and roles inside the community was a plus to the methodology because of the added value of the single individuals to the creation of new projects addressing solutions to the connections of the system map.

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**6. KPIs** As the project started just before the pandemic and the application of system change created delays, it was said that no measurement was done so far, as they were “still implementing the project”, but some ideas were also given. On one hand it was suggested to measure “how far and how implemented are the solutions that came up from system change”, and, so, to use a ratio of the projects developed out of all the projects ideated. On the other hand, the focus was more on “the experience of the participants, how they valued the experience, and if they thought it was useful.”

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**7. Applicability of system change to social inclusion and equal education** All the three participants agreed that “this methodology is applicable to almost any field”, even though it may require different settings and adaptation. It was also pointed out that this methodology can be applicable to every complex system, and, as of that, all the SDGs refer to problems that can be addressed with it. It was then specified that, even though this practice was not applied to the employability field, it could have also been used for so. However, it emerged that, even if system change is not implemented, collaboration is still fundamental. This outcome is in line with what said in the literature by Meadows: system change is perfect to address all the wicked problems that need the creation of a complex system mapping to be addressed, but can also be applied to simpler one, even though it does not apply to the cause-effect linear issues.

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**8. System change with COVID-19**

According to the interviewees, the impact reflected on the project were even greater because of the use of system change, as they are “working with the community, and [they] need its involvement and the solutions it provides”. Furthermore, the participants still took place in the project, but working remotely was harder for interactions and to “create bond”. In addition, the COVID-19 pandemic increased the amount of time needed due to the need of moving all the communications and projects in a virtual environment.

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**9. System change VS individualistic approach**

All the three participants had different but aligned answers. First, it was said that, even though they “had a bad experience”, in order to “make system change work, you need the right stakeholders”. In fact, in this case the project manager wanted to highlight the fact that, despite implementing system change was very hard and stressing, the main reason behind it stands in the lack of “right people representing the right institutions”, which can create coordination problems and miscommunication. Secondly, the project coordinator pointed out that, in a long-term perspective, there are “multiplier effects directly from the beginning, as you have a lot of people involved”. Thirdly, the project analyst states that this methodology will have to be implemented also by other organizations if they aim to succeed in the achievement of system goals.

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**10. System change for SDG 4**

If, on one hand, they all agreed that system change is a methodology with a great potential and a wide applicability to all the field, SDG 4 included, on the other hand, all the three reminded how tough it was to implement system change, in terms of time and complexity. Also, it was added that system change “should be explained and taught to people in a simpler way”, being explained in a more practical and easy way to be implemented, still keeping its attitude toward complex problems. This has mainly to do with the fact that, as the project analyst said, “system change works for complex problems, not for simple ones”, and, so, it needs to tackle all the connections of the system mapping.

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**11. Open question**

Parts of the answers covered topics already mentioned before, as the large amount of time needed for the transition, but it was also mentioned the importance that it should be given to the study of the methodology before the implementation. Furthermore, the project manager proposed a possible change in the application: “it may be better if the community [...] made the diagnosis and point out what is missing in the framework, instead of working on the diagnosis that someone else developed”. This could be considered a possibility for ICF, involving the community already from the first step of the diagnosis and system map development, even though it is not explicitly suggested or discouraged in the literature.

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