PERSPECTIVES ON "SUSTAINABILITY TRANSITION PATHWAYS" IN THE 2030 AGENDA ROADMAP: THE CASE OF FINLAND

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Abstract

The purpose of the study is to identify what kind of implicit "sustainability transition pathways" guide the 2030 Agenda roadmap of the Finnish National Commission on Sustainable Development. It utilises Frank W. Geels' Multi-level perspective (MLP) framework on transition. I explore the phenomenon in the context of Finland's sustainability transition. The objective of my research is to obtain new knowledge about the factors influencing Finland's sustainable development and the future directions. The data is drawn on of the 2030 Agenda roadmap of the Finnish National Commission on Sustainable Development published by the Prime Minister's Office in 2022 and is limited to six systemic packages (areas of change) that concern Finland's medium-term plan to achieve the goals of the global 2030 Agenda for Sustainable Development adopted by the UN. The study examines the official English translation of the document. The data is analysed by using theory-driven document analysis method. The findings suggest that the roadmap implies several different transition pathways to achieve societal sustainability: the education sector requires transformative change, the economy and environmental protection sector requires reconfiguration, the food system and energy production sector require technological substitution, and social and health services require de-alignment and re-alignment of the system. The findings show that the public administration plays a key role in the mainstreaming of sustainable practices. From the results it can be concluded that policy coherence can ensure the synergies of transition pathways and a fair transition towards a more sustainable Finland.

Keywords Finland, sustainability transition, Agenda2030, Multi-level perspective, MLP

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Tiivistelmä Tutkimuksen tehtävänä on selvittää minkälaisia implisiittisiä ”kestävyysmuutospolkuja” Suomen kestävän kehityksen toimikunnan Agenda 2030 -tiekartta sisältää. Tutkimus tarkastelee aineistoa Frank W. Geels'n monitasoperspektiivin näkökulmasta ja Suomen kestävyysmurroksen kontekstissa. Tutkimukseni keskeinen tavoite on luoda uutta tietoa Suomen kestävään kehitykseen vaikuttavista tekijöistä sekä yhteiskuntakehityksen tulevista suunnista. Tutkimuksen aineisto on valtioneuvoston kanslian vuonna 2022 julkaisema Suomen kestävän kehityksen toimikunnan Agenda 2030 -tiekartta. Se on rajattu kuuteen järjestelmäluontoiseen kokonaisuuteen (muutosalueeseen), jotka koskevat Suomen keskipitkän aikavälin suunnitelmaa saavuttaa YK:n kestävän kehityksen toimintaohjelman Agenda 2030 tavoitteet. Tutkimus tarkastelee asiakirjan virallista englanninkielistä käännöstä. Tutkimuksen analyysimenetelmänä on käytetty teorialähtöistä dokumenttianalyysia. Tutkimustulokset osoittavat, että tiekartassa implikoidaan useita erilaisia muutospolkuja yhteiskunnallisen kestävyyden saavuttamiseksi. Kestävyystavoitteiden saavuttamiseksi koulutuksen ala edellyttävät transformatiivista muutosta, talouden ja ympäristönsuojelun ala uudelleenkonfiguraatiota, ruoan ja energiantuotannon ala teknistä korvausta sekä sosiaali- ja terveydenhuollon ala järjestelmän purkamista ja uudelleenjärjestelyä. Tutkimukseni tulokset osoittavat, että julkishallinnolla on keskeinen rooli kestävien toimintatapojen valtavirtaistamisessa. Tutkielman tuloksista voidaan päätellä, että politiikkajohdonmukaisuudella voidaan varmistaa muutospolkujen synergiat ja reilu siirtymä kohti kestävämpää Suomea.	
Asiasanat Suomi, kestävyysmurros, Agenda 2030, monitasoperspektiivi, MLP	
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ABBREVIATIONS

EU	European Union
FNCSD	Finnish National Commission on Sustainable Development
IPCC	Intergovernmental Panel on Climate Change
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
LNOB	"Leave no one behind" principle
MLP	Multi-level perspective
NGO	Non-governmental organization
RDI	Research, Development and Innovation
SDG	Sustainable Development Goal
SOTE	Health and Social Services Reform (abbr. from Sosiaali- ja terveydenhuollon ja pelastustoimen uudistus)
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNEP	United Nations Environmental Programme
WCED	World Commission on Environment and Development

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1 INTRODUCTION

"People's wellbeing in Finland is good from a global perspective but that is based on operations that exceed the limits of the world's carrying capacity" (Finnish National Commission on Sustainable Development, 2022, p. 79). With these words, the Finnish National Commission on Sustainable Development (FNCSD) summarizes Finland's state of sustainability in the 2030 Agenda roadmap commissioned by the Prime Minister Sanna Marin's government in 2020. This statement is consistent with the World Happiness Report 2023, according to which Finland is the happies country in the world for the sixth year in a row (Helliwell et al., 2023, pp. 32–76). On the other hand, it also highlights the dilemma hidden in the wellbeing mentioned above – it has no sustainable basis.

1.1 Background

Climate change is a great challenge for the humankind. With the explosive growth of the world's population in the 20th century, the consumption of natural resources grew exponentially (e.g. Crutzen & Stoermer, 2000). Pollution, emissions, and waste have since become an enormous global problem. Yet, the benefits and harms from using natural resources are not evenly distributed. According to the United Nations Environmental Programme (UNEP) Emission Gap Report, the world's richest spend more than the poor, but the world's poor suffer primarily from the consequences of climate change caused by the overconsumption of natural resources (UNEP, 2020, pp. 62–63). In addition, the United Nations (UN) has stated the greenhouse gas emissions are currently at their highest level for 2 million years, and this threatens to lead to a dangerous increase in the global average temperature (UN, 2020). In other words, our way of living threatens our own existence.

Unsustainable production and consumption has been identified as one of the biggest development problems in the Nordic countries (e.g. Sachs et al., 2021; Nordic Council of Ministers, 2021). Finland is no exception here. Despite the country's small size, Finns have a relatively large environmental impact – Finland is one of the world's

most energy-consuming countries per capita, using more than twice as much energy as the world average (Ritchie et al., 2022). This has a negative effect on the wellbeing of the entire planet, and its consequences will eventually return to Finland. The situation calls for a comprehensive systemic change.

To solve global unstustainability problems, the UN launched the 2030 Agenda for Sustainable Development in 2015. The 2030 Agenda and its sustainable development goals (SDGs) aim to promote the state of the world by 2030, ensuring a dignified life and the opportunity to realize one's potential in a safe and healthy environment (UN, 2015a). Along with the other UN member countries, Finland is also committed to implementing the action program. For this purpose, the Finnish National Commission on Sustainable Development has prepared a national 2030 Agenda roadmap, which is a medium-term plan of actions that Finland needs to take to achieve the goals of the UN 2030 Agenda.

Due to the climate change and unsustainable consumption, the sustainability transition has become one of the most heated topics of political and scientific discussion of the day. Sustainability transition is commonly defined as a "radical transformation towards a sustainable society as a response to a number of persistent problems confronting contemporary modern societies" (Grin et al., 2010, p. 1). These persistent problems manifest as crises and conflicts concerning climate, food, water and energy. Geels and Schot (2010, pp. 11–12) add, that transitions are long-term processes resulting radical shifts (in scope) from one system to another, a process that requires multiple socio-technical changes and interaction between stakeholders. Sustainability transitions are distinguished from other historical transitions by their goal towards collective sustainability. For studying the sustainability transition, Geels (2002) has developed a theoretical framework of multi-level perspective (MLP) on transitions. The MLP is an abstract analytical tool that recognizes the connection between theoretical principles and the mechanisms of society (Geels, 2002, p. 1273). With the framework, different societal transition pathways can be identified, which are determined by the nature of the interaction between actors in different analytical levels.

1.2 Objectives and questions of the study

The purpose of this study is to examine the 2030 Agenda roadmap of the Finnish National Commission on Sustainable Development through the concept of sustainability transition. The roadmap has been prepared to address especially those goals and targets of the 2030 Agenda that Finland has not yet reached (FNCSD, 2022, p. 11). The six defined areas of change deal with the economy, education, social and health services, agriculture, forestry, and energy system. For each area of change, the roadmap has a

vision that extends to 2030 and a description of the necessary measures to achieve the sustainability goals by 2030.

The objective of the research is to gain a new understanding of Finland's state of sustainable development and future directions. To achieve this, I will analyse the 2030 Agenda roadmap utilizing the MLP as an analytical tool to identify implicit transition pathways for the six areas of change. By studying the transition pathways, more knowledge can be obtained about the factors influencing Finland's sustainable development and the magnitude of the necessary actions to achieve the sustainability goals of the 2030 Agenda. My study is guided by the following research questions:

1. What kind of implicit "sustainability transition pathways" guide the 2030 Agenda roadmap of Finland?
    a. What kind of "transition pathways" are implicit in each area of change discussed?

This study employs a qualitative document analysis methodology to examine the selected policy document, the 2030 Agenda roadmap. I analyse the data with a theory-driven method using the MLP framework. With the MLP, the implicit transition pathways guiding the development of different areas of society can be identifies from the document. The MLP has a systemic approach to social change, and it helps to identify the interdependences of different areas. Based on the results, I will reflect on Finland's readiness for sustainability transition and possible hinders of development. I will also reflect on Finland's position in the global context and its role as an international pioneer in curbing the climate change.

While development studies traditionally has focused on so-called "developing countries", the 2030 Agenda has emphasized development as a universal endeavor. This study contributes to the development studies by generating new knowledge about parallel and partially overlapping transition pathways that dynamically affect the development of the whole society. The timing and nature of the interaction between actors can trigger unexpected development trajectories, which can be anticipated by examining the actions. According to the The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment Report, the UN 2030 Agenda goals can only be achieved through a comprehensive system-wide change including economic, social, political, and techonological factors (Brondízio et al., 2019, p. xviii). Therefore, this new knowledge will further contribute to the proclaimed need for policy coherence guiding the sustainability transition in Finland.

1.3 Structure of the thesis

This thesis proceeds from a broad perspective towards the Finnish context. After the introductory chapter, I shed light on the current state of the world by introducing the concepts of planetary boundaries, climate change and sustainable development. This justifies the need for social change and indicates the means for its implementation in a sustainable way. The second chapter also presents selected international policies that address climate change and sustainable development. The UN 2030 Agenda for Sustainable Development serves as a guideline for national sustainable development work. This is also the case in Finland, so the third chapter deals with Finland as a context of sustainability policy. In its brevity, the third chapter presents Finland, and its welfare state functions to outline the field of action of sustainable development policy. In addition, I highlight the role of Finns as significant global polluters. The fourth chapter introduces the theoretical framework of this research. The multi-level perspective (MLP) has established its position in the sustainability transition research. The MLP offers a typology for four different transition pathways that are the result of the interaction of actors at different levels of society. The chapter introduces the main features of the transitions pathways. In the fifth chapter, I describe the operationalisation of the MLP framework to answer my research questions. In this chapter, I also discuss data collection, description of the material, document analysis and research limitations. In the chapter six, the implicit sustainability transition pathways identified in 2030 Agenda roadmap of Finland are detailed comprehensively. In the last chapter, I recap the main findings and discuss the research results and their contribution to the scientific community and society. Finally, I propose suggestions for practical applications and future research.

2 BACKGROUND

In this chapter, relevant literature is reviewed and connected to the research problem. The purpose is to establish connections between current phenomena and policies concerning sustainability, previous research and my research questions. This is also to demonstrate a research gap in the field and to further elaborate the need for a critical review of sustainability policy.

First, I will lay foundation to the understanding of the planetary boundaries and the urgency of climate change. This is followed by the definition of sustainable development and selected policies addressing the situation. Then, I move from the global perspective towards the Finnish context to position the Finnish sustainability work within the international sphere.

2.1 Planetary boundaries

The Stockholm Resilience Centre (2023) define planetary boundaries as a set of quantitative metrics within which humanity has a safe operating space. In 2009, the former centre director Johan Rockström and his colleagues modelled nine thresholds for planetary boundaries. These are: climate change, ocean acidification, stratospheric ozone depletion, biogeochemical flows (nitrogen (N) and phosphorus (P)), freshwater use, land system change, rate of biodiversity loss, chemical pollution, and atmospheric aerosol loading (Rockström et al., 2009a; 2009b). The last two have not yet been quantified. The selection of the said planetary boundaries emerged from a question of "What are the non-negotiable planetary preconditions that humanity needs to respect in order to avoid the risk of deleterious or even catastrophic environmental changes at continental to global scales?" (Rockström et al., 2009b, p. 2). The model was one of the most ambitious attempts to achieve a cross-sectoral understanding of the state of the planet.

Different sectors form an interactive Earth system, where exceeding one threshold results endangerment of another sector. Since its introduction, the planetary boundary approach has been subject to scientific debate. The 2009 modelling estimated that the planetary boundaries had been exceeded in three areas: climate change, rate of biodiversity loss and interference with the global nitrogen cycle (Rockström et al., 2009a; 2009b). These sectors are connected to each other – climate change has led to a disturbance in the natural cycle, because of which the habitats of animal species have been degraded and this has led to the accelerated biodiversity loss. It is worth noting that the interaction of different sectors can change the defined threshold values due to unforeseen combined effects. Rockström et al. (2009a, pp. 474–475) emphasizes, that no boundary can be exceeded without endangering the safe operating space for humanity.

Since 2009, the calculations have been refined and updated numerous times. In 2015, Steffen et al. further specified the sectors, dividing the 'rate of biodiversity loss' into two subsectors under the heading biosphere integrity (Steffen et al., 2015, p. 741). The control variables for biosphere integrity are extinction per million species per year (E/MSY) and the Biodiversity Intactness Index (BII) (ibid., p. 740). The research group's biggest conceptual proposal is the replacement of the chemical pollution sector with 'novel entities.' Steffen et al. (2015, pp. 743–744) define novel entities as new and/or modified life forms that have potentially harmful or otherwise unwanted effects. These include chemicals and other type of engineered materials (e.g., plastics), as well as naturally occurred elements that have emerged due to the human activities (e.g., heavy metals). Due to the complexity of this planetary boundary, no quantitative thresholds had been defined before 2022. The study by Persson et al. (2022) proposes quantified metrics of novel entities based on several complementary control variables. With this, they present their staggering findings, as they conclude that humanity has already exceeded the planetary boundary of novel entities (see: FIGURE 1). They argue that novel entities impact include direct biological effects with subsequent cascading effects, physical pathways affecting climate, and uncontrollable chemical reactions (Persson et al., 2022, pp. 1511–1512). Mass produced goods can cause negative environmental effects throughout their life cycle, not to mention indirect consequences.

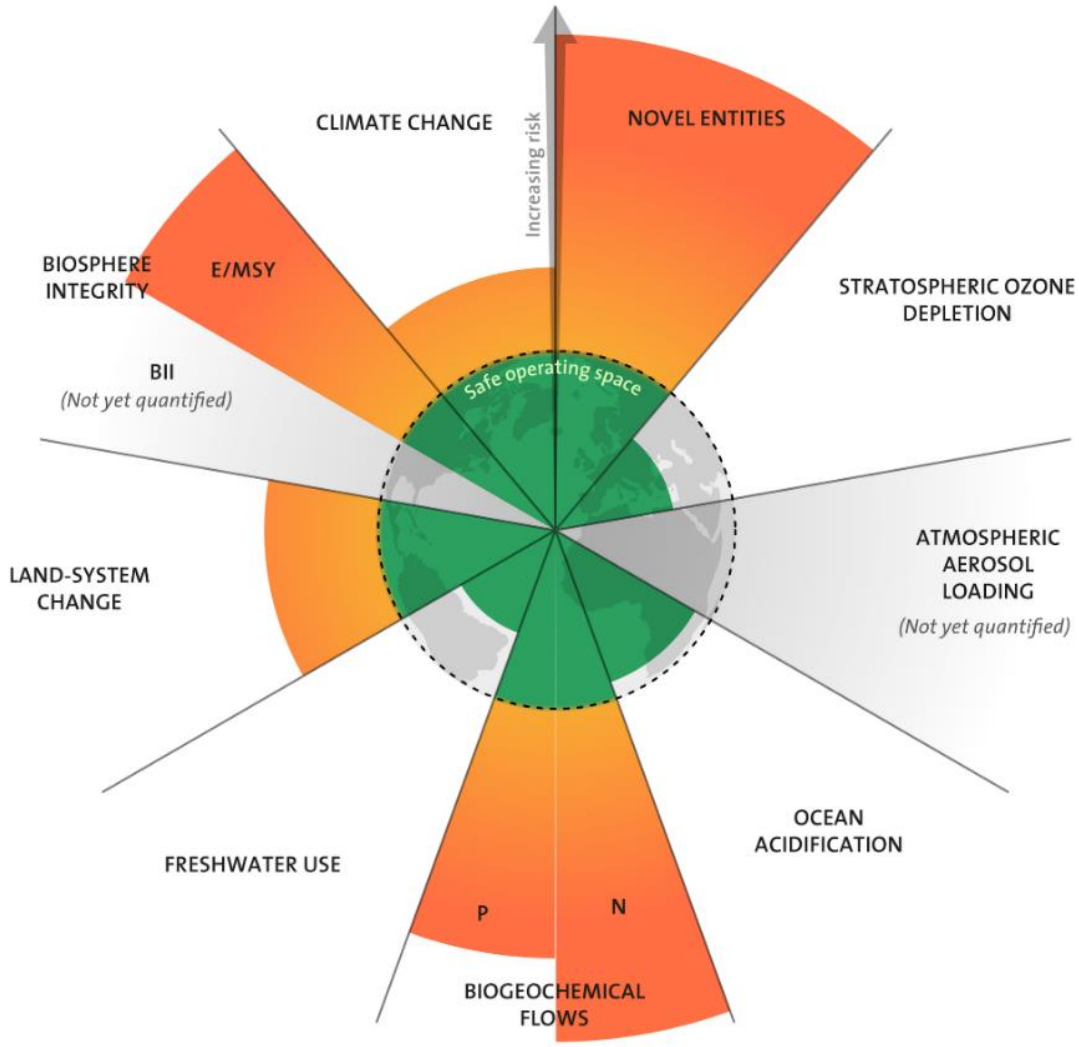

FIGURE 1 The planetary boundaries framework.
Source: Azote for Stockholm Resilience Centre, based on analysis in Persson et al. 2022 and Steffen et al. 2015 (CC BY-NC-ND 3.0)

Steffen et al. (2015, p. 744) identify climate change and biosphere integrity as the core planetary boundaries due to their fundamental role in the Earth system functions. Furthermore, they point out that large changes in the climate or in biosphere integrity alone could potentially derail the planetary wellbeing. Figure 1 illustrates how climate change and the integrity of the biosphere already exceed the Earth's safe operating space. For this reason, it is important to try to curb climate change and the deterioration of the state of nature in all human activities. Even the purpose of this research, in its limited part, is to increase knowledge about the means by which human development is kept within planetary boundaries. In the next section, I will further describe the urgency of climate change what kind of threat it poses to humanity.

2.2 Climate change

The climate has varied a lot during the 4.5 billion years of the Earth's existence. According to geological chronology, we are currently living through the last of five ice ages, which began about 2.5 million years ago (International Commission on Stratigraphy, 2023). During the ice ages, the temperature varies between glaciation periods, i.e. glacial periods, and warming periods, i.e. interglacial periods (Ekholm, 1901, pp. 34–36). It is generally believed that modern humans only evolved about 200,000 years ago, so we are relatively recent arrivals. The current interglacial, called the Holocene, began about 12,000 years ago (e.g. Crutzen, 2002). During the Holocene, the Earth's temperature has been relatively stable, enabling favorable conditions for life. But during the past three centuries, human impact on the environment has been significant. Population growth has been explosive, forests have been cleared for farmland, cities have been built, fossil fuels have been consumed, animal species have become extinct and the seas have become acidified (Crutzen & Stoermer, 2000, pp. 17–18). Due to the distincs features of the time, Crutzen and Stoermer proposed that the current period, beginning at the end of the 18th century, should be called the "Anthropocene", or the Age of Man (Crutzen & Stoermer, 2000, p. 17). According to them, humans have influenced the climate in such a way that it differs significantly from its uninterrupted natural behaviour. They date the beginning of the Anthropocene to the beginning of the global industrialization, namely the invention of the steam engine in 1784. The concept quickly popularized, and its use spread from geology to the human sciences and political debates (Toivonen & Korhonen, 2017, p. 3). The debate about the Anthropocene has been indeed complicated; the impact of human activity on the environment is scientifically proven, but its meaning for global societies is disputed (ibid.). In terms of environmental impacts, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) identifies the post-World War II period as its own category, because since the 1950s, human impact on the Earth has multiplied (Brondízio et al., 2019, pp. 83–91). From the 1950s onwards, the large-scale utilization of fossil energy sources has increased the concentration of carbon dioxide in the atmosphere resulting that the average temperature of the earth has risen (Rockström et al., 2009a; Masson-Delmotte et al., 2018; Brondízio et al., 2019; UNEP, 2020). This has led us down a path where global warming threatens the future of all humanity.

Swedish meteorologist Nils Ekholm discovered more than a hundred years ago that human activity has an unpredictable effect on the climate (Ekholm, 1901, p. 60). He predicted that coal consumption would warm the atmosphere, but he could not foresee the speed of development. According to the Intergovernmental Panel on Climate Change (IPCC) special report, global warming of more than 1.5 degree

Celcius compared to pre-industrial time would mean the mass extinction of the species and the reduction in viable land (Masson-Delmotte et al., 2018, pp. 68–70). Unfortunately, the UNEP Emissions Gap Report suggests that currently the world is on the way to hit 3.2 degree Celsius global warming by the end of the century (UNEP, 2020, pp. 34–35). Without immediate reductions in carbon dioxide emissions, global warming will continue at a rapid pace and cause devastating effect on both humanity and nature. In November 2022, the Climate Action Tracker (CAT) analysis published that the global temperature has already increased 1.2 degree Celsius compared to the pre-industrial average (CAT, 2022, p. 6). The CAT warming projections suggest global warming between 2.2–3.4 degree Celsius by the end on the century based on the current policies (CAT, 2022). This estimate is due to the fact that carbon dioxide remains in the atmosphere for a very long time, even hundreds of years. This means that the emissions already made will warm the atmosphere throughout this century, gradually destabilizing the Earth system.

Rockström et al. (2009b) emphasizes that the Earh system is a whole where everything affects everything. The loss of biodiversity is both a consequence and a cause of climate change, because the deterioration of the environment caused by climate change accelerates the loss of biodiversity and vice verse (Rockström et al., 2009b). According to the IPBES report, the five most important causes of biodiversity loss are changes in the use of land and sea, direct exploitation of organisms (fishing, hunting and gathering), pollution in its different forms, the spread of harmful species and climate change (Brondízio et al., 2019, pp. 117–138). Secondary, indirect drivers of change are related to social behavior. The IPBES report suggests that values guide the consumption of natural resources through economics and politics (Brondízio et al., 2019, pp. 72–116). The development of technology has enabled an increase in the standard of living, the effects of which are increased consumption and urbanization. The latest IPCC report underlines that the global greenhouse gas emissions continue to increase from unsustainable patterns of consumption and production, energy use and land use (Lee et al., 2023, p. 6). Consequently, human-caused climate change continues to affect regions around the world. Therefore, it is important to take action to move from unsustainable paradigm towards sustainability. The comprehensive change in mindset from continuous growth to sustainable development is not clear-cut, because the concept of sustainability is multidimensional and it is often implemented with different emphases. Due to this, the scientific community has worked to create a basis for a common understanding of the principles of sustainable development. Next, I will describe different ways of conceptualizing sustainability and how these definitions guide international sustainable development policy.

2.3 Sustainable development

The concept of sustainable development was first introduced in the so-called Brundtland Report by the World Commission on Environment and Development (WCED) in 1987. The report states that "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, part I, chapter 2). This definition has since become established as a generally accepted definition of sustainable development. It is noteworthy that this definition of development implies limits - not absolute but relative material limits to the use of natural resources (ibid.). The Brundtland Report argues that development is sustainable when it takes place within planetary boundaries. In addition to the environmental dimension, sustainable development also includes the social and economic dimension of development (WCED, 1987). This conceptualization is commonly described as a three-dimensional approach to sustainable development. Purvis et al. (2019) help to visualize the dimensions of sustainable development (FIGURE 2). According to a typical representation, the dimensions of sustainability are described as intersecting circles, but concentric circle approach has gained endorsement among emerging green economic theories addressing sustainability (e.g. doughnut economics) (Purvis et al., 2019, pp. 681–682). Addressing all these dimensions is critical for achieving sustainable development.

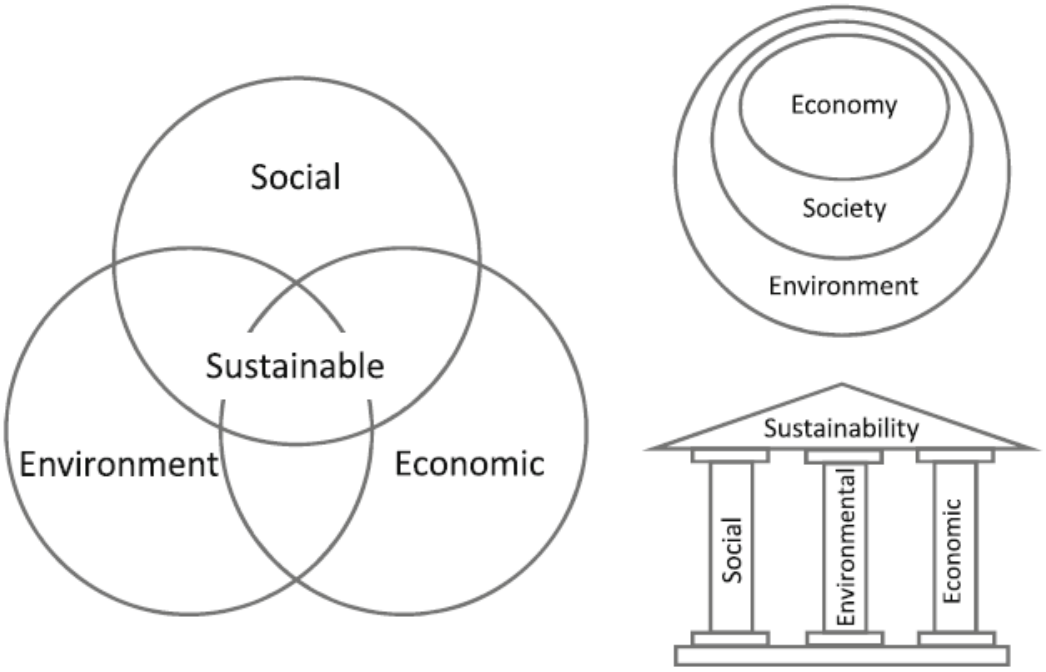

FIGURE 2 Representations of the three dimensions of sustainability.
Source: Ben Purvis, Yong Mao and Darren Robinson (2019, p. 682)

The three dimensions of sustainable development are environmental, social and economic. The modern understanding of the environmental dimension is based on the idea of the planet's carrying capacity, introduced by the Club of Rome in their work the 'Limits to Growth' in 1972 (Meadows et al., 1972). The understanding of the earth as a limited entity is now well understood and the research on the planetary boundaries has been continued by the Stockholm Resilience Centre. In simple terms, it can be said that an environmentally sustainable actor operates while conserving natural resources. In the same sense, a socially sustainable actor aims to ensure the realization of human rights at every stage and acts appropriately and fairly. Social sustainability encompasses social justice, equality, equity, inclusion, among others (Mensah, 2019, pp. 9–10). The concept implies that people's wellbeing is important since development is about people. The social dimension of sustainability is related to the environmental and economic dimension in the sense that people have the right to a sufficient livelihood and a healthy living environment (Mensah, 2019, p. 9). The dimension of economic sustainability is historically the most controversial of the three, as the concept of sustainability was born from criticism of economic status quo (Purvis et al., 2019, pp. 683–684). Yet paradoxically, the Brundtland Report argues that one of the most potential ways to achieve ecologically and socially sustainable development is through economic means (WCED, 1987, part I, chapter 3). The report concludes that market-orientation is no longer so much a goal of development work, but rather a tool to guide desired development. Purvis et al. (2019, p. 681) see it as an attempt to reconcile economic growth as a solution to ecological and social problems.

The tripartite approach to sustainable development established in the Brundtland Report has been adopted as part of the United Nations orthodoxy. Due to this, among other things Purvis et al. (2019, p. 682) argue that much of the recent literature on sustainability is focused on the conceptualization of sustainability of the UN Sustainable Development Goals (SDGs). This is an important notion from this study's point of view because the data of the study deals with the implementation of the SDGs in Finland. When studying the societal transition towards sustainability, it is important to define what is meant by said 'sustainability'. Especially when sustainable development is a globally declared goal, to achieve which international action programs and agreements have been drawn up. The Brundtland Report concludes that achieving sustainable development ultimately depends on political will (WCED, 1987, part I, chapter 1). Global, interlaced crises require collective responses. Next, I will talk more about the UN the 2030 Agenda action program and the goals of sustainable development.

2.4 Selected policies addressing climate change and sustainability

Steffen et al. (2015, pp. 737–738) argue that the climate change thresholds do not dictate how societies develop, but political decision concerning them do. Ideally, the political decisions are based on scientific evidence and include consideration on planetary boundaries. Yet, according to the Dasgupta review, it is difficult to predict the future, and there is no single right way to implement sustainability as part of policy-making (Dasgupta, 2021). However, the review highlights the role of public authority as the most crucial factor in adjusting the system to be more sustainable. Environmental policy and administrative decisions can safeguard the state of nature and the sustainable development. In the following, I will describe selected international policies addressing climate change and sustainability. The policies have been chosen based on the relevance of the research question. First, I will describe the UN 2030 Agenda for Sustainable Development, which acts as a guide for other policies. Then I will focus on the sustainability strategies of the EU. The Nordic Council of Ministers, on the other hand, focuses on the context of the Nordic countries. Finally, I will discuss the Finnish Prime Minister Sanna Marin's government program and how it initiated, among other things, the 2030 Agenda roadmap of Finland analysed in this study.

2.4.1 United Nations the 2030 Agenda

In the United Nations historical Paris Agreement (2015b) the 191 UN Member States committed to climate goals aiming to keep global warming under 2 degrees Celsius. To meet this goal, the UN adopted the 2030 Agenda for Sustainable Development in 2015 (UN, 2015a). The Agenda encompasses 17 Sustainable Development Goals (SDGs) with whopping 169 targets and 232 indicators (FIGURE 3). The SDGs serve as a comprehensive approach by addressing the social, economic, and environmental dimensions of development. The SDGs succeed the previous Millennium Development Goals (MDGs), which now apply to all countries instead of targeting mainly developing countries like the predecessor (UN, 2000; 2015a). The 2030 Agenda and the SDGs aim to promote the state of the world by 2030 ensuring dignified life and opportunity to realize one's potential in a safe and healthy environment (ibid.). Because the SDGs are not legally binding, the implementation of the 2030 Agenda rely on the UN Member States' own sustainable development policies and programmes. Therefore, the executive power of the sustainable development lies with the nation states – the global goals are implemented by national governments on a local level. The national progress is monitored and reviewed in annual reviews.

FIGURE 3 The United Nations Sustainable Development Goals.
Source: The United Nations (2023)

2.4.2 European Union Green Deal & Fit for 55 package

The European Union is a natural partner in achieving the UN's climate goals, and the EU is committed to implementing the SDGs. The EU is focused on the green transition to succeed in this, with the ultimate goal of achieving carbon neutrality by 2050. The European Green Deal is the EU's strategy for reaching the 2050 goal (European Commission, 2019). The strategy aims to transform EU into a "fair and prosperous society, with a modern, resource-efficient and competitive economy" (ibid., p. 2). In 2021, the European Commission and European Green Deal adopted the 'Fit for 55' package, a set of interconnected proposals to help achieve the societal change needed to reduce net emissions by at least 55 % by 2030 compared to 1990 levels (European Commission, 2021, p. 1–3). The package strengthens existing sustainable development legislation and presents new initiatives across climate, transport, energy, buildings, land use and forestry sectors. The proposed and revised regulations and directives are legally binding on all 27 EU member states. The EU countries must adapt their own legislation to be compatible with the EU's strategy.

2.4.3 Nordic Council of Ministers Vision 2030

The Nordic Council of Ministers has representatives of all Nordic countries, including Denmark, Norway, Iceland, Sweden and Finland. The Nordic Council of Ministers adopted the Vision 2030 action program in 2019, which is the 2030 Agenda implementation plan with special attention to Nordic conditions (Nordic Council of Ministers,

2020). For example, the Council has identified unsustainable consumption and production as one of the most pressing problems in Nordic countries (ibid., p. 3). In addition to achieving the SDGs, the Nordic region aims to be the most sustainable and integrated region in the world by 2030 (Nordic Council of Ministers, 2020, p. 4). The action plan 2021–2024 for implementing the strategy focuses on strengthening a green, competitive, and socially sustainable Nordic region (ibid.). One of the main goals is to make Nordic region an innovative leader in closed circular economies by investing in carbon-neutral production chains (ibid., p. 9, p. 22). Although the Council has illustrated overarching guidelines for achieving 2030 Agenda and Vision 2030, most Nordic countries also have their own national implementation plans. For example, the 2030 Agenda roadmap analysed in this study is Finland's version of the national plan to implement the SDGs.

2.4.4 Finland’s Prime Minister Sanna Marin’s government program

Finland’s Prime Minister Sanna Marin’s government program (2019–2023) aimed to make Finland a socially, economically and ecologically sustainable society. Government program is a plan of actions that the government undertakes to implement during its 4-year term of office. It is a massive project that coordinates the interests of different stakeholders and internationally binding agreements. Prime Minister Sanna Marin’s government had a strong commitment to sustainable development, and the government program included, among other things, the goal of carbon neutrality by 2035 and carbon negativity shortly thereafter (Finnish Government, 2019). In addition, the program included strengthening Finland’s position as a pioneer in the circular economy. Although the government program contained many goals consistent with the sustainable development goals of the UN, it also included a commission for the preparation of the national 2030 Agenda roadmap. The preparation of the 2030 Agenda roadmap was commissioned to the Finnish Commission on Sustainable Development in 2020.

In this chapter, I have described policies that utilize the principles of sustainable development in addressing climate change. Sustainable development is an important goal to define when looking at society's development towards sustainability. In addition, it is important to assess the appropriateness of the policy used in the temporal and spatial context. In this section, I presented how Finland's sustainability policy is guided by many international commitments. In the next chapter, I will discuss Finland as a context for development policy.

3 FINLAND AS A CONTEXT FOR SUSTAINABILITY POLICY

In this chapter, I will describe Finland as a context for sustainability policy. The Nordic welfare state is a unique context for sustainable development policy because the state has a strong commitment to social sustainability by default. In this field, Finland is ranked particularly well in the UN's Sustainable Development Report (Sachs et al., 2022). On the other hand, the northern climate causes high energy consumption and dependence on imported products. According to the report, Finland's biggest challenge remains to be environmental protection (ibid., p. 202). First, I will tell you background information about Finland, such as demography, economy and geography. Next, I will describe politics and administration, and especially the role of the state in implementing the welfare mission. Finally, I will present information on Finns' consumption habits and environmental impacts.

3.1 Finland

Finland is a Nordic country located in the northern Europe and borders Russian in the east, Sweden in the west, and Norway in the north. The country ranks the fifth-largest country in the European union and the 8th largest country in the European continent with an area of 338,472 km^2 (Statistics Finland, 2022). There are hundreds of thousands of lakes in Finland and 86 % of the land area is forest. The population of Finland is 5.5 million people, most of whom (61.6 %) are of working age (15–64 years old). The population is aging, with only 15.4 % of the population under 14 years old (ibid.). Compared to the many other European countries, Finland is large and sparsely populated with a population density of 18.3 inhabitants/km^2. Situated in northern Europe, Finland has a considerably cold climate with an annual mean over 5 °C in southern and western Finland and below 0 °C in northern Finland (Finnish Meteorological Institute,

2023). Due to the long distances and the cold climate, living and moving around requires special preparedness.

The Constitution of Finland (1999/731) states that Finland is a sovereign republic dedicated to promoting justice in the society. According to the constitution, the public authorities must guarantee adequate social, health and medical services for everyone (§ 19). In order to ensure a healthy and safe living environment for everyone, the Finnish government regulates many essential prerequisites for a good life. The realization of good life is supported with the help of social benefits (for more information, see: KELA, 2023), but it inevitably maintains a high standard of living and, with this, high consumption.

3.2 Finnish welfare state

As discussed in the previous chapter, the role of public authority has an emphasized role in improving the sustainability of the system (Dasgupta, 2021). The executive power of the state is emphasized especially in a state model where the state practices social-political universalism, such as in Finland. For this reason, in terms of the research question, it is relevant to discuss the special features of the Finnish welfare state as a context of sustainability policy.

Welfare state can be organised in different ways and perform its welfare function in numerous ways. The different models are called welfare-state regimes. Esping-Andersen (1990) defines three distinguish welfare regimes: the liberal, the social democratic, and the corporatist-statist regimes. According to Esping-Andersen (1990, pp. 21–23), the regimes differ by the degree of decommodification, labour market organization, public market intervention, and the scope of social security. While the liberal regime emphasizes market-oriented solutions and means-tested assistance for social problems, the corporatist-statist model is based on the social security provided by the employment relationship and the safety net provided by the family (ibid., pp. 26–27). Instead, in the social democratic model the state regulates the market and provides universal social security (ibid., p. 27). In accordance with the Esping-Andersen's classification, the Finnish welfare state is based on social democratic regime, i.e. the Nordic model. The Nordic model is commonly associated with economic success, social and gender equality, and general wellbeing (Julkunen, 2017). According to Julkunen (2017), the roots of the Nordic welfare model are in Sweden, from where the concept spread to the other Nordic countries. The idea of social insurance and the welfare state were consolidated during the post-World War II reconstruction, when social democracy, solidarity and equality were combined with economic growth. Hence, the construction period of the Finnish welfare state can be considered to have begun in the

1960s, when the rapid urbanization of rural areas required the reorganization of social services, education and work life (Julkunen, 2017). Focusing the public investments on welfare services and social benefits led to the formation of a skilled and prosperous workforce. Despite the global market liberalism of the 2020s, Finland has maintained its traditionally strong public administration and extensive social security. Decades of persevering work had succeeded in instilling strong universalistic values in the citizens, crystallized in the idea of the equality of opportunities guaranteed by the Finnish state. However, prosperity and the realization of equality require constant adaptation and reform of the system to reflect the prevailing situation.

3.3 Finnish lifestyle and consumption

The Finnish Environment Institute (SYKE, abbr. from Finnish: Suomen ympäristökeskus) states that Finns' consumption and production do not have a sustainable basis (Furman et al., 2018). Despite the country's small size, Finns have a relatively large environmental impact. This has a negative effect on the wellbeing of the entire planet, and its consequences will eventually return to Finland (ibid.). According to Our World in Data[1], which is maintained by numerous researchers, Finland is among the world's most energy-consuming countries per capita (Ritchie et al., 2022). The total use of primary energy includes electricity, transport, and heating. According to their data, Finns used 58,141 kWh energy per person, while the world average was 20,902 kWh per person in 2021. In addition, about half of the energy consumed in Finland (47 % in 2021) came from fossil fuels such as oil, coal, and gas (Ritchie et al., 2022). It is important to pay attention to energy sources, as currently the energy sector produces three-quarters of global greenhouse gas emissions (Ritchie et al., 2020). Even in Finland, the energy sector dominates the greenhouse gas emission statistics. All in all, the average Finn produced consumption-based carbon dioxide (CO_2) emission of 8.68 tons per capita in 2020 (Ritchie et al., 2020). Consumption-based emissions are national emission that have been adjusted for trade. CO_2 emission are typically measured as domestic emission, but that does not consider emissions from imported goods (Ritchie, 2019). Instead, consumption-based CO_2 emissions are calculated from domestic emissions minus emissions from the manufacture of export goods plus emissions from the manufacture of imported goods (Ritchie et al., 2020). Consumption-based CO_2 emissions better reflect the impact of lifestyles and consumption habits on the carbon footprint. The carbon footprint of Finns is almost twice the global average, 4.50 tons per

[1] https://ourworldindata.org/

capita, and it clearly exceeds the EU average, 7.17 tons per capita in 2020 (Ritchie et al., 2020). It is also worth noting that Finland is a global net importer of emissions, as up to 28% of its total CO_2 emissions were generated outside the country's borders in 2020 (Ritchie, 2019). The value means that 28 % of Finland's CO_2 emissions were embedded in imported goods. In particular, the food consumed in Finland is mainly imported from other parts of Europe and South America (Furman et al., 2018). In summary, it can be stated that Finns consume a relatively large amount of energy globally and cause considerable greenhouse emissions in their daily lives.

In this chapter, I have briefly given background information on Finland and described the hallmarks of a welfare state. In summary, Finland is geographically a large country with a small population and relatively cold climate. The Finnish welfare state is built in to promote the well-being of its citizens, so it has a strong motivation and executive capacity to promote sustainability. Currently, Finns use more than twice as much energy as the world average, more than half of which is from fossil sources. The current state of Finland is the starting point of this research because the research material and the knowledge obtained from it will contribute to the transition of Finnish society towards sustainability.

4 THEORETICAL FRAMEWORK

In this chapter, I will introduce the concept of sustainability transition and the multi-level perspective (MLP) approach on transitions. Sustainability transitions are a prominent research object in sustainability studies. The MLP framework was created by Frank W. Geels in the early 2000s and it has since established its position as a standardized transition model that many scholars now refer to. The theory can be utilized to identify different transition pathways in societal changes. The different transition pathways and their characterizations are detailed at the end of the chapter.

4.1 Sustainability transitions

Sustainability transition has become one of the most heated topics of political and scientific discussion of the day. The increased use of the term communicates the need for comprehensive social change in order to achieve a sustainable society. In the context of discussions on societal change, transition and transformation are often used as synonyms, but as theoretical approaches, the terms have nuanced differences. The sustainability transition research field has adopted the term 'transition', which is used to refer to the transition from one kind of social, technological, institutional and economic model to another regime (Hölscher et al., 2018, p. 1). They direct their analysis to the social, technological and institutional interaction that facilitates the change of societal subsystems (e.g., energy, mobility, cities). The concept of 'transition' analyzes the dynamic process of change and identifies the enablers and hinderers of change – the "how's" (Hölscher et al., 2018, p. 2). Instead, 'transformation' commonly refers to a more radical and fundamental large-scale change in the interaction of people and the environment (ibid.). However, some scholars use the concepts more flexibly, considering transfromation as only one possible transition pathway

(Hölscher et al., 2018, p. 2). For example, the pioneering sustainability transition scholars Frank Geels and Johan Schot define transitions as long-term processes resulting into radical shifts (in scope) from one system to another, a process that requires multiple socio-technical changes and interaction between stakeholders (Geels & Schot, 2010, pp. 11–12). They therefore synthesize the main features of the above conceptualizations of transition and transformation, focusing their analysis on the dynamic process of large-scale and far-reaching changes. By their definition, the concepts of transition and transformation are not mutually exclusive but complementary. Increasingly, both concepts refer to the normative idea of sustainability (Hölscher et al., 2018, p. 2). This study adopts the conceptualisation of transition by Geels and Schot, as it is well established in sustainability transition research.

Previously, societal transition has typically referred to energy transition, as energy availability has historically been the main component of economic development. Indeed, Fouquet and Pearson (2012, p. 1) refer to 'energy transition' as the transition from one economy dependent on a certain energy source to another. Arguably, humanity has gone through several energy transitions during its history. The main energy sources have changed, for example, from muscle and waterpower to coal and from coal to oil (Malm, 2013; Fouquet, 2016). Fossil fuels have been the dominant energy sources worldwide since the Industrial Revolution of the 19th century (Ritchie et al., 2022). Technically, we are currently in the midst of the latest energy transition, the shift from fossil fuels to renewable energy.

Building on Geels and Schot (2010), in this study I define sustainability transition as several fundamental changes occurring simultaneously in different areas of society, which aim to secure the carrying capacity of the environment. They argue that sustainability transitions are distinguished from other historical transitions by their goal towards collective sustainability. Geels (2011, p. 24) summarizes, that the systemic changes towards sustainability are often called 'socio-technical transitions', because "they involve alterations in the overall configuration of transport, energy, and agri-food systems, which entail technology, policy, markets, consumer, practices, infrastructure, cultural meaning and scientific knowledge". Inherently, this means that the sustainability transitions are about the interactions between technology, politics, economy, and culture. These elements are produced and reproduced by various actors. Geels and Schot (2010, p. 12) further state that transitions are macroscopic, and therefore the analysis should focus on the levels of the individual, organizational subsystem, organization, organizational population, organizational field, society and world system. Therefore the transition must be analysed simultaneously at several different levels of society. For this research task, Geels (2002, 2004, 2011) has developed the multi-level perspective (MLP) framework. The MLP framework is utilized throughout this research. I will focus on this in the following section.

4.2 Multi-level perspective (MLP) on transition

Sustainability transition is a long-term and complex socio-technical transition. To address the general research concern, transition, Geels (2002) has developed a theoretical framework called the multi-level perspective (MLP) on transitions. The MLP is an abstract analytical tool that recognizes the connection between theoretical principles and the mechanisms of society (Geels, 2002, p. 1273). The perspective incorporates notions from science and technology studies, evolutionary economics, and sociology (Geels & Schot, 2010; Geels, 2011). Geels has previously employed the framework to study historical energy transitions, but he has since developed the approach to go beyond single technology. The MLP outlines a simplified and standardized transition model that many researchers now refer to.

The MLP emphasizes how transition occurs as a result of interaction between and within different levels of society. According to Geels' (2002, 2011), the MLP consists of three analytical levels: socio-technical landscape, technological niches, and socio-technical regimes (FIGURE 4). The socio-technical landscape is the broader macro level of the society, that is relatively stable and outside of the direct influence of the actors from other levels. Though, the landscape can be affected by slow changes (such as climate), long-term changes (such as industrialization), or rapid external shocks (such as war). The counterpart of the macro levels is the micro level of the society, where sheltered niches produce innovations (such as technologies, theories). Niches are incubators of innovation that are essential in the transitions because they produce the seeds for the systemic change. Lastly, the socio-technical regimes (meso level) are nested between these two levels.

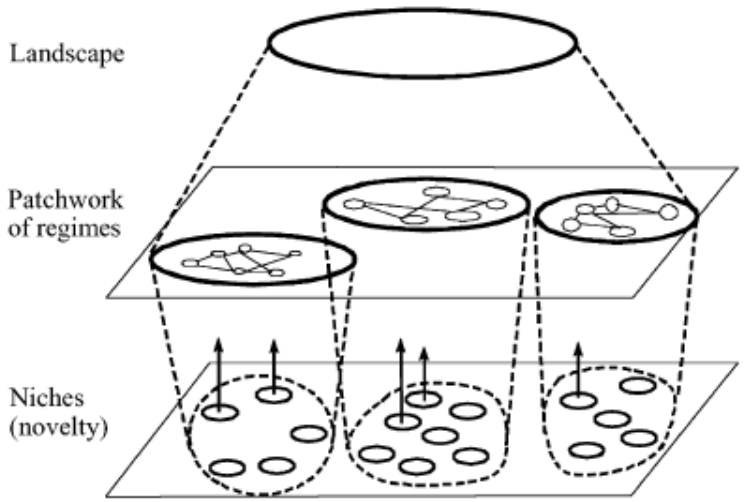

FIGURE 4 Multiple levels as a nested hierarchy.
Source: Frank W. Geels (2002, p. 1261)

The landscape and niche levels are defined in relation to the regime, while the regime constitutes the 'deep structure' of the existing socio-technical system (Geels, 2011, p. 27). Established socio-technical regimes consist of various sub-regimes in the field of science, technology, policy, economics and culture, which interact with each other at the socio-technical level (ibid.). Regimes are characterized by path-dependency and lock-ins, as the rules of socio-technical regimes stabilize and lock-in the prevailing systems. Geels (2004, pp. 904–906) proposes that the concept of socio-technical regimes contain cognitive belief systems, regulative laws, and normative values that uphold the current system. Different stakeholders interact within the socio-technical system while co-evolving multiple trajectories. While these regimes have their internal dynamics, they also interact and evolve with each other (FIGURE 5). Geels (2011, p. 27) concludes that the concept of socio-technical regime is intended to describe the meta-coordination between different sub-regimes.

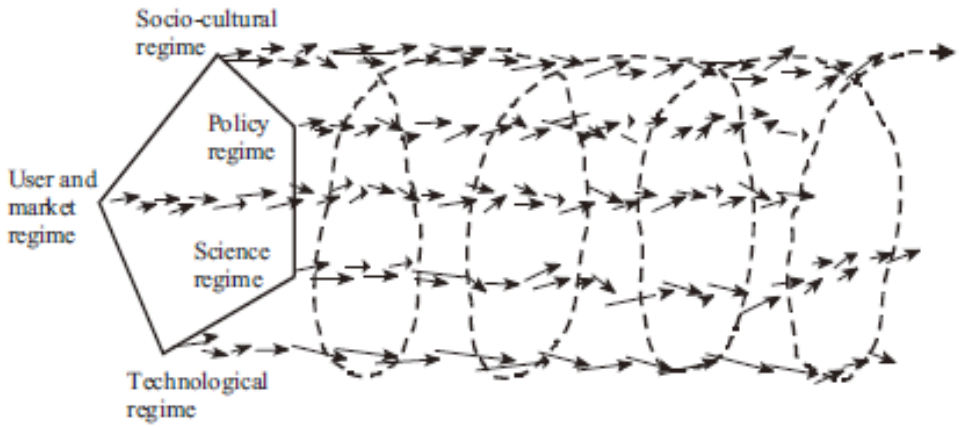

FIGURE 5 Alignment of ongoing processes in a socio-technical regime.
Source: Frank W. Geels (2011, p. 27)

The window of opportunity for societal transition is formed when the timing of landscape pressure on regimes aligns with the development state of niche innovations (Geels & Schot, 2010, pp. 54–62). The innovations develop in a nurtured process with different niche-actors. Niche innovations gain momentum as the innovations become more suitable, precise and commonly accepted solutions. Sufficiently developed niche innovations can have either competitive or symbiotic relationship with the existing regime, depending on whether or not they can be adopted as an enhancement to existing functions (Geels & Schot, 2010, p. 55). If the niche innovations are not yet sufficiently developed, they cannot seize this window. Figure 6 provides an ideal-typical model of the dynamic interaction between the three levels according to Geels (2011). Although each transition is unique, a general pattern can be identified. Here is represented the dynamic interplay of unfolding socio-technical transitions.

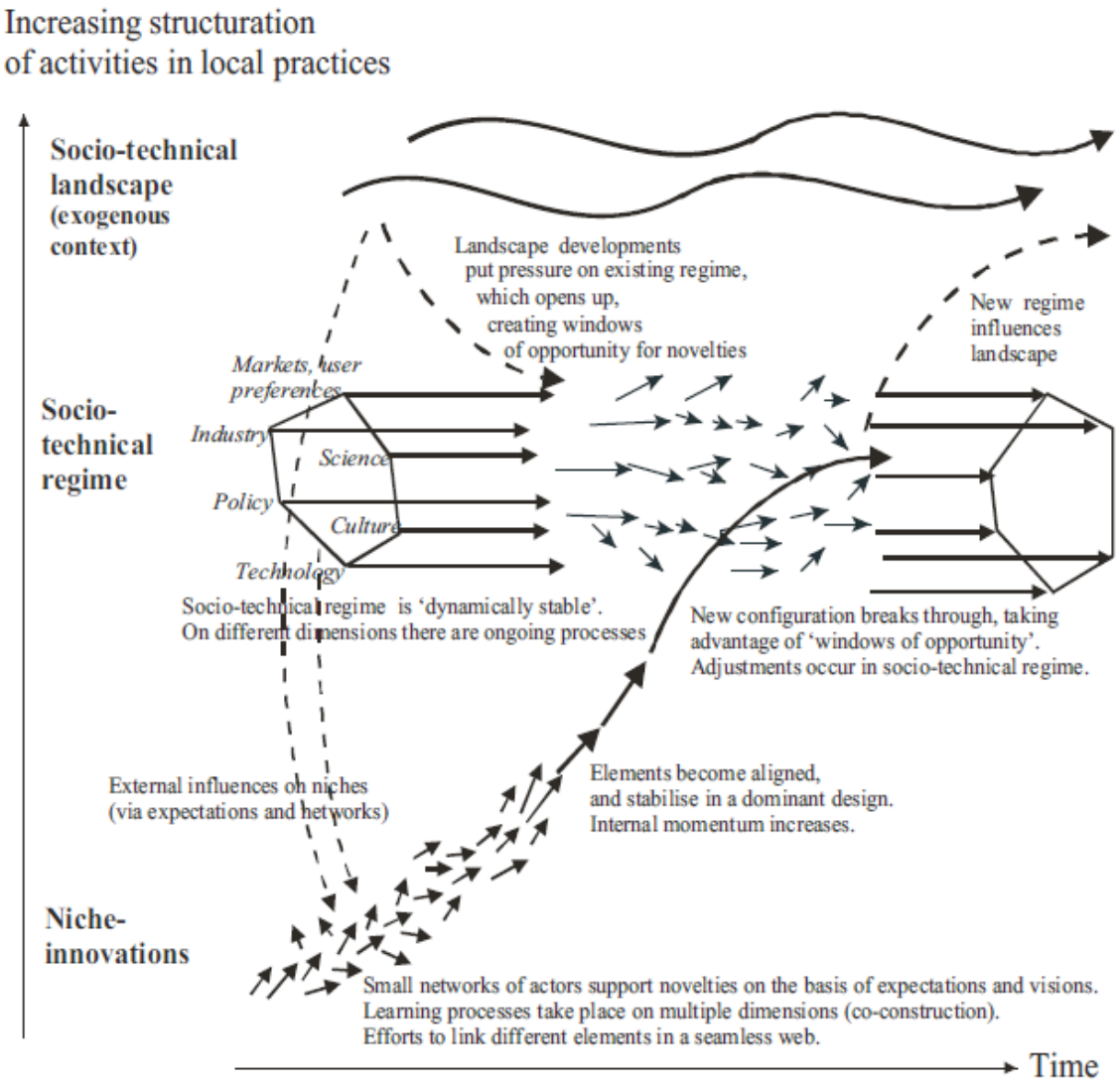

FIGURE 6 Multi-level perspective on transitions.
Source: Frank W. Geels (2011, p. 28)

Though the MLP has been recognized as a fruitful approach analysing sustainability transitions, the framework has received criticism for underplaying the role of agency, among other things (see: Geels, 2011; Geels & Schot, 2007). While Geels (2011, pp. 25–29) admits that private actors have limited agency to address sustainability transitions, he emphasizes that multi-level interaction is always enacted by social groups. He further reflects that increasing structuration of activities in local practices implies that different socio-technical levels are continuously maintained and reproduced by actors in concrete activities (FIGURE 6). In other words, while actors are embedded in the structure, they also reproduce them (Geels & Schot, 2010, p. 42). They argue that although the actors are not explicitly shown in the diagrams or terminology, they are still implicitly part of the theoretical foundations of the MLP.

4.3 Transition pathways

Geels and Schot (2007, 2010) argue that transitions do not come about easy since the existing socio-technical regimes are dynamically stable. However, they admit that regimes become unstable when individuals diverge or disagree with the basic rules, or the landscape faces disruptive changes. The timing and nature of multi-level interactions trigger different transition pathways. They recognize four different transition pathways: P1) Transformation, P2) De-alignment and re-alignment, P3) Technological substitution, and P4) Reconfiguration pathway. In addition, they recognize zero proposition when there is no landscape pressure: P0) State of dynamic stability and reproduction (ibid., pp. 54–57). These pathways models are ideal types, and they hardly exists in 'pure' forms. The transition pathway development can be triggered either by the pressure of a change in the landscape, a change in discourse of the established practices, or by transformative niche-innovations (ibid.). The interaction between niche- and regime-actors that determines the development of triggered trajectory. Regimes therefore play a central, decisive role in transitions, because transitions are defined as transitions from one system to another. In this section, I outline the main features of the different transition pathways defined by Geels and Schot (2007, 2010).

4.3.1 Transformation pathway

The transformation pathway is associated with the most societal transitions. The concept of transformation is often also used as a parent of sub-concept of transition, as discussed in the Section 4.1 Sustainability transitions. In the MLP, the transformation pathway occurs when the regime faces moderate landscape pressure and the niche-innovations are not yet sufficiently developed to capture the window of opportunity (Geels & Schot, 2007, p. 406). As a result, the regime changes its own development trajectories to adapt to the changed situation. In the transformation pathway, the niche innovations have a symbiotic relationship with the regime because they are not yet able to compete with the existing regime. The existing regime adopts competence-enhancing add-ons from the niche without changing its core functions. The dynamic processes thus reinforce each other. According to the MLP, the transformation pathway is the least radical transition of the four transition pathways.

4.3.2 De-alignment and re-alignment pathway

The de-alignment and re-alignment pathways is triggered when regime faces a large and sudden landscape pressure, resulting with increasing regime problems. In this scenario the regime actors lose their faith in the system, leading to de-alignment and erosion of the regime. If the niche-innovations are not sufficiently developed, there is

no clear substitute for the eroded regime. Geels and Schot (2007, p. 408) remark that "metaphorically, the 'hollowing out' of the regime leads to a vacuum." This leaves space for multiple insufficiently developed innovations to emerge and compete for attention and resources. Eventually, after exploration of multiple trajectories, one niche-innovation becomes dominant and forms the core for re-alignment of a new regime (ibid.). Re-alignment of the regime is the result of the interaction between actors, when one innovation demonstrates its superiority in terms of compatibility. The new regime is formed around the innovation favoured by the market, culture, technology and politics. According to the MLP, the de-alignment and re-alignment pathways is the most radical transition of the four transition pathways, as one or more regimes are re-aligned and re-institutionalised due to landscape pressure and new innovations.

4.3.3 Technological substitution pathway

Similar to the de-alignment and re-alignment pathway, technological substitution pathway is also triggered when the landscape poses disruptive pressure on regime. But in this scenario the niche innovations are sufficiently developed, and they are able to seize the window of opportunity for transition. At the moment of specific shock, the niche-innovations breaks through and replaces the existing regime. Alternatively, the niche-innovations can break through even without the help of landscape pressure if they gain high internal momentum through investments, politics, demand, etc. Early MLP studies implicitly assumed a technological substitution pathway as the only means of societal transition, where one innovation (e.g., steamships) emerged and replaced the existing regime (e.g., sailing ships) (Geels & Schot, 2010, pp. 68–71). The new transition pathways have become more prominent as the societies have become more complex.

4.3.4 Reconfiguration pathway

In the reconfiguration pathway the existing regime adopts sufficiently developed niche-innovations in response to moderate landscape pressure. These adoptions are often motivated by improved performance in some aspect. The niche-innovations do not aim to replace the existing regime; thus the new regime grows out of the old regime (Geels & Schot, 2007, p. 411). The adopted innovations may lead to further adjustments in the regime as new combinations of elements are discovered. This pathway is similar to the transformation pathway, but in the reconfiguration pathway, the regime architecture experiences substantial changes. According to Geels and Schot (2007), the reconfiguration pathway is most common in distributed systems (e.g. food production), where the transition occurs as a result of the adoption of several components.

These four transition pathways presented above will serve as an interpretation framework guiding the analysis. Using this framework, I aim to identify implicit transition pathways from the Agenda 2030 roadmap that guide Finland's change towards sustainability. Going through different change paths helps to understand the scope and dynamics of actions required to achieve Finland's sustainable development goals by 2030. In the next section, I will delve into the methodology of the research and the operationalization of MLP in the analysis.

5 METHODOLOGY

In this chapter, I will discuss the methodological choises of my research. First, I will elaborate the qualitative research approach and its applicibality for the research purpose. Then, I will explain why and based on what charasteristics I selected the 2030 Agenda roadmap of the Finnish National Commission on Sustainable Development (FNCSD) as the data for my research. I will then proceed to briefly describe the political process that led to the drafting of the document. After describing the content of the research material, I move on to describe the method of data analysis. This study employs a qualitative document analysis method to examine the selected policy document, the 2030 Agenda roadmap. Ethical consideration, positionality and limitations of the study are introduced in the end of the chapter respectively.

5.1 Qualitative research approach

Qualitative research approach aims to form an in-depth understanding of a single phenomenon instead of aiming for statistical representativeness. Qualitative research seeks to interpret and understand subjective and collective meanings. The constructive foundation of qualitative research approach sees the researcher themself as a part of the social reality they study and interpret. Alasuutari (2011, p. 59) describes qualitative research as a detective game – it is important to systematically interpret emerging clues and avoid intellectual dishonesty. He further reflects that inductive analysis of qualitative data progresses from individual observations towards generalisations. In scientific research in general, a perfect certainty can never be achieved, but the more mutually supportive research results are found, the more convincing the conclusions are (ibid). Therefore, the aim of qualitative research is to create a description of the phenomenon in a concise and general form. Alasuutari (2011, p. 218) emphasises that

qualitative research is a textual process from start to finish – not least because qualitative research targets are often written documents such as books, policy papers, and interviews. For this reason, the empirical and subjective nature of the analysis is always present in qualitative research. At its best, qualitative research is piloting and generating new information. The cyclical research process allows deep analysis and understanding of the topic.

This research utilizes a qualitative strategy to research the content of the 2030 Agenda roadmap of the FNCSD. The qualitative approach is chosen because of the limited data and the research question; the implicit transition pathways would be hard, if not possible, to analyse through quantitative document analysis. In this case, the policy process is deeply embedded in a temporal and spatial context, the dependencies and interconnections of which cannot be fully explored by quantitative methods. Qualitative research also enables the critical investigation of hidden meanings and discourses. My research questions were formed and revised during the writing process based on the increase in knowledge and the peer feedback I received.

5.2 Methods of data collection

This research will conduct a documental analysis for the 2030 Agenda roadmap of the FNCSD. The initial step of the study was to decide on the institution whose development policy papers to review. In Finland, the government leads the national development work, but the government's work is supported by the Development Policy Committee of the Ministry of Foreign Affairs and the independent Finnish National Commission on Sustainable Development. The FNCSD is an influencer forum that brings together experts and stakeholders from different fields. The government, parliament, ministries, business, municipalities, trade unions, church, organizations, scientific community, as well as other development experts are represented in the Commission (FNCSD, 2023). I chose the Commission's work as my research target because the Commission is an independent institution whose goal is to support the continuity of the government's work on sustainable development beyond individual parliamentary terms. In addition, the Committee is the only institution in Finland whose main task is specifically to accelerate the implementation of the 2030 Agenda and integrate it into the national sustainable development work. Due to these charasteristics, the 2030 Agenda roadmap of the FNCSD is an ideal research target for my research purpose.

For this thesis, I chose the official English translation of the 2030 Agenda roadmap of the Finnish National Commission on Sustainable Development[2] published on 7 June 2022. The original Finnish version of the document, Kestävän kehityksen toimikunnan Agenda2030 -tiekartta, has been published on 13 May 2022. My thesis analyses the official English translation, but the original Finnish version is used as a supplement if necessary. The document has a total of 83 pages and two appendices in Finnish. The appendices contain materials related to the preliminary study of the 2030 Agenda roadmap conducted in 2020–2021. The data was obtained from the Institutional Repository for the Government VALTO[3]. The repository contains the Ministries' publications in PDF format since 2016. Most publications are available in Finnish, Swedish and English. VALTO is open to the public and its content is free to use, provided that the source is cited correctly. Electronic publications can be downloaded for free, but publications can also be purchased in printed form from the online bookstore of the Finnish Government. All the materials used in this research were openly downloaded from VALTO. For this study, obtaining the data online was both inexpensive and time efficient.

For data management and analysis, I used ATLAS.ti[4] software, which is a tool designed for qualitative research. I acquired a license for the software through the University of Jyväskylä, which allowed me to install ATLAS.ti to my own device. This tool allows one to organize data, create codes, and illustrate transition pathways emerging from the data. ATLAS.ti facilitates efficient data analysis utilising semi-automatic research tools and visualization of information. In addition, the software can be used to store data and maintain memo.

5.3 The 2030 Agenda roadmap of the Finnish National Commission on Sustainable Development

Finland's the 2030 Agenda roadmap seeks an answer to the question "How do we ensure the future wellbeing of Finns within the bounds of nature's carrying capacity, while also addressing global wellbeing and the sustainable use of natural resources?" (FNCSD, 2022, p. 8). In accordance with the Prime Minister Sanna Marin's government program, the government had to take action to accelerate the implement the UN the 2030 Agenda in Finland (Finnish Government, 2019, pp. 65–67). The government pro-

[2] The document is available at: http://urn.fi/URN:ISBN:978-952-383-266-4
[3] VALTO can be accessed at: www.julkaisut.valtioneuvosto.fi
[4] More information about ATLAS.ti software is available at: https://atlasti.com/

gram aims to make Finland a socially, economically, and ecologically sustainable society (ibid.). To initiate the achievement of the goal, the Prime Minister's Office produced a report describing the current state of Finland's implementation of the 2030 Agenda. The report illustrated government's current actions in promoting SDGs and how the actions should be scaled to reach the goals by 2030. The report recommends introducing regular independent expert consultation and systemic reporting into the implementation strategy (Prime Minister's Office, 2020a, pp. 109–114). At the same time, the Prime Minister's Office had also commissioned Gaia Consulting Oy to produce a pilot study for the 2030 Agenda roadmap (FIGURE 7). The pilot study contains background material, situation analysis and expert interviews on the status of the national 2030 Agenda roadmap work. The pilot study recommends building the national roadmap on systemic transitions or transformation paths (Halonen et al., 2020, pp. 43–48). Consistently, the government commissioned the FNCSD to prepare a proposal for the 2030 Agenda roadmap. Aalto University supported the Commission in preparing the roadmap by facilitating Mid-Range Transition Arena, which is a strategic tool for directing a systemic transformation (Lähteenoja et al., 2021). The commission submitted the final document to the government to use in its work in February 2022.

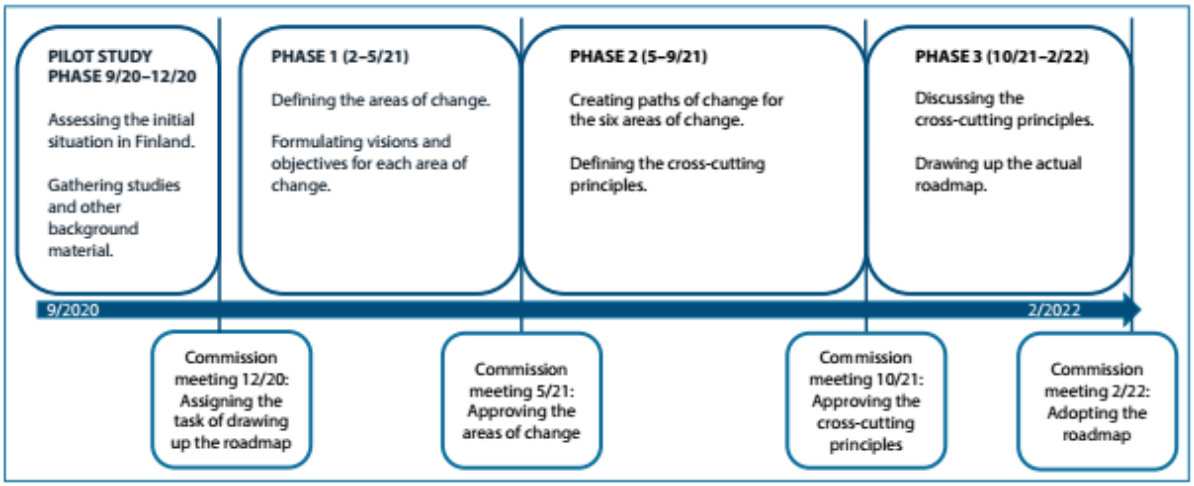

FIGURE 7 Stages of preparation for the 2030 Agenda roadmap.
Source: Prime Minister's Office (2022, p. 78) (CC BY-SA 4.0)

The 2030 Agenda Roadmap of the FNCSD (2022) is a medium-term plan about the actions Finland needs to take to achieve the 2030 Agenda of the UN adopted in 2015. The roadmap guides public decision-making and the government in its work. The roadmap aims to promote the achievement of the SDGs through six areas of change. The roadmap's six areas of change are the following: Economy and work promoting wellbeing and sustainable consumption; Education, competence and sustain-

able lifestyles; Wellbeing, health and social inclusion; Food system promoting wellbeing; Forest, water and land use promoting biodiversity and carbon neutrality; and Sustainable energy system (FIGURE 8). In addition to the six areas of change, Finland addresses global responsibility and support for the global implementation of the Agenda 2030. This research will focus only on the six areas of change because the research interest is about the Finnish transitions pathways to sustainability. The areas of change were largely determined based on the 2030 Agenda goals and targets that Finland has not yet reached (Prime Minister's Office, 2020b, pp. 103–150).

FIGURE 8 The six areas of change defined by the FNCSD.
Source: Prime Minister's Office (2022, p. 12) (CC BY-SA 4.0)

Aside to the areas of change defined in this document, Finland has already reached several goals and targets that must be safeguarded. Due to the interconnected nature of the society, focusing on the deprived areas will also improve and maintain the state of the other areas. For each area of change, the roadmap entails a vision extending to 2030, a set of objectives, and description of the key measures. In addition to the six areas of change, the roadmap defines five cross-cutting principles guiding implementation. The principles are the following: ensuring justice, equal treatment and gender equality; fostering inclusion throughout society; focusing attention on those in a weaker position ('leave no one behind', LNOB); safeguarding perseverance and policy coherence; and shouldering global responsibility.

5.4 Methods of data analysis

Analysis is a process in which the data is first broken down and then reassembled into interpretations and scientific conclusions. Analysis refers to systematically reviewing and structuring the material to make interpretations. Interpretations are bringing out the deeper meanings of the material with the help of a theoretical framework. In this section, I describe the qualitative document analysis, the operationalization of the MLP theory, and the stages of the analysis in this study.

5.4.1 Document analysis

Document analysis is a technique for systemically reviewing and evaluating documents. Bowen (2009, p. 28) summarizes that in document analysis "the analytic procedure entails finding, selecting, appraising (making sense of), and synthesising data contained in documents". He argues that document analysis is particularly well suited for conducting qualitative case studies. Although document analysis is often used as a complementary method, it can also serve as a stand-alone method. Bowen (2009, pp. 33–34) highlights that research utilizing document analysis typically requires carefully reviewing prior documents and previous studies. That is because documents are context-specific and should be evaluated using other sources of information. In my research, it is important to consider the theoretical frameworks in the preliminary studies used in the preparation of the 2030 Agenda roadmap. The goals of the roadmap are based on the UN 2030 Agenda, but the achievement of the goals utilizes systems thinking and sustainability transition pathways (UN, 2015a; Halonen et al., 2020; Lähteenoja et al., 2021; FNCSD, 2022). These theoretical commitments are not necessarily evident from the researched material itself, but they have been clearly stated in the pilot study.

The advantages of document analysis lie with its time efficiency and availability. In relation to other qualitative research methods, many documents are public domain and can be obtained online (Bowen, 2009, pp. 31–32). Many kinds of electronic records are increasingly available. Therefore, rather than collecting data document analysis requires mere data selection. However, the researcher must assess the reliability and coverage of the data. The advantage of the public records is their detailed documentation – it is relatively easy for the researcher to trace the preceding materials and the author's affiliations. In addition, Bowen (2009, pp. 31–32) argues that documents are excellent research materials because they provide background information and context, means of tracking and assessing development, and supplementary data.

The document analysis proceeds from superficial examination towards throughout examination and interpretation (Bowen, 2009, pp. 32–33). The first step of the analysis process combines elements of content analysis by organizing information into categories (ibid.). Tuomi and Sarajärvi (2007) describe how content analysis begins by studying the research material, after which the material is coded. Once encoded, one searches for unifying or separating denominators, such as recurring themes or expressions. Bowen (2009, pp. 32–33) reminds that the analytical process should proceed in such a manner that new empirical knowledge is produces. The results should not just be a listing of quotations extracted from the research material but should generate new interpretations (ibid.). Here, the researcher's extensive reading is an advantage. At each stage of the analysis, researcher moves from the empirical to the conceptualisation of the phenomenon. The analysis process can be implemented in different ways. The relationship between premise and conclusion defines the form of reasoning. Here, the research analysis proceeds deductively, i.e. building on existing knowledge. The analytical framework is built on basis of the MLP.

5.4.2 Operationalizing the MLP in this research

According to Geels (2002), the different levels and their boundaries have to be defined in a study specific way since the MLP does not directly refer to any a priori ontological reality. Rather, the MLP is an analytical tool to understand the transition dynamics. Thus, in MLP, levels must be defined and operationalized in respect of the research purpose. In particular, this research analyses the understanding, conceptualisation and operationalisation of niches, regimes and landscapes in the selected policy paper, the 2030 Agenda roadmap of the FNCSD. At the beginning of my analysis I must define the levels of analysis according to the MLP. In defining each level in this study, I refer to Geels' (2002) model of multiple levels as a nested hierarchy (FIGURE 4). In this model, niches are innovation incubators that combine novelties of several dimensions (e.g., technology, ideology, policies). Such current innovations include, for example, green energy and circular economy. The landscape developments creating

pressure to the existing regimes are, for example, climate change, war in Europe, and a declining world economy. This research is contextualized in Finland, so the socio-technical regimes primarily refers to the Nordic welfare state and its functions.

Geels himself has previously utilized the MLP model by defining steamships as a novel innovation in the sailing ship regime in the 19th century Great Britain (Geels, 2002). To understand the transition in the sociotechnical regime, he also analysed the internal linkages of relevant developments. More recently, Miremadi (2021) has utilized the MLP in her study of Iranian water sector. Her study highlights the meaning of physical and ideological boundaries that influence the development of societal transitions. Coming closer to the Finnish context, Kivimaa (2014) utilized the MLP to study the role of government-affiliated intermediary organizations in facilitating socio-technical transitions towards environmental sustainability in Finland. Her study suggests that innovation intermediaries are likely to have a strong role in niche-innovation processes and diffusion of green energy technology through policy renewal, opinion influencing, and change initiating. These examples demonstrate the flexibility and applicability of the MLP – the approach can be operationalized in the analysis of a specific technological area or a wider societal transition. The MLP is suitable for both historical and contemporary analysis, and sometimes, even as complimentary to futures studies (Vähäkari et al., 2020). The approach is well suited to examine the 2030 Agenda roadmap, as the roadmap approaches sustainability challenges from a systemic perspective. Only after establishing the levels of analysis for this study can I analyse the data in the light of the MLP theory. Next, I will introduce the analytical frameworks guiding the analysis.

5.4.3 Analytical framework

Even though the MLP analyses the system as a whole, the main units of analysis are situated in the meso-level (socio-technical regimes), as the primary research interest is to outline the transition from one system to another (Geels and Schot, 2010, pp. 11–12). The regimes studied here are the current dominant structures including, but not limited to user and market regime, socio-cultural regime, policy regime, science regime, and technological regime. Geels (2004, p. 905) refers to these regimes as a 'deep structure' of socio-technical regimes that are carried by the social groups. In addition, these regimes exercise different regulative, normative, and cognitive rules within and between regimes (ibid., p. 906). By analysing the dynamic interaction between the socio-technical regimes and niche innovations I will be able to recognize the patterns of transition pathways. Building on the topology of sociotechnical transition pathways by Geels and Schot (2007), I have prepared the following table (TABLE 1) to identify the implicit transition pathways.

TABLE 1 Main actors and (inter)actions in transition pathways.
Source: Substantially adapted from Frank W. Geels and Johan Schot (2007, p. 414)

Transition pathways	Main actors	Type of (inter)actions	Key words
P0 Reproduction	-	If there is no external landscape pressure, the regime remains *dynamically stable* and reproduces itself	Novelties may be present but cannot break through, regime have internal problem-solving potential, external pressure help stabilize regimes
P1 Transformation	Regime actors and outside groups	Outside voice criticism. Incumbent actors adjust regime rules (goals, guiding principles, search heuristics)	Outside pressure, institutional power struggles, negotiations, adjustment of regime rules
P2 De-alignment and re-alignment	New niche actors	Changes in deep structure create strong pressure on regime. Incumbents lose faith and legitimacy. Followed by emergence of *multiple* novelties. New entrants compete for resources, attention and legitimacy. Eventually one novelty wins, leading to re-stabilisation of regime	Erosion and collapse, multiple novelties, prolonged uncertainty and changing interpretations, new winner and re-stabilisation
P3 Technological substitution	Incumbent firms versus new firms	Newcomers develop novelties, which compete with regime technologies	Market competition and power struggles between old and new firms
P4 Reconfiguration	Regime actors and suppliers	Regime actors adopt component-innovations, developed by new suppliers. Competition between old and new suppliers	Cumulative component changes, because of economic and functional reasons. Followed by new combinations, changing interpretations and new practices
P5 Mixed pathways	-	*Sequence of transition pathways*: beginning with transformation, leading to reconfiguration, and possibly followed by substation or de-alignment and re-alignment	Landscape pressure takes the forms of 'disruptive change' triggering sequence of transition pathways in various regimes

In addition to the four transition pathways described in Section 4.3 Transition pathways, I have included the description of P5) Mixed pathways i.e. sequence of transition pathways (Geels & Schot, 2007). The mixed pathway implies that it is possible to change the course of transition as the landscape pressure grows more pressing and niche innovations gain more standing. The 'zero proposition' P0) Reproduction, demonstrates the dynamic stability of sociotechnical regimes.

The analysis proceeded to the coding of the material after I had familiarized myself with the material by reading though it a couple of times. I used the MLP as a guiding theory to identify different actors (landscape, regimes, innovations) and interaction dynamics (symbiosis, competition) from the material. I used the ATLAS.ti software to help with coding and writing down observations. I systematically used the framework of Table 1 in the analysis. In addition to the framework, I used the descriptions of different transition pathways presented in Section 4.3 Transition pathways. Using the framework, I classified the generated codes into different categories, transition pathways, based on how they corresponded to the description. Eventually, I was able to classify the found transition pathways based on Geels' MLP theory.

5.5 Ethical considerations

I conduct my research in English, analysing official English translation of a Finnish policy paper. My faculty requires to write the thesis in English and by using the official English translation I ensure the use of the official vocabulary consistently. However, I always have the original Finnish version at my disposal. I believe that reading in my native language helps me to form a deeper understanding of the subject. Being familiar with the cultural context where the political documents were produced in may bring deeper layers to the analysis, but the analysis of political documents may also require in-depth knowledge of the broader political context. Therefore, the research results and conclusions may be imperfect due to my incomplete understanding of the subject. This can be avoided by preparing a systematic and comprehensive literature review. The ethical considerations regarding the research material itself can be referred as 'biased selectivity' – for whom and for what purpose was the document drawn for (Yin, 1994, as cited in Bowen, 2009, p. 32)? The preparation of the 2030 Agenda roadmap was commissioned by the Finnish government, as the promotion of the 2030 Agenda was included in the programme of Prime Minister Sanna Marin's government.

5.6 Positionality

On account of several years of studying social sciences, I have always been interested in social development from different perspectives. The topic of sustainability is increasingly visible in everyday life as well. My original research interest for the thesis was fast fashion and global production chains, as I am a clothing industry artisan by my educational background. Before Covid-19 closed the borders, I was supposed to go to Xi'an, China for six months to study Chinese. Due to the cancellation of my student exchange period due to the Covid-19, I had to change the research target country to my home country of Finland. The current megatrend of the Finnish clothing industry (and industry in general) is the promotion of the circular economy. This in turn led me to Finnish circular economy policies. After familiarizing myself with the literature and research on the circular economy, I came to the conclusion that the circular economy is an ambitious concept but unrealistic in many respects. At this stage, however, I was already well informed about the field of sustainable development work in Finland. That's how I found the Agenda 2030 roadmap – which was still being written at the time. Even on the first reading, I found many interesting themes and concepts in the document, so I decided to focus my thesis on this policy. Since then, I become

familiar with the sustainability transition research field and the final research plan started to take shape. Although my final research setting differs greatly from the original idea, I am happy with the learning journey I have had. Research taking place in my own country also has the advantage that I now have a good image of my own work opportunities. With this study, I hope to achieve a new understanding of the state of the Finnish sustainable development work and to advance my own expertise on the matter.

5.7 Limitations

There were several limitations to this study. First, studies of sustainability and sustainable development are published with accelerating pave. New information is obtained all the time, so information also becomes outdated quickly. During my research process many reviews and policy papers were updated several times.

Bowen (2009, pp. 33–34) argues that even though documents can be rich in detail, the researcher should treat documents as a limited and incomplete evidence. Documents are also often produced for some other purpose than scientific research. This is especially true of political documents, as they are usually commissioned by someone. In addition to this, they use vocabulary and classification specific to their field. Although the FNCSD is an actor independent of the government, in addition to its primary purpose (promoting the 2030 Agenda), it also has interests that potentially serve numerous stakeholders.

When studying complex social changes, using a theory-driven method can seem artificial. Also, it can be artificial to try to define when and from where the transitions starts. As Geels (2011) states, the MLP is not a 'truth machine' that will automatically produce the right answers as the produce of the analysis (Geels, 2011, p. 34). He describes that the MLP is rather a heuristic guide to focus attention to relevant problems and questions. In this case too, the research interest has been to find broad guidelines for development, which help to outline future trends (and their challenges). So, the MLP's analytical strength is also its weakness – it does justice to the complexity of societal transitions by employing complex perspective and requiring many data, but it can at best merely describe the process (Geels, 2002, p. 1273).

6 FINDINGS

In this chapter, I discuss the main finding of the analysis. The findings aim to present the sustainability transition pathways implicit in the 2030 Agenda roadmap of the FNCSD. The transition pathways have been identified utilizing the MLP analytical frameworks. First, I will tell a little about the application of the MLP theory in the Finnish context for sustainability transition. Then, the main findings of my analysis will be presented as follows. First, I present the reconfiguration pathway of economy and work sector. From which I continue to the closely related transformation pathway of educational sector. Third, I describe the de-alignment and re-alignment pathway of the social and health services. Fourth, I present the technological substitution pathway of food system. Following that, the transition pathways of the environmental protection corresponds to the reconfiguration pathways of the economy and work sector. Lastly, I present the technological substitution pathways of energy system.

6.1 The MLP on sustainability transition in Finland

Geels and Schot (2007) note, that the empirical levels do not necessarily correspond to the analytical levels of the MLP. This is due to the descriptive nature of the approach, and strict classification and boundary work are beyond it. In the same vein, Upham et al. (2014, p. 778) discuss how the government policies position flexibly in the MLP. Policies do not have a fixed position at the levels of analysis even though they are mostly associated with macro-level processes stabilizing and guiding regime practices. Smith and Raven (2012, pp. 1025–1026) argue that policies may also contribute to niche-level developments by shielding, nurturing and empowering innovations that would otherwise diminish. Thus, a transition triggered by alignment of developments at multiple levels may be initiated by politically empowered niche-innovation (such as the 2030 Agenda roadmap). Upham et al. (2014, p. 787) further note, that such policy

innovations intended to address the ruling regimes are likely to result in regime transition. Here, I adopt the proposition that policies related to a specific regime influence the regime-level stability, while policies from other domain influence the landscape-level development (ibid., pp. 778–779).

Geels (2011) has a structural perspective on social changes. According to him, sustainability transitions take place through structural measures. For this reason, the first step in the analysis is defining the structures under inspection. In this regard, I employ Geels' (2002) model of societal levels as a nested hierarchy (see: FIGURE 4). The *status quo* of the current state of affairs is that the climate change is accelerating quickly, and biodiversity degradation is destabilizing the planetary functions. Overconsumption, pollution, and unsustainable lifestyles were often mentioned as the reasoning behind the need for societal change. In turn, regimes are a *de facto* form of governance in the sense that they control and maintain the structure of material and social processes. Niche innovations, on the other hand, are the seeds of change. Fouquet (2016, p. 8) argues, that every mainstream socio-technical innovation started as a niche product. He points out that the successful introduction of a new innovation requires new or superior features (e.g., easier, more flexible, more sustainable) in addition to a familiar service (such as heating, energy, food). To ensure a successful transition to sustainable development, it is important to support niche innovations. In the next section, I present the implicit transition pathways of the 2030 Agenda roadmap and the interaction between niche innovations and regimes.

6.2 Transition pathways in the 2030 Agenda roadmap

The 2030 Agenda roadmap of Finland seeks to find an answer to the question "How do we ensure the future wellbeing of Finns within the bounds of nature's carrying capacity, while also addressing global wellbeing and the sustainable use of natural resources?" (FNCSD, 2022, p. 8). In this section, based on my analysis, I will describe what kind of sustainability transition pathways are implicit in the 2030 Agenda roadmap of the FNCSD according to the MLP. Throughout this section, the data is referred to by the author's abbreviation FNCSD (Finnish National Commission on Sustainable Development). I present the findings of the analysis in the order according to the 2030 Agenda roadmap, one area of change at a time. Each section progresses from the description of the area of change to the description of the implicit transition pathway emerging from it and the contextualisation of the findings.

6.2.1 Reconfiguring economic paradigm

The first area of change, Economy and work promoting wellbeing and sustainable consumption[5], encompasses the assessment and management of different forms of capital (incl. human, ecological and economic resources) (FNCSD, 2022, p. 16). This area of change calls for adopting and mainstreaming new economic thinking and economic instruments promoting sustainability in production and consumption. In practice, the roadmap encourages changing the economic paradigm "by shifting the attention from economic flows to economic assets" (FNCSD, 2022, p. 14). The 2030 Agenda roadmap explicates the following vision for 2030:

> Finland is a frontrunner and Finnish companies have a strong handprint in solutions that bolster overall sustainability and are related to climate change, such as the bioeconomy and circular economy, industrial innovation and digital services. Companies generate wellbeing and added value through business models that aim for economic, ecological and social sustainability. The wellbeing economy approach has now been mainstreamed, and the economy strengthens ecological and social capital. Public finances are on a solid basis. Work is meaningful and of a high quality. Innovations, entrepreneurship and business activities that promote sustainability are supported and appreciated. Changes in competence needs are anticipated in education and companies, and competence is updated continuously. Finland is getting closer to operating within Earth's limits. The domestic use of renewable natural resources is sustainable and resource efficient, and the domestic use of non-renewable natural resources is decreasing rapidly. Consumption and production are being made more sustainable through good and consistent regulation, which provides a framework for market-based and customer-oriented operations.[6]

This need for change is motivated by the notion, that "We must undo structures that cause overconsumption in order to create human wellbeing within Earth's limit" (FNCSD, 2022, p. 16). In particular, the 2030 Agenda roadmap proposes to bring natural and human capital at the heart of economic thinking by strengthening wellbeing economy and circular economy approaches with new regulatory actors assessing the integration of natural and human capital into the policymaking (FNCSD, 2022, pp. 15–16). The wellbeing economy is defined here as a framework, that "determines how people – individuals, communities and organisations – use human capital sustainably in their economic activities and how economic activities produce economic and human wellbeing" (FNCSD, 2022, p. 16). Economic thinking should therefore be changed from maximizing economic growth to maximizing wellbeing. Economic growth certainly has an instrumental value as a prerequisite for human wellbeing, but it is not a goal in itself. In turn, the circular economy is defined as an approach that "determines how natural resources are used for economic purposes in an ecologically and economically sustainable way and how the economy can ensure the preservation of natural

[5] The area of change is linked to the SDGs 8, 9 and 12 (see: FIGURE 3).
[6] Finnish National Commission on Sustainable Development, 2022, p. 13.

capital and strengthen it" (FNCSD, 2022, p. 16). With circular economy thinking, economic activity can be adjusted to the planetary boundaries. The mainstreaming of more sustainable consumption and production methods are enforced thought public procurement and product regulation. The roadmap states that consumers must be provided with information supporting sustainable lifestyle and consumption (FNCSD, 2022, p. 17). The governmental actors play a major role in directing economic behaviour, for which they have a wide range of economic instruments at their disposal, such as taxation, subsidies, and RDI investments (FNCSD, 2022, pp. 16–18). The roadmap proposes that state should actively encourage companies, with state-owned companies leading the way, to act responsibly and support individuals in making sustainable consumption choices (FNCSD, 2022, p. 15, p. 17).

Essentially, this area of change corresponds to the characteristics of reconfiguration pathway (FIGURE 9). In this pathway, the regimes have symbiotic relationship with niches, and they can be easily adopted to solve local problems (Geels & Schot, 2007, p. 411). These adoptions are typically driven by landscape pressure, such as economic considerations. In this case, the need for change has been articulated based on overconsumption of global nature resources, endangered human wellbeing, and international political pressure (FNCSD, 2022, p. 13). According to the roadmap, wellbeing economy and circular economy are concepts that we want to incorporate into Finnish economic thinking (FNCSD, 2022, p. 15). From the MLP's point of view, they are innovations adopted by the regime. The regime actors expressed in the roadmap are the Finnish government and the public sector, the EU, companies in different fields, employees, entrepreneurs, trade unions, consumers, municipalities, the Sustainability Panel, and the 3rd sector. Reconfiguration pathway is further supported by the fact that although the 2030 Agenda roadmap proposes the introduction of the wellbeing economy and the circularity approach to Finland's public finances, it does not propose abandoning capitalism *per se*. This distinction is well argued in the statement, "Economic instruments should be actively used to promote the circular and wellbeing economies" (FNCSD, 2022, p. 17). The introduction of new concepts would only reconfigure existing components, as pictured in Figure 9. Though, Geels and Schot (2007, p. 411) argue that the adopted innovative concepts may lead to subsequent adjustments as the regime actors explore new elements and linkages. The roadmap states that "the analysis of impact on natural capital and human capital should also be included in industrial, employment and business policy planning to accelerate the change and the seizing of opportunity" (FNCSD, 2022, p. 16). Therefore, the document directly states that reconfiguring economic paradigm will also affect e.g. to the policies regulating industries, and with these, also to the technical conditions and the need for new skills.

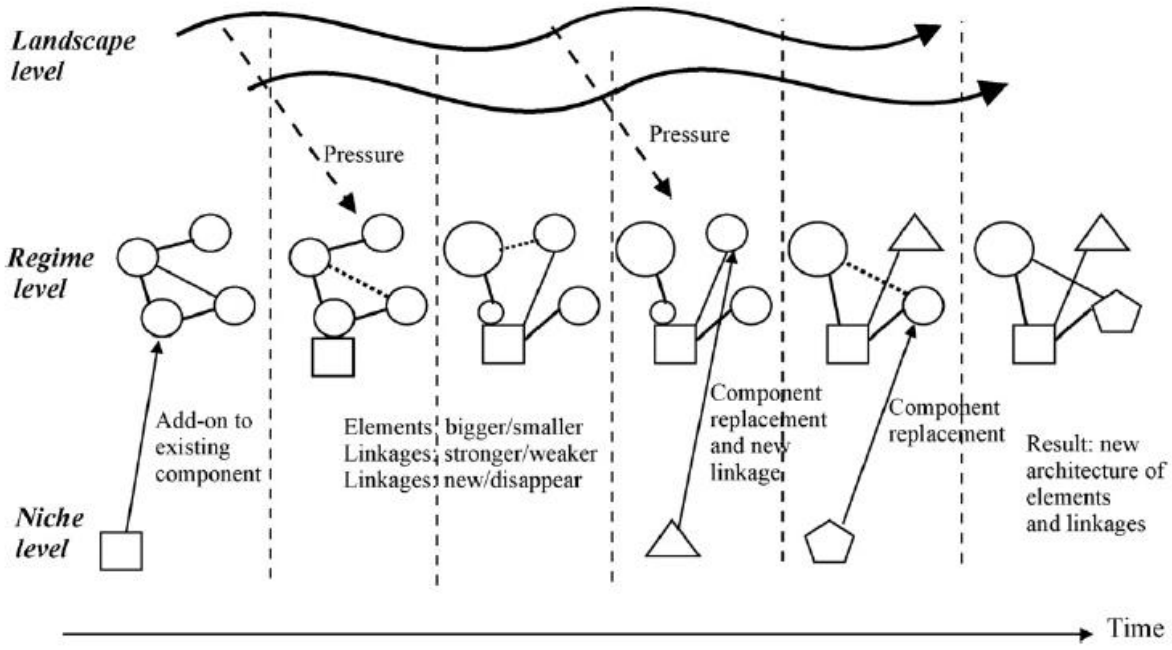

FIGURE 9 Reconfiguration pathway.
Source: Frank W. Geels and Johan Schot (2007, p. 412)

Geels and Schot (2007, p. 411) point out that the reconfiguration pathway is particularly important for distributed sociotechnical systems that operate through multiple fields (i.e., retail, production, transportation). In these distributed systems, transitions are not caused by individual add-ons, but by the sequences of component replacement and new linkages. In her study, Kivimaa (2014, p. 1379) contemplates that a successful sustainability transition requires systemic intermediaries that voice out new socio-technical visions and gain acceptance for the new regime. State-owned companies and media platforms are examples of intermediate actors mainstreaming new ideas. She emphasizes that transitions take a long time, even decades, so the change has to be driven systematically and long-term.

The roadmap recognizes the interlinkages between economic paradigms, education and the creative destruction of job market. This is well articulated in the statement on how "forms of work, changes in professional structures, access to the job market and job-related competences are all inherently related to economic change" (FNCSD, 2022, p. 13, p. 18). With the changing conditions of work life and production, the sustainability transition requires continuous learning to maintain job-related competence. For this reason, the mainstreaming of new sustainability thinking requires transforming education.

6.2.2 Transforming education

The second area of change, Education, competence and sustainable lifestyles[7], includes enhancing learning and education as means to accelerate sustainable social change (FNCSD, 2022, p. 19). The roadmap proposes, that "a shift towards a more sustainable society is made possible by changes in our worldview, a broader and deeper understanding, as well as new skills and knowledge" (FNCSD, 2022, p. 19). In particular, the vision for change is based on the notion that education has an influence in our understanding about the complexity of societies and sustainable lifestyles. Therefore, the roadmap proposes that a successful sustainability transition is achieved through integrating eco-social education into the core curricula (FNCSD, 2022, p. 21–24). The roadmap explicates the following vision for 2030:

> An increasingly strong value base and competence that promote sustainable development add significance to people's lives and boost competence that supports the creation of new knowledge, new ways of working and solutions for global sustainability problems. Knowledge and education are available to everyone. Continuous learning offers everyone the opportunity to expand their understanding and competence, learn new skills and knowledge needed in our changing world, both in and out of the workplace. Our education system provides knowledge promoting the sustainability shift to all population groups equally and accessibly. The educational attainment of the population has improved, and educational and competence gaps have been closed. Society supports sustainable lifestyle choices, and the general attitude towards and opportunities to make sustainable choices have improved. Although Finns consume less and more sustainably, their wellbeing has improved.[8]

The roadmap defines that eco-social education "departs from the notion that humans should act within the limits set by the resilience of ecosystems" (FNCSD, 2022, p. 23). The eco-social education provides the basis for adopting a sustainable lifestyle. Similarly, the roadmap describes a sustainable lifestyle as an attitude that "builds on the notion of humans being part of nature and depending on the vitality of ecosystems" (FNCSD, 2022, p. 19). In addition, the sustainable lifestyle includes sustainable consumption habits and social responsibility (FNCSD, 2022, p. 24). The roadmap argues that the educational actors play a key role in renewing society's value base and mainstreaming sustainable lifestyle. Because of this, the sustainability transition calls for cooperation between formal, non-formal and informal education (FNCSD, 2022, p. 21, p. 24). In addition to the educational actors, the state plays a key role in creating the necessary preconditions for adopting a sustainable lifestyle. This includes ensuring inclusive urban planning through regulations, resourcing civil society activities with public sector's funding, developing personal carbon budgeting, offering unbiased

[7] The area of change is linked to the SDGs 4, 5, 10 and 13 (see: FIGURE 3).
[8] Finnish National Commission on Sustainable Development, 2022, p. 20.

guidance, among other things (FNCSD, 2022, pp. 24–25). The goal is to decouple well-being from materialism by making sustainable lifestyles "easy, inexpensive and inspiring for individuals" (FNCSD, 2022, p. 25). Building an inclusive and accessible society promotes society's integrity and strengthens the national vision of a future worth striving towards.

The vision and goals for this area of change correspond to the transformative pathway (FIGURE 10). In this pathway the regimes adjusts the regime rules (goals, guiding principles, etc.) according to the outside pressure (Geels & Schot, 2007, p. 406). The landscape pressure and emerging niche-innovations lead to institutional power struggle, negotiations, and adjustment of regime rule. In this case, the roadmap calls for revising the society's value base in response to the environmental degradation and climate change (FNCSD, 2022, p. 23). The immediate and latent effects of the neglection of planetary boundaries are becoming increasingly apparent, as is the international political pressure to develop more sustainable lifestyles. According to the roadmap, mainstreaming sustainable lifestyles is essential for sustainable development (FNCSD, 2022, p. 22). From the MLP's point of view, the mainstreaming of sustainable values is an adopted innovation that does not really require changes to the current regime architecture. The regime actors expressed in the roadmap are formal, informal and non-formal education providers (incl. schools, leisure activities, care), students, individuals, communities, senior citizens, media, municipalities, industries, employees, companies in different fields, entrepreneurs, the Parliamentary Working Group on Research, Development and Innovations, and the 3rd sector. The roadmap highlights, that the sustainability transition is achieved especially through competent individuals who implement new knowledge in business and industry (FNCSD, 2022, p. 25). For this reason, it is of primary importance to invest in the mainstreaming of values among citizens and support the development of active agency. All of this contributes toward society's ability to transform its development trajectories in accordance with the changing landscape pressure.

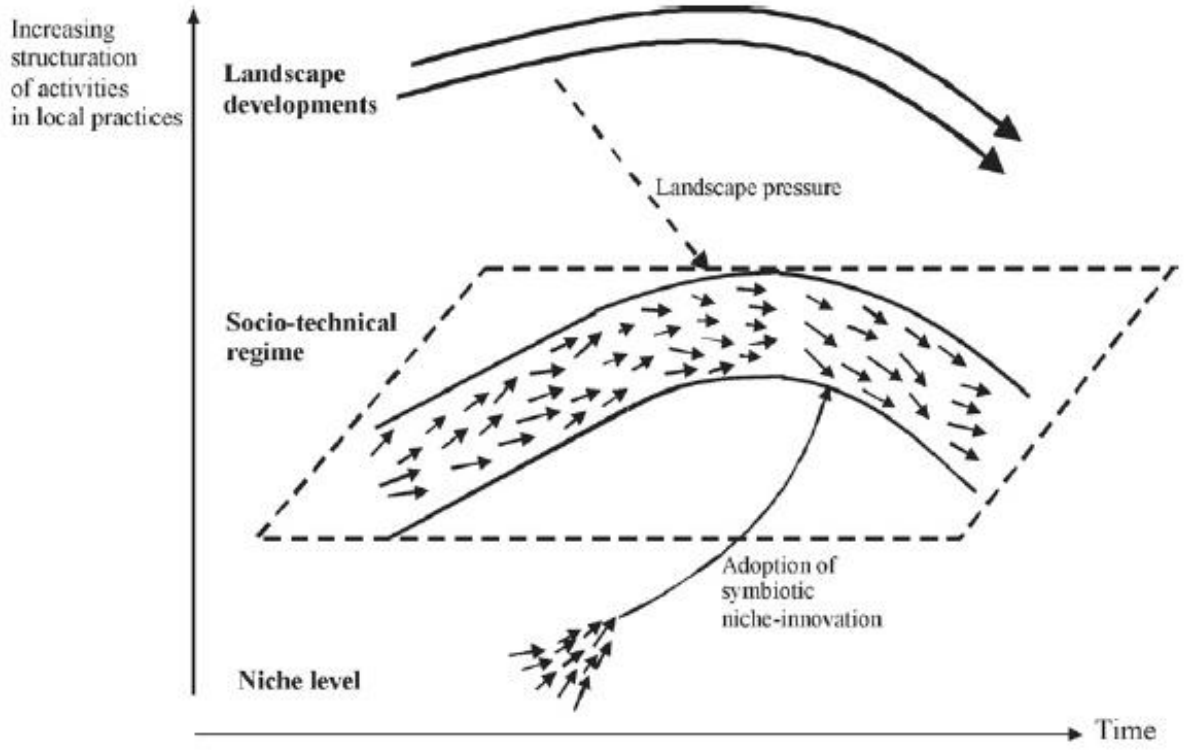

FIGURE 10 Transformation pathway.
Source: Frank W. Geels and Johan Schot (2007, p. 407)

Geels and Schot (2007, p. 406) argue that in the transformation pathway, the core of regime stays unchanged even though the regime rules are being adjusted due to the outside pressure. The landscape pressure or niche innovations do not change the regime rules directly, but regime actors use their adaptive capacity to change from within to better fit to the changed operating environment. In this case, the Finnish education system is well equipped to adapt to the need for change. This is evident when the roadmap mentions the actions that have been already taken to prepare the education sector for a paradigm shift: "The UN 2030 Agenda goals have been incorporated into the national core curricula to provide the necessary resources for creating global citizenship and a sustainable society for current and future generations" (FNCSD, 2022, p. 28). In addition, the roadmap draws from the fact that Finnish education system is world famous for its performance and learning outcomes, as the differences between schools are among the smallest in the world (FNCSD, 2022, p. 27). According to the Programme for International Student Assessment (PISA), Finnish students achieve higher scores that the OECD average in reading, mathematics and natural sciences (OECD, 2019). In addition, PISA states that the influence of socio-economic background on learning outcomes in Finland is one of the smallest of the comparison countries (ibid.). Although eco-social education is not yet a part of the curriculum as such, the Basic Education Act (1998/628) requires teaching a wide variety of

subjects, e.g. social studies, ethics, foreign languages and environmental studies. These subjects already equip students to look at the world in a critical and open-minded way. This supports the observation that this area of change implies a transformation pathway, as it can be considered that adding eco-social education to the curriculum does not require very large changes to the existing system.

In addition to integrating a sustainable lifestyle into teaching, education paths should be flexible and encourage retraining according to the needs of the changing labour market (FNCSD, 2022, p. 26). The roadmap proposes that the cooperation among different sector is essential in anticipating future competence needs and promoting continuous learning. Because of this, the state must provide necessary preconditions for citizens to develop their skills and knowledge for more advanced competence – whatever the competence needs may be in the future job market. Accessible teaching encourages lifelong learning and maintaining the competence required by the sustainability transition. Similarly, the roadmap concludes that "the mainstreaming of sustainable lifestyles calls for similar transitions towards a sustainable society in each area of change" (FNCSD, 2022, p. 24).

6.2.3 De-aligning and re-aligning social and health services

The third area of change, Wellbeing, health and social inclusion[9], is a large thematic entity that consists of several sub-areas. In addition to the self-evident social and health services, this area of change deals with demography, discrimination, gendered violence, children's rights, poverty reduction, urban planning, civil society activities, and employment (FNCSD, 2022, pp. 29–30). All the sub-areas strive to promote the well-being and inclusion of Finns by shifting the focus to preventive work (FNCSD, 2022, p. 31). The 2030 Agenda roadmap defines a following vision for the future:

> In the 2030s, more people will consider their quality of life to be good. People are healthier and enjoy better wellbeing, and health inequalities have decreased. Finland is a world leader when it comes to preventing health and social problems and in supporting health and wellbeing. Demographic trends are sustainable. Gender equality and equality within and among different population groups have been achieved. Poverty and deprivation have declined, and more and more people have decent employment. Finland is a safe country for all its residents and groups of people, and trust among different social stakeholders has improved. Loneliness has declined. Everyone has a sense of belonging to a community and can experience meaningfulness and participate equally in social activities. The civil society is active and helps keep everyone on board. Sustainable lifestyles contribute to the wellbeing of everyone globally, within nature's carrying capacity.[10]

The roadmap proposes that "reducing poverty, bridging inequality and achieving social justice are the core themes in this area of change, creating a foundation for good

[9] The area of change is linked to the SDGs 1, 3, 5, 10 and 16 (see: FIGURE 3).
[10] Finnish National Commission on Sustainable Development, 2022, p. 30.

safety and security in daily life" (FNCSD, 2022, p. 31). The main message of the roadmap is that welfare applies to everyone, regardless of age, gender or social status. In practice, this area of change argues that "inequality can be reduced through accessible general services" (FNCSD, 2022, p. 31). The roadmap suggests that improving the accessibility of general services requires changes it urban planning, social security and the organization of health services, among other things (FNCSD, 2022, p. 32). These actions call for appropriate investment and consistent implementation. For this reason the public sector actors, such as municipalities and wellbeing service counties, would be primarily responsible for creating the preconditions in which citizens can live good lives (FNCSD, 2022, p. 33). According to the roadmap, this is a structural approach to respond to social problems in Finland (FNCSD, 2022, p. 33). The goal of these actions is to generate wellbeing with special attention to the ecological boundaries.

This area of change corresponds to the de-alignment and re-alignment pathway of the MLP (FIGURE 11). In this pathway, increased landscape pressure leads to internal problems and erosion of the existing regime (Geels & Schot, 2007, p. 408). At this time, if the niche-innovations are not sufficiently developed there is no clear substitution and multiple innovations emerge (ibid.). These innovations co-exist and compete for resources until one innovation becomes dominant, leading to the re-alignment of a new regime. From the MLP's point of view, the Health and Social Services Reform[11] (SOTE, abbreviation from Sosiaali- ja terveydenhuollon ja pelastustoimen uudistus) described in the roadmap is an emerging innovation that aims to dominate the social and health services regime. In this case, the innovation aims to fill the vacuum created by the pressure caused by the growing demand for health services from an aging population. (FNCSD, 2022, pp. 29–31). In de-alignment and re-alignment pathway, the regimes experience prolonged internal problems, collapses and de-aligns before the destabilisation of regime (Geels & Schot, 2007, p. 408). Before the SOTE reform, responsibility for Finland's public social and health sector was fragmented among different administrative levels, such as municipalities and provinces. In addition to public services, there are private healthcare services for students and employees. Due to this, there have been many regional differences in the availability and quality of care. Now, a new level of administration was created, the welfare service counties, which are responsible for all healthcare, social welfare and rescue services of their respective regions starting from 1.1.2023 (FNCSD, 2022, p. 33; L 2021/616). According to the MLP, the SOTE reform is a politically nurtured innovation because it was initiated by Finnish government.

[11] More information about the reform is available at: www.soteuudistus.fi

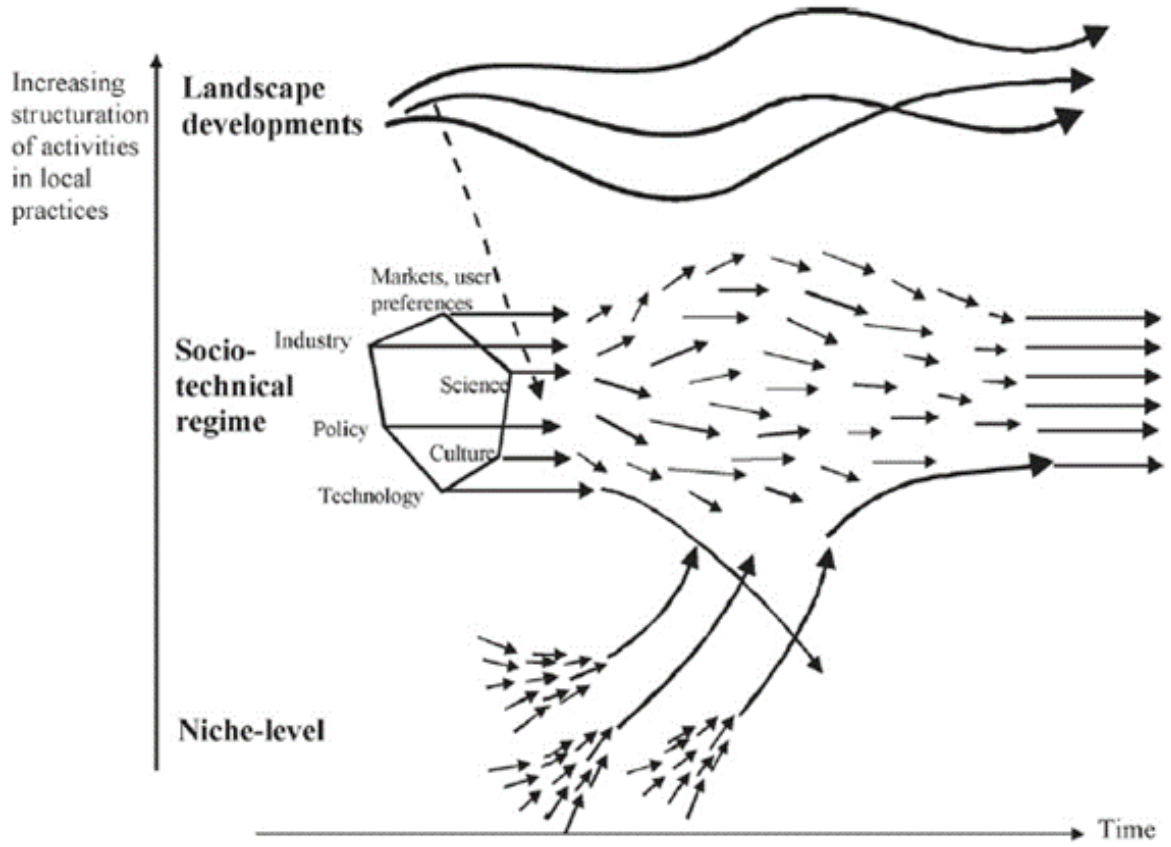

FIGURE 11 De-alignment and re-alignment pathway.
Source: Frank W. Geels and Johan Schot (2007, p. 409)

According to Geels and Schot (2007, p. 413), the de-alignment and re-alignment pathway is likely to result from a mixed transition pathway. In a mixed transition pathway, the pressure for change triggers a sequence of transition pathways that progress from a moderate transformation to a reconfiguration of regimes, possibly followed by substitution or de-alignment and re-alignment of the system (ibid.). The following pathway depends on the nature of landscape pressure and the development stage of niche-innovations. Sufficiently developed innovations may take advantage of the window of opportunity leading to a substitution pathway, while insufficiently developed innovations lead to de-alignment and re-alignment pathway (ibid.). Finland's social and health sector has been the subject of numerous reforms over time. The current reform has resulted from the evolutionary development of the health and social sector, during which regime actors have reacted in different ways to respond to the changing landscape pressure. Some scholars propose that the earliest social and health sector reforms already took place during the urbanization of the 1960s (e.g., Kröger, 2011). By the mid-1970s, the majority of Finns (60 %) had moved to cities and public services had responded to the changed demand due to internal migration and demographic renewal (Statistics Finland, 2022, pp. 254–256; Kröger, 2011, p. 150). From the

MLP's point of view, Finnish social and health services were transformed when it adjusted its own operations due to external pressure (FIGURE 10). Since then, the pressure for change has been created by various factors, such as international crises (1970s oil crisis, early 1990s recession), globalization, digitalization, and the emergence of new economic ideologies. At the turn of the 21st century, the widespread neoliberal paradigm also affected Finland. The adoption of neoliberal ideologies inherently led to the reconfiguration of public sector administration along with the social and health services (Julkunen, 2017, pp. 64–65). Privatization, budget cuts, decentralization, and strategic planning were widely adopted because the existing public sector was perceived as too burdensome and inefficient (ibid.). The introduction of new add-ons triggered architectural adjustments of the regimes, leading to the reconfiguration of the system (FIGURE 9). Yet, the architectural changes of the regimes appear to be insufficient, as the need for a new reform emerged. Building on Geels and Schot (2007), this area of change combines characteristics of de-alignment and re-alignment pathway and substitution pathway. The establishment of new wellbeing service counties is a fundamental change that completely replaced the previously existing regime architecture. On the other hand, the other sub-areas defined in the roadmap, such as promoting equality and accessible urban planning, call for more differentiated transitions. These parallel and partially overlapping transition pathways intertwine and dynamically promote the change towards a socially sustainable society.

6.2.4 Technological substitution of food system

The fourth area of change, Food system promoting wellbeing[12], deals with the sustainability of food, local food production and the food system (incl. waste), water use and consumption, and the climate issues (FNCSD, 2022, p. 37). This area of change calls for actions that enables a sustainable food system by 2030:

> In the 2030s, the Finnish food system offers healthy and safe food that has been produced competitively, ethically and sustainably and that is appreciated by consumers. The Finnish food system is profitable, socially just and friendly to the climate and environment. It also operates within our planetary limits. The food system operators (incl. consumers) have collaboratively adapted to the changes in society, nature and the climate.[13]

The need for change is motivated by the notion, that "food system influences the use of natural resources, the climate, environmental load, land use, biodiversity, as well as the health and wellbeing of humans and animals" (FNCSD, 2022, p. 37). Environmental values have therefore been brought to the centre of change because the sustainability of environmental management is understood as directly affecting human

[12] The area of change is linked to the SDGs 2, 6, 12, 13, 14 and 15 (see: FIGURE 3).
[13] Finnish National Commission on Sustainable Development, 2022, p. 37.

wellbeing. To implement the change, the roadmap states that the Finnish food system must address both technological and behavioural aspect (FNCSD, 2022, p. 8). In practice, the roadmap proposes that the sustainability transition is enabled by "research and development, innovations and investments, digitalisation, guidance and education" (FNCSD, 2022, p. 38). The state plays a central role in leading change in the form of funding and policy guidance. The new sustainability thinking must apply to the entire food supply chain, from producers to consumers (FNCSD, 2022, p. 40). According to the roadmap, promoting a planet-based diet and material circularity would significantly reduce environmental emissions (FNCSD, 2022, p. 40). This is an excellent example of how environmental sustainability can be promoted through behavioural and technical changes.

As a whole, this area of change corresponds to the technological substitution pathway (FIGURE 12). In this pathway the niche innovation (technological substitution) will break through and replace the existing regime due to the landscape pressure (Geels & Schot, 2007, p. 409). In this case, the progressive loss of nature has created a demand for green technology and an environmentally sustainable food system (FNCSD, 2022, p. 37). Here, the emerging technological substitution is the resource efficiency, circularity and renewable energy use (in the form of extensive electrification) (FNCSD, 2022, p. 39). According to the roadmap, the mainstreaming of material efficiency and circularity is necessary in terms of ensuring food security, self-sufficiency and environmental sustainability (FNCSD, 2022, p. 41). From the MLP's point of view, the circularity approach is a politically nurtured innovations that substitutes the unsustainable food production. Hence, the technological substitution is taking place at all stages of the food supply chain. Starting from the primary production, the roadmap states that "Improving the environmental sustainability of the food supply chain involves all the chain's participants" (FNCSD, 2022, p. 40). The regime actors involved in food supply chain mentioned in the roadmap are farmers (i.e. producers), consumers, different industries, public food services, students, schools, the EU member states, Finnish policymakers, and NGOs. The roadmap also demonstrates the interlinkages of all six areas of change – rethinking material boundaries creates conditions for more sustainable social development. The adoption of one technological substitution leads to an avalanche-like sequence of changes on multiple dimensions of regime rules (FIGURE 12). To manage political coherence and overall systemic change, traditional top-to-bottom governance is practiced in this area of change. The state utilizes economic instruments to intervene the market and to steer consumer behaviour. For example, the roadmap states that "taxation and pricing help steer consumption towards sustainable – and healthy – choices" (FNCSD, 2022, p. 43). In this way, both the formation of the price and the profitability can be influenced.

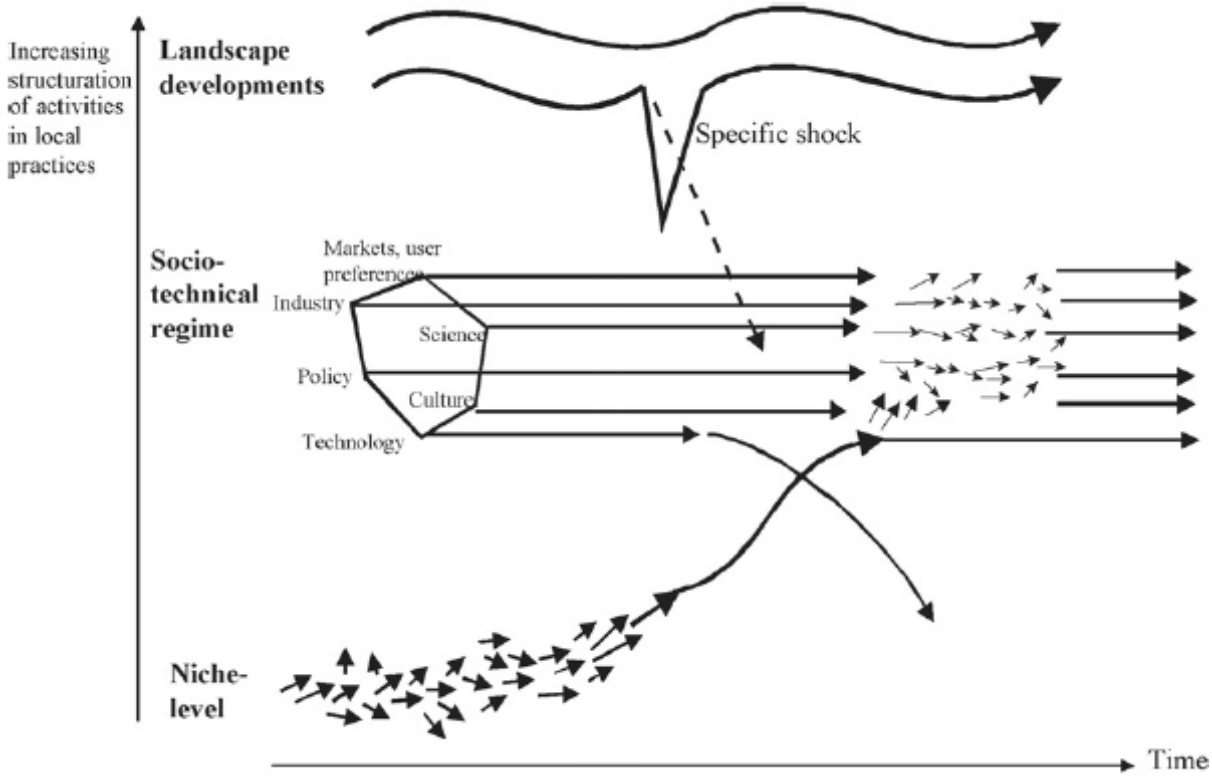

FIGURE 12 Technological substitution pathway.
Source: Frank W. Geels and Johan Schot (2007, p. 410)

Geels and Schot (2007) argue, that the timing of the interaction between actors at different levels is important for the emergence of a technological substitution pathway; the new technology must be able to meet the demand and be superior to its predecessor by some standard. When the innovation enters the market, the regime will defend itself, leading to a market competition and power struggle (ibid., p. 410). They also argue that that outcome of technological substitution pathways is very similar to de-alignment and re-alignment pathway as in both pathways the initial regime is replaced by another sociotechnical regime (ibid., p. 410). Though, the process leading to this outcome is different. Technological substitution pathway triggers further follow-up substitutions, whereas in de-alignment and re-alignment pathway the competing innovations will eventually wither.

6.2.5 Reconfiguring environmental protection

The fifth area of change, Forest, water and land use promoting biodiversity and carbon neutrality[14], encompasses sustainable forest and freshwater management, the protection of biodiversity and thus securing the food system (FNCSD, 2022, p. 44). This area of change calls for integrating the biodiversity into land use and policy planning to support achieving carbon neutrality. In particular, the roadmap emphasizes the importance of political will and policy coherence among different stakeholders (FNCSD, 2022, p. 46). The roadmap defines a following vision for the future:

> In the 2030s, forest, water and land use lies on a sustainable foundation that supports carbon neutrality, the bioeconomy, the circular economy and biodiversity, and nature is on the path to recovery. Finns possess extensive knowledge about nature, and Finland is well positioned in terms of innovative practices, competence and education that support the wellbeing of nature and people. This is supported by inputs into research, development and innovations. Principles and practices supporting biodiversity, carbon neutrality and adaptation to climate change have been integrated into all public decision-making. The green transition has been implemented in an economically, ecologically and socially sustainable manner. Biodiversity and the sustainable management and use of natural resources have been promoted through cooperation involving various parties by, for example, developing new instruments for coordinating and promoting the protection of biodiversity and the parallel operation of different activities, instead of opting for exclusion and confrontation.[15]

This area of change is motivated by the notion that "the loss of biodiversity endangers the wellbeing of both nature and humans" (FNCSD, 2022, p. 44). In practice, the roadmap suggests that all policymaking related to the environment should be based on scientifically researched information to safeguard sustainable land use and biodiversity. The roadmap argues, that "securing biodiversity and the drive towards carbon neutrality should be considered as cross-cutting goals in all legislative work" (FNCSD, 2022, p. 48). Thus, nature is placed at the centre of all public sector activities. In addition, the economy's dependence on a healthy ecosystem should be further underlined in public policy (FNCSD, 2022, p. 49). The determination of economic value for natural capital would speak in favour of this, "so that biodiversity can be better taken into consideration in fiscal planning and impact assessment" (FNCSD, 2022, p. 48). Economic thinking should therefore be adapted to the planetary boundaries. If necessary, government subsidies and taxation should be re-allocated to reduce harmful effects and increase positive impact (FNCSD, 2022, p. 48). All in all, according to the roadmap the state plays a key role in mainstreaming values through legislation, education, and research. Arguably, what is needed is "a strong, joint commitment

[14] The area of change is linked to the SDGs 2, 6, 11 and 15 (see: FIGURE 3).
[15] Finnish National Commission on Sustainable Development, 2022, p. 44–45.

from cities and municipalities, trade and industry, policymakers and landowners" to achieve the vision and goals for this area of change (FNCSD, 2022, p. 46).

This area of change corresponds to the reconfiguration pathway (FIGURE 9). In this pathway the regime adopts innovations, which developed in niches (Geels & Schot, 2007, p. 411). The adoption of new innovations is often motivated by outside landscape pressure. In this case, there were both internal and external motivators, as "Finland has not succeeded in stopping the loss of biodiversity despite national and international goals and the efforts made to secure biodiversity" (FNCSD, 2022, p. 44). Due to this, the adopted innovations are to some extent fundamentally politically nurtured (Upham et al., 2014, p. 778–779). According to the roadmap, placing the planetary boundaries at the centre of the economy, education, and political decision-making would accelerate the sustainability transition (FNCSD, 2022, p. 48). From MLP's point of view, the concept of planetary boundaries is an emergent innovation that is being adopted by regimes. The change takes place as a result of the interaction between the regime actors. The actors mentioned in the roadmap are the public administration (including the Parliament of Finland, the Finnish Tax Administration, the Regional State Administrative Agency, cities and municipalities, policymakers), trade and industry, experts, education providers, and landowners. As regime actors explore new combinations using new and old elements, they may create a space for the adoption of ever new innovations (Geels & Schot, 2007, p. 411). Over time, combining new elements can lead to a wider reconfiguration of society (FIGURE 9). Within the framework of this roadmap, it is already noticeable that the mainstreaming of environmental values directly affects the economic paradigm, education, food production and the energy system.

According to Geels and Schot (2007, p. 411), the reconfiguration pathway differs from the transformation pathway in the sense that in the reconfiguration pathway the adoption of innovations leads to further changes in the structure and functions of the regimes. The roadmap states that the adoption of nature values promoting biodiversity has already influenced many strategies and acts (e.g. the Mining Act, Nature Conservation Act, Climate Act and Forest strategy) (FNCSD, 2022, p. 50). Furthermore, the roadmap introduces the inclusion of nature value in the fiscal planning and political decision-making. This is also heralded by the recent Dasgupta Review, which introduces the recognition of the intrinsic value of nature (Dasgupta, 2021). The main message of the report is that it is cheaper to protect and maintain a functioning ecosystem than to first destroy it and then restore it. Therefore, the reconfiguration of environmental protection results in further adjustments in the regime architecture and development trajectories.

6.2.6 Technological substitution of energy production

The area of change for Sustainable energy system[16] deals with the energy sector, which includes electricity, heating, and transport (FNCSD, 2022, p. 50). This area of change calls for technology innovations that could further accelerate the electrification of Finnish energy sector. The change is motivated by the notion that "the energy sectors accounts for approximately 75 % of Finland's greenhouse gas emissions" (FNCSD, 2022, p. 50). The 2030 Agenda roadmap explicates the following vision for 2030:

> Finland has adopted renewable and emissions-free energy and largely given up the use of fossil-based energy. Sectoral integration, improved energy efficiency, well-functioning energy markets, as well as the development of stocks and demand response secure adequate self-sufficiency as part of the European system and ensure the security of supply and delivery reliability of energy in all of Finland and to all population groups. Finland is a proactive frontrunner that offers cutting-edge solutions to global energy-sector challenges and the commercialisation and export of new technologies, as well as for supporting developing countries. Finland continues to develop its competence and seizes the opportunities offered by digital services, the participation of citizens and the latest research.[17]

The need for change is based on concern of the mitigation of climate change. According to the roadmap, attention should be paid to the sustainable use of natural resources by increasing the consumption of renewable energy (FNCSD, 2022, p. 51). In practice, the roadmap proposes that the change will happen through "the implementation of technologies supporting the energy transition, the renewal of regulation and taxation, the facilitation of emission-free transport and increased support for innovation and RDI" (FNCSD, 2022, p. 52). The Finnish state, led by the EU, has the biggest role in governing the change. The EU climate package 'Fit for 55' will have a significant impact on Finland's energy sector. According to the roadmap, in addition to the carbon neutrality goal, "the energy system is undergoing other significant changes, which include new opportunities for producing and storing energy, improved energy efficiency of buildings and a rapidly rising share of electricity in energy use" (FNCSD, 2022, p. 50). Therefore, the energy transition will also lead to a renewal of the labour market when coal-based technology will give way to sustainable technology. Companies and employees must be supported in the sustainability transition of the energy sector, when changing technology requires new competence (FNCSD, 2022, p. 52). In addition, consumers are also expected to have competence in energy matter and to make sustainable choices (FNCSD, 2022, p. 50). The goal is to make Finland an innovative, self-sufficient pioneer in sustainable energy, which presents itself as an attractive trading partner in the international market.

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[16] The area of change is linked to the SDGs 7, 9, 12 and 13 (see: FIGURE 3).
[17] Finnish National Commission on Sustainable Development, 2022, p. 51.

This area of change corresponds to the characteristics of technological substitution pathway (FIGURE 12). In this pathway the sufficiently developed niche innovations break through and replace a specific regime (Geels & Schot, 2007, p. 409). The window for change arises when outside pressure causes tensions among regimes and niche innovations have gathered enough internal momentum to become mainstream (ibid.). In this case, climate change accompanied with international political pressure has created a need for a sustainable energy transition (FNCSD, 2022, pp. 50–52). Here, emerging technological innovations include the adoption and mainstreaming of non-fossil energy sources and systems (FNCSD, 2022, p. 53). The non-fossil energy sources include e.g. solar and wind power, geothermal energy and nuclear power. From the MLP's point of view, prioritizing renewable energy means replacing the existing energy regime with a new innovation. Due to the landscape pressure, the Finnish state has started to support the green energy transition, which increases its profitability and demand. The roadmap states, that "The improved competitiveness of new solutions will accelerate change" (FNCSD, 2022, p. 54). The changes in the energy system affect the rest of the system directly and indirectly: "Changes in energy production and use have societal impacts, which can lead to changes in trade and industry, as well as energy prices" (FNCSD, 2022, p. 50). In this regard, Geels and Schot (2007, p. 410) express that technology substitution pathway has a technology-push characteristics, which leads to a wider regime change where co-evolutionary processes follow substitution. The roadmap mentions, for example, that the widespread use of electric cars leads to the renewal of public transport infrastructure (FNCSD, 2022, p. 54). According to the roadmap, the regime actors facilitating the change are the Finnish public administration (including the Parliament of Finland, the Finnish Tax Administration), the EU, consumers, energy producers (including peatland farmers), higher education institutions, research institutes, investors, different industries, municipalities, and communities. The roadmap argues that stable and predictable environment calls for investments that generate climate benefits (FNCSD, 2022, p. 53). Therefore the need for eliminating the differences in regional and international regulations is highlighted.

The roadmap proposes that the overall sustainability of the energy system is ensured by having the final energy consumption based on renewable electricity. According to Ritchie et al. (2022), the use of low-carbon energy sources already has increased steadily in Finland in the 21st century. The share of primary energy from low-carbon sources increased from 38 % in 2000 to 53 % in 2021 (Ritchie et al., 2022). In terms of electricity consumption, the development has been even faster. The share of low-carbon sources of electricity used by Finns has increased from 66% in 2000 to 89% in 2021 (Ritchie et al., 2022). Even though Finland has reduced its energy consumption since the peak years of the early 2000s, there is still a lot to be done to bring the overall primary energy consumption to a sustainable base.

7 CONCLUSIONS

Sustainable development is humanity's greatest challenge in the 21st century when our way of life puts a strain on the planetary boundaries. Environmental, economic and social inequalities cause fragmentation, when instead we should face challenges together. To address the problem, international and national actors have come together to draw up action programs to achieve sustainable development. In this regard, the UN the 2030 Agenda has acted as a pioneer and standard for international sustainable development since 2016. In this study, I analyse the Finnish Agenda 2030 roadmap and the implicit sustainability transition pathways it contains. Societal transitions towards sustainability are not straightforward but involve many kinds of interaction and conflicting interests. For this reason, I have utilised the Multi-level perspective on transition to describe Finland's paths towards sustainability.

In this concluding chapter, I will first recap the research questions and summarize the main findings. Along with the findings, I present some observations about the factors and themes connecting the implicit transition pathways. Then, I will discuss how the new knowledge contributes to the development research and the Finnish sustainability transition. Finally, I will put forward some suggestions for practical applications and future research.

7.1 Recap of the main findings

In this research, my research question was to identify the implicit "sustainability transition pathways" guiding the 2030 Agenda roadmap of Finland. The research objective was to produce new knowledge about the transition pathways that dynamically affect societal development towards sustainability. The Multi-level perspective (MLP) framework by Geels (2002) guided the analysis throughout the research. Eventually, four different transition pathways could be identified from the roadmap.

According to MLP, the transformation pathway and reconfiguration pathway are the most moderate transition pathways. Based on my analysis, these transition pathways were implied in three of the six change areas. This is a welcome result in terms of the overall sustainability of Finnish society, because it means that sustainability in these sectors is already in such a good place that only moderate adjustments are needed. The analysis findings suggest that the 2030 Agenda roadmap implies that the Finnish educational system requires a transformative change to achieve the UN sustainability goals by 2030. Transformative change is implemented by integrating eco-social education into the education system. A sustainable lifestyle can be mainstreamed through education. The Brundtland report argues that those who are affluent have to adapt their lifestyle to planetary boundaries (WCED, 1987, part I, chapter 1). Finland belongs to the aforementioned affluent and polluting countries, so it has a moral obligation to increase awareness of sustainable lifestyles.

As in transformation pathway, in reconfiguration pathway the existing system adopts add-ons to solve local problems. But the difference is that in reconfiguration pathway the adoption of add-ons triggers further system adjustments to accommodate changed circumstances. My analysis suggests that the 2030 Agenda roadmap implies that Finland's economy and work and the environmental protection sectors require reconfiguration in order to achieve sustainability goals by 2030. Reconfigurative change in economy and work is implemented by introducing wellbeing economy into the Finnish economic policy practices. The roadmap defines wellbeing economy as an economic practices producing economic and human wellbeing. The introduction of welfare economy aligns with the Brundtland report, according to which economic growth is no longer the goal of development *per se*, but a tool to guide development towards sustainability (WCED, 1987). Purvis et al. (2019, p. 681) argue that this observation is part of a conceptual development on the quest to reconcile economic growth as a solution to social and ecological problems. This attitude change can also be observed in the 2030 Agenda roadmap of Finland. In a complex world, economic policy must be able to consider the complexity of the society and the direct and indirect effects of the policy practices. On this notion, Raworth cites John Sterman on how "there are no side effects - just *effects* [*sic*]" (Sterman, 2012, as cited in Raworth, 2017, p. 123). Thus, the deepened nature degradation cannot be dismissed as an unintended side effect of economic growth but must be understood as the result of conscious choices. Similarly, the findings suggests that reconfigurative change in environmental protection is implemented by integrating biodiversity approach into all public decision-making. According to the roadmap, determining economic value of natural capital would make it easier to take biodiversity into account in fiscal planning. The 'value' of nature should be defined according to planetary boundaries, i.e. how important it is in terms of nature's carrying capacity and biodiversity. Among others, the Dasgupta

review speaks in favour of consolidating environmental accounting into national accounting and political decision-making (Dasgupta, 2021). The reconfiguration pathway requires the internalization of new concepts and system adjustments, but the change is built on the basis of the existing institutional structure.

The findings of the analysis suggest that the food system and energy production require a greater transition than the aforementioned sectors in order to achieve the sustainability goals. My analysis suggests that the 2030 Agenda roadmap implies that Finland's food system and energy production sectors require technological substitution in order to achieve sustainability goals by 2030. The technological substitution in food system is implemented by introducing material circularity principles into the Finnish food supply chain. Circularity is commonly defined as an industrial system that is designed to work restoratively and regeneratively (Ellen MacArthur Foundation, 2012, p. 7). The approach aims to use renewable energy and eliminate waste through the superior design of materials, products, and systems (ibid.). Introducing this approach to the food system would steer it towards sustainability. Köhler et al. (2019, p. 14) point out that the successful implementation of new concepts such as circularity require profound understanding of consumption pattern in addition to new industrial system design. In the same vein, Korhonen et al. (2018, p. 41) adds that circularity remains just a technical tool unless the current consumption culture changes. These considerations demonstrate the system-based nature of society when the sustainability transition of one sector requires parallel actions from other sectors as well. In the case of the 2030 Agenda roadmap, successful technological substitution also requires action from legislation and consumers. Similar to food system, the 2030 Agenda roadmap implies that Finnish energy production requires technological substitution in order to achieve sustainability goals by 2030. The roadmap suggests that the technological substitution is implemented by the electrification of Finnish energy sector. This is because the contemporary energy sector account for around three-quarters of the world's greenhouse emissions (Ritchie et al., 2020). These statistics imply that it is not humanly possible to continue business-as-usual if we wish to keep humanity within the safe operating space of planetary boundaries. The Finnish society should collectively shift from carbon-based energy use towards renewable energy. Renewable energy sources include solar and wind power, geothermal energy and nuclear power. The technological substitution pathway of the energy system affects the rest of society directly and indirectly through availability, pricing, legislation and education.

According to the MLP, along with the technological substitution pathway, the de-alignment and re-alignment pathway means the most comprehensive societal change. The difference is that in technological substitution pathway a certain technol-

ogy ('socio-technical regime') is directly replaced by a new, relatively advanced substitute. Instead, in de-alignment and re-alignment pathway, there is no direct replacement for regime. Because of this, the regime may remain in a chaotic state for a long time before a replacement is formed. My analysis suggests that the 2030 Agenda roadmap implies that Finland's social and health services require the de-alignment and re-alignment of the system in order to achieve sustainability goals by 2030. The social and health services are de-aligned and re-aligned by implementing the Health and Social Services Reform (SOTE). The SOTE reform is an administrative reform that aims to assemble social and health services in an accessible way under the responsibility of one operator. The reform is part of a wider development, where inequalities and trade-offs are curbed by unifying the administration.

Reflecting on the research findings, the influential Dasgupta review suggests that societies can achieve sustainability through three interconnected transitions: (i) do not exceed the planetary boundaries; (ii) change measures of economic success; and (iii) transform our institutions from a systems perspective (Dasgupta, 2021, p. 488). According to the review, staying within the planetary boundaries includes nature conservation, changes in production and consuming patterns, and family planning. The changes in the measures of economic success include the consideration of natural capital in the national accounting. By reforming institutions, change can be driven from within society, instead of relying on traditional top-down or bottom-up politics. The review especially highlights the role of education and the economic system in promoting sustainable change (ibid., pp. 488–498). Reflecting on this, the 2030 Agenda roadmap includes all the elements outlined in the Dasgupta review to achieve sustainability. The implicit transition pathways identified utilizing the MLP support Finland's development towards a prosperous and globally responsible Finland that protects the carrying capacity of nature.

7.2 Contributions of this study

By integrating theories on sustainability transitions and the Multi-level perspective, the thesis contributes novel insight into Finnish sustainability transition research. It also presented one detailed study of sustainable development action plan drafted by government-affiliated expert committee – a subject that has been little studied. A research gap regarding implicit transition pathways in societal transitions towards sustainability was pointed out. The thesis provided particular input to the understanding of factors influencing Finland's sustainable development by specifying the dynamic processes of different transition pathways based on Geels' MLP theory.

Sustainable development is commonly defined as accommodating the needs of current generations without jeopardizing the ability of future generations to meet their own needs (WCED, 1987). The definition of sustainable development has inherently material basis, as it aims to guide thinking and action to reflect nature's carrying capacity and renewability. Rockstöm et al. (2009b) refer to this conceptualization of nature's carrying capacity as the planetary boundaries. Sustainable development has long had an anti-capitalist resonance and its goals were incompatible with the goals of neoclassical economics. However, with the concept of planetary boundaries and international political pressure, the market has become intertwined with environmental issues in a new way; the new main question is how to reconcile economic and climate goals? The transition to sustainable development and the pursuit of economic growth are not completely mutually exclusive goals, because green technology innovations are beneficial for both the climate and people and the economy (Ympäristöministeriö, 2021). New technology creates new jobs and with increased income people can afford to consume more environmentally friendly products. However, this is not quite a simple equation. According to the Ministry of the Environment's annual climate report, Finns' emissions have not decreased despite the factors mentioned above (Ympäristöministeriö, 2021). On the contrary, according to studies, the carbon footprint tends to increase as income increases (ibid.). However, making individuals responsible for their consumption choices is not a long-term solution to the problem, as a larger ideological change and political guidance is needed. The 2030 Agenda roadmap contributes to this view by highlighting the responsibility of public authorities in guiding the sustainability transition.

According to Geels (2011, p. 25) the special characteristics of sustainability transition are the goal-oriented actions towards sustainability, the prioritization of collective good over individual interest, and recognition of the influence of stakeholders in the empirical field. He concludes that the sustainability transition is not likely to succeed without changes in policies addressing the economic frame conditions as individual actors have limited incentives to act towards collective sustainability. Geels and Schot (2010, p. 12) further state that the socio-technical perspective of transition includes the mobilization of resources, engaging social networks, developing a vision for change, creating a market, and establishing a new regulatory framework. The 2030 Agenda roadmap corresponds to the characteristics mentioned above, as the action plan is constructed around political decision-making and public procedures. The roadmap illustrates in detail how the Finnish state can influence incentives to act for sustainable development. The government can further accelerate technical transitions towards sustainability by drafting regulations that apply to consumers, entrepreneurs, and ministries alike. Therefore my analysis agree with Geels' (2002, p. 1259) view that diffusion of new innovations requires user adjustments and domestication. Ultimately,

the integration of new innovation is a matter how individual users adopt new practices in their organizations and routines. In essence, niche-innovations, markets, and user preferences co-evolve.

Finally, in the context of the Nordic welfare state, the societal transition to sustainability places great emphasis on the role of the state in guiding the market and the behaviour of citizens. The 2030 Agenda roadmap presents various examples of public authority activities that could accelerate the sustainability transition. Especially in the case of the food system, the role of taxation and state subsidies steering consumption behaviour is of great importance. In the same way that the state guides individual behaviour, it also controls the operating environment of industry and companies. Various regulations, both national and international, ensure the safety and health of production. Consistently, the Finnish Environment Institute (SYKE) recognizes that the state has a significant role in shifting the structures of the Finnish welfare state towards more sustainable operations; the sustainability transitions cannot be left solely to the market (Furman et al., 2018). At the political level, the question of the necessity of sustainability measures is already an outdated discussion. Instead, one should ask how sustainability policy can be practiced and implemented fairly.

7.3 Recommendations for future research

Successful sustainability transition calls for normative directionality from public authorities. Köhler et al. (2019) builds on Geels and Schot (2007) that individuals have limited incentives to address sustainability issues because sustainability serves the public good rather than individual good. Therefore public policy has a central role in shaping the directionality of sustainability transition through regulations, subsidies, taxes, and policy coherence (Köhler et al., 2019, p. 3). They suggest that transitions are inherently political processes, involving power struggle and competition of resources (ibid., p. 6). Therefore, further research interest would be to extend the MLP approach to transition management (TM) approach. TM builds on MLP with the main concern how to enable and support niche-innovations promoting sustainable development (Loorbach et al., 2017). While the MLP has an interpretative approach to processes, the TM actively tries to influence the course of development. This is why transition management would be the next step after identifying the transition dynamics.

At the grassroots level, the further research interest could address the agency of individuals and communities in sustainability transition. Building on Köhler et al. (2019, p. 11), the importance of civil and social movements to the diffusion of innovations is vastly understudied. They propose that social movements influence the public

opinion regarding the current system while simultaneously supporting grassroot innovations. Thus, studying social movements for sustainability transitions would provide valuable information about bottom-up regime pressure and how social movement can enable or constrain transitions.

7.4 Concluding remarks

What kind of future we end up with depends on the choices and actions we do today. Finnish Innovation Fund SITRA concludes that influencing the future requires awareness of one's actions and choices, challenging current assumptions, imagining desirable futures and discussing them, envisioning wider change and joint action towards desirable futures (Dufva et al., 2021, p. 25). Achieving sustainability goals is not only about climate protection, as the 2030 Agenda roadmap states that "the implementation of the 2030 Agenda strengthens society's resilience" (FNCSD, 2022, p. 8). Therefore, the roadmap calls for a collective sustainable transition in order to secure the carrying capacity of the planet. According to the UNEP Emission Gap report, the mechanisms for lifestyle change entail economic policies, physical infrastructure, behavioural change, and information-based policies (UNEP, 2020, p. 64–75). In other words, the change concerns the personal, social and structural spheres of life. The state has a key role in changing the structures of society to support sustainable choices. The 2030 Agenda road map states the role of science and politics in achieving sustainable development as follows:

> Decision-making must be supported by research-based knowledge to ensure the achievement of a good ecological state and the biodiversity goals in different habitats and populations, such as forests and water bodies, and to determine the impact on human wellbeing, education and food security.[18]

The Permanent Secretaries of the Finnish ministries has a similar message to the future government. The key message for the next two parliamentary terms is that the green transition and resilience to crisis must be advanced rapidly (Damski et al., 2023, p. 7). The promotion of green transition should not be limited only to the ended government period, but it should be an overachiving theme for the following decade. Environmental and social sustainability should be in balance with economic growth (ibid., p. 8). The role of the public administration is an enabler and accelerator of sustainability transition. After all, the term 'welfare state' implies the welfare mission of the state, which it fulfils by relentlessly working for a sustainable future.

[18] Finnish National Commission on Sustainable Development, 2022, p. 49.

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