MEGA TRENDS 2023

Understanding an era of surprises

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Foreword

When we published our most recent megatrend report three years ago, in January 2020, we noted that the world is entering a postnormal era of surprises. The megatrends depicted the major changes that would require entirely new ways of thinking and acting. At that time, there were already signs emerging of a virus that would shake the world, and, only a little later, life was transformed in a flash into the postnormal. We were often asked whether the pandemic was reflected in Sitra's megatrends. In the spring of 2022, the same question was asked about Russia's invasion of Ukraine. Megatrends do not provide answers about wildcards and black swan events but emphasise changes that we cannot afford to ignore. Megatrends are not intended to surprise the reader, but to reinforce understanding of the broad arcs of change and their interrelationships. Ideally, working on megatrends provides insights and enhances long-term thinking.

While the crises of recent years have set in motion major changes, the megatrends are not subject to radical changes. New emphases and critical questions have emerged. Tensions change over time. The essential role of megatrends is therefore to remind us that we are still urgently need to restore the carrying capacity of nature, address challenges related to well-being, strengthen and defend democracy and participation, and to ensure that the economy and technology are developed and used in a fair and sustainable way. If we do not take the future seriously, we will face these issues later in crisis mode.

How do megatrends support future thinking for people and communities in the postnormal era? In the midst of severe acute crises, the future horizons of societies and individuals become narrowed and more strongly focused on the present and on coping with the challenges of daily life. Still, as clichéd as it may sound, the future is also built through decisions and choices made in the midst of crises. The various crises and their solutions are intertwined. It is therefore important that we understand the big picture and the interdependencies and tensions between phenomena. With Sitra's work on megatrends we aim to enhance people's understanding of potential future developments and the ways in which we can influence the future. In recent years, megatrends have proven to be a useful framework for examining the longer-term implications of both the Covid-19 pandemic and Russia's war of aggression. While public debate usually focuses on a single aspect, such as the economy, health or security, megatrends have helped us consider the impact of crises from the broader perspectives of people, the population, nature, the economy and technology. As our faith in the future falters, it is important to identify the choices we still face and the issues that are important to discuss now to build a better future.

Sitra's foresight work is guided by the goal of strengthening the future-oriented thinking of people and organisations, and expanding the group of people who have the power to shape the future. Many people and organisations have already embraced Sitra's megatrends, and it has been great to see that there is a growing demand for information and tools related to the future. This foresight report has been written taking into account the broad and diverse audience for megatrends and purposes for using them. We have considered which perspectives are important to emphasise in this particular period and how to support the integration of future knowledge into everyday activities and change-making.

Foresight is often a balancing act between utopias and dystopias, problems and solutions, hope and hopelessness. The future now appears blurred, uncertain, even frightening. According to Sitra's Futures Barometer, more than half of Finns sometimes view the future as frightening and sometimes eagerly anticipate it.

Hope is not found by clinging to the past, but by opportunities to make the future fair, sustainable and inspiring.

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Abstract

In a time of surprises and uncertainty, the future looks unpredictable, even frightening. Attention is easily drawn to the latest crisis and the present moment. But building a fair, sustainable and inspiring future requires a shared understanding of the longer-term picture of change. What has already changed? What is changing right now? How are changes interlinked? What is preventing change? What is possible? This report answers these questions through the use of megatrends.

Megatrends are directions of development, consisting of several phenomena, that describe broad arcs of change. They often occur at a global level and are often believed to continue in the same direction. Megatrends shed light on the phenomena around us that are currently prominent.

Sitra's megatrends 2023 describe the big picture of change through five themes: nature, people, power, technology and the economy. **Nature's carrying capacity is being eroded** as we live in the midst of an ecological sustainability crisis. There is an urgent need for ecological reconstruction, which means transitioning to a society that improves the state of nature and human well-being. **Challenges to well-being** are increasing as changes in the operating environment influence people's daily lives. The population is ageing, becoming more diverse and concentrated in growth centres, which impacts the size of the working-age population, the funding of the welfare state, the adequacy of social and health services, democracy and the adoption of technology. General uncertainty about the future is exacerbating mental health problems.

The battle for democracy is intensifying and societies are under strain as crises accumulate. Geopolitical power struggles have returned with a vengeance, and the rules-based world order – and trust in the institutions that underpin it – is wavering. At the same time, there are disputes over the ground rules of the digital world, the resources required by new technology and, more generally, technological trends, which means that **the competition for digital power is intensifying**. Technology and data are increasingly embedded in people's daily lives and data is increasingly collected and exploited.

Cracks are showing in the foundations of the economy as global inequality increases and the ecological sustainability crisis unfolds. Increasing extreme weather phenomena and the collapse of nature's contributions to people are eroding the functional conditions of the economy and wealth is being concentrated in the hands of an even smaller group, creating an increasingly urgent need to reform the economy.

The recent major crises – the Covid-19 pandemic and Russia's invasion of Ukraine with its manifold consequences – have made the interdependent character of our world more tangible. While the challenges seem big, a different future is possible. In Sitra's vision, Finland will prosper by building a fair, sustainable and inspiring future that ensures people's well-being within the limits of the planet's carrying capacity. We can adapt to the limits of this carrying capacity by investing in the ecological reconstruction of society and daily life. We can reform the economy to be more transformative by adhering to the principles of sustainable and responsible development. We can strengthen democracy by increasing participation and empowerment. All of this requires future-oriented thinking and the capacity for change.

Introduction

Sitra's previous megatrend report was published in January 2020. It included a section on postnormal times – the transition to a period of surprises, contradictions and conflicts. At the time, it may have seemed a bit abstract, a theoretical spin used by futurists that has no practical relevance to daily life.

Now, three years later, examples of postnormal times are all around us. Surprises and crises – such as the Covid-19 pandemic, Russia's war of aggression, the food and energy crisis and extreme weather events – have become familiar. Everyday life can change very quickly, and mindsets can change with it. This is illustrated by the fact that, according to a survey published by Yle in autumn 2022, half of Finns have changed their world view in the last two years.

Why then, in a time of surprises, should we pay attention not only to surprises but also to megatrends, the slowly changing broader arcs of development? Surprises do not come out of nowhere. They are driven by longer-term changes, or megatrends. Understanding and critically evaluating continuities, path dependencies and the current perceptions of the future helps to identify discontinuities. If there is one thing we can say about the future, it is that there will be more surprises.

While surprises cannot be precisely predicted, they can be anticipated. For example, Russia's invasion of Ukraine, the halting of energy imports and the blowing up of gas pipelines were all events the exact nature and timing of which no-one could have predicted. At the same time, they were all the kinds of surprising events that can, and in some cases have, be anticipated through foresight. The important thing is not to predict accurately but to outline and learn from different potentialities, including the unexpected.

Instead of dwelling on uncertainty and surprises, what we need now is an understanding of the big picture of change, which will increase insight even in a time of surprises. This is also the aim of this report. It is worth looking at the megatrends together, because they are not separate but interact with each other. It is also important to identify the different stages of change: what has already changed, how are the current changes interconnected and which of them can be influenced? This is a time of transformation where many structures and ways of doing things are changing. The starting point is that there is no return to the old normal, but the future is not predetermined, and we can influence it.

In this report, we want to emphasise influencing the future. Rather than merely listing the things that are changing, we also discuss where we want things to change and how we can make a difference. What do we need to adapt to and what do we need to change? How can we get one step ahead in Finland and live a life now that will be viable in the future? Everyone – individuals, communities and society – all have a responsibility to think longer term and build a better future for the generations to come.

Influencing the future also means taking a position on which direction to take in the light of current trends or what kind of change should be strengthened. It is not unusual to take a stance – reports on the future always do so simply through the choice of subject matter, the framing of issues and the wording – what is raised and how. Because there is no such thing as a fully objective trend report, it is necessary to be as open as possible about the choices made and the perspective of the report.

The starting point of this report is <u>Sitra's vision</u>: Finland will prosper by building a fair, sustainable and inspiring future where people thrive within the carrying capacity of the planet. In line with Sitra's impact objectives, we emphasise ecological reconstruction, economic renewal, strengthening participation and empowerment, and strengthening future-oriented thinking and society's capacity for change. The focus is on the potential futures of Finnish society and the changes that will affect them.

There are always many possible futures, and many views about them. Understanding different perspectives is an important element of shaping the future. Although we present the big picture of change from the perspective of Sitra's vision in this report, we also highlight other views of futures when we discuss current future scenarios. The aim is to highlight the diversity of futures and the different directions in which change is sought.

The big picture of change

We explore the big picture of change through five themes: nature, people, power, technology and the economy. This is <u>a frequently used framework in trend analyses</u> and is helpful in preventing the analysis from focusing excessively on a single theme, such as technological change. Still, more important than the specific framework is to examine the linkages between changes and the emergent challenges that need to be addressed (Figure 1).
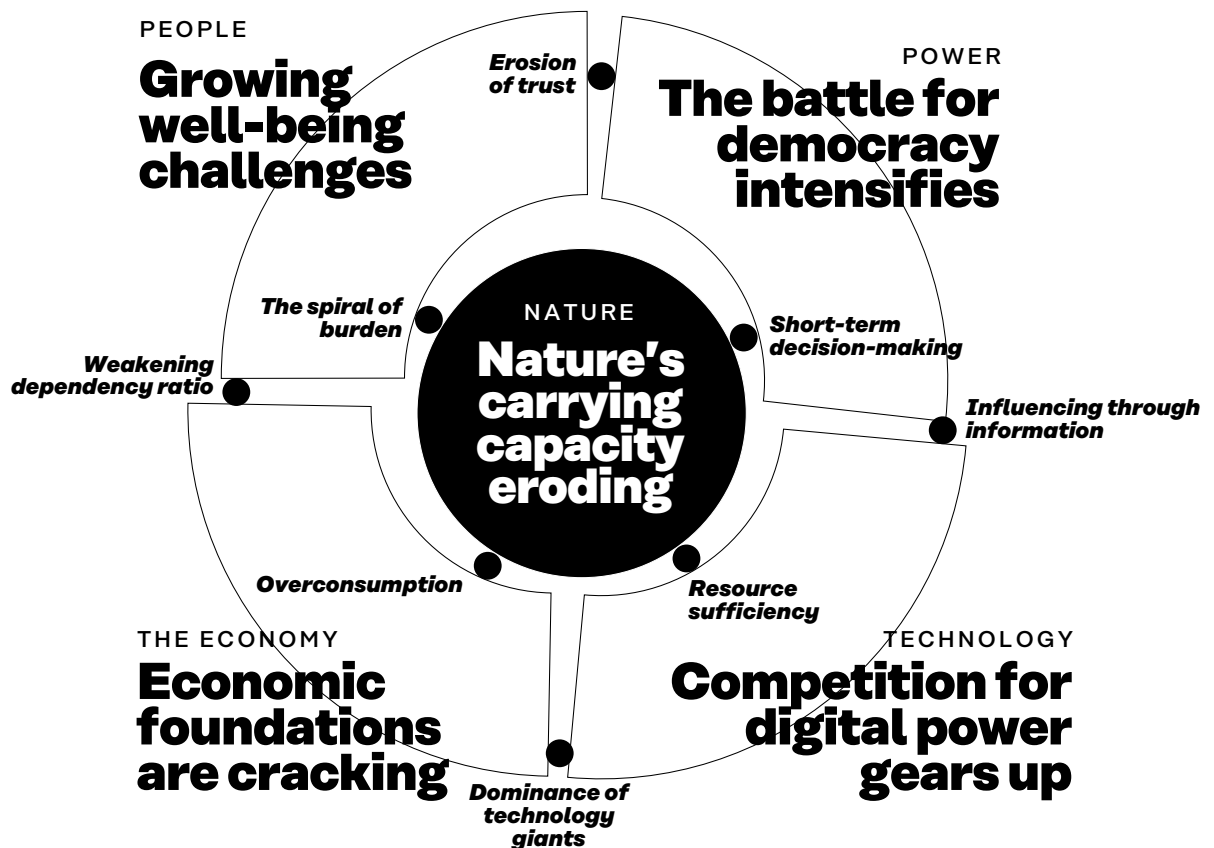

Figure 1. The big picture of change and the challenges to be addressed

Nature's carrying capacity is eroding as we are in the midst of an ecological sustainability crisis. The climate is heating up, biodiversity is declining at an alarming rate, natural resources are being over-exploited, and waste is increasing. Human activity places a burden on living and non-living nature beyond its carrying capacity and threatens the very basis of our economy and well-being. There is an urgent need for ecological reconstruction, which means transitioning to a society that improves the state of nature and human well-being. The slower society and people are to change their ways, the worse the impacts of the ecological crisis will become.

Well-being challenges are growing as many simultaneous changes affect people's daily lives. The ageing of the population has implications for the size of the working-age population, the funding of the welfare state, the adequacy of social and health services, democracy and the uptake of technology. The population is diversifying and becoming concentrated in growth centres. Changes in working life, the ecological sustainability crisis, the pandemic and general uncertainty about the future are exacerbating mental health problems and testing people's resilience. Human health is interlinked with the health of nature.

The battle for democracy intensifies. Societies are under strain as crises accumulate. Democracies have been both weakened and strengthened by the recent crises. Whereas the global pandemic concentrated power and limited the freedoms that democracies value, Russia's invasion of Ukraine has galvanised civil society and awakened people to the crisis of democracy. Defending Ukraine is also a matter of defending democracy. At the same time, even in many well-established democracies, the ideals and principles of democracy are being questioned and authoritarian approaches are being applied, both in Europe and the United States. Trust

is eroding and information manipulation is growing. An orderly and harmonious transition towards a fairer and more sustainable world looks increasingly unlikely. Geopolitical power struggles have returned with a vengeance, and this means a struggle between social systems. The rules-based world order and trust in the institutions that underpin it are being undermined.

The competition for digital power gears up. Technology and data are increasingly embedded in people's daily lives. Technology is developing rapidly, and new technologies are being introduced in new areas of life. Digitalisation has been the most significant technological development of recent times, cutting across all sectors. Data is increasingly being collected and used to provide new customised services to individuals and organisations. At the same time, there are disputes about the rules of the digital world, the resources required by new technology and, more generally, the direction of technological development. The challenges include both the current dominance of the technology giants and the adequacy of critical resources.

Economic foundations are cracking. Growing global inequalities and the ecological sustainability crisis create a need to reform the economy. Wealth is being concentrated in the hands of an even smaller number of people, while increasing extreme weather events and the collapse of the ecosystem services erode the operating capacity of the economy. Many at the global level have realised that the current economic system is not sustainable for people and nature. Sustainability is being emphasised in all activities and has extended from individual environmental issues to human rights issues, human well-being and improving the state of nature. The broadening of sustainability reflects a greater need to rethink the role of the economy and what it actually stands for.

The megatrends are interconnected

The recent major crises – the Covid-19 pandemic and Russia's invasion of Ukraine with its manifold consequences – have made the interdependence of our world more tangible. No change happens in isolation. Environmental degradation is reflected in growing geopolitical tensions, deteriorating economic capacity and well-being problems. Populism and fomented confusion are fuelled by the accumulation of crises. Geopolitical tensions are growing and there are power struggles related to technology, the economy, production, resources and future prospects.

Solutions must be found to accommodate new technologies within the limits of nature's carrying capacity and to help improve the state of nature in line with the goals of the digital and green twin transition. Technological developments are changing how we operate and are linked to human well-being, the functioning of societies and the state of the environment. Economic development depends on the ecosystem services, the stability of society, the functioning of global production chains, the availability of labour, and well-being. Safeguarding human well-being in turn requires a well-functioning economy and society, the well-being of nature and a safe environment, the responsible use of technology and the strengthening of empowerment.

Megatrends easily focus attention on the changes of the moment. To understand the interdependencies of current changes, we need to examine where they have come from and what has already changed. The climate is already heating and biodiversity is deteriorating at an alarming rate. Wealth has become globally concentrated in the hands of an increasingly small number of people, and globalisation has created a highly interdependent world. Digitalisation has led to power becoming increasingly concentrated in the hands of a few technology companies and the individuals that control them. Democracies are being challenged both internally and externally, and the numbers of authoritarian states have grown. The population is already ageing, the share of the working-age population has decreased, and mental health problems have increased.

On the other hand, we can look to the future and consider what is possible in light of past and present changes. While the challenges seem big, a different future is possible. We need to recognise the changes that have already happened, but we can influence future changes and buttress favourable trends already identified. The limits of the Earth's carrying capacity can be adapted to by investing in the ecological reconstruction of society and daily life. The economy can be reformed to make it more transformational by adhering to the principles of sustainable and responsible development. Democracy can be strengthened through greater participation and opportunities to make a difference. All of this requires future-oriented thinking and the capacity for change.

The Futures Triangle provides deeper insight into change

To delve deeper into the big picture of change presented above, this report looks beyond trends, to the trajectories of change, to path dependencies, mindsets and perceptions of the future. The Futures Triangle (Figure 2) is used as the framework for this discussion. It is a tool developed by the futurist Sohail Inayatullah for outlining the issues that may influence the future. The sides of the triangle represent the past, present and future. The push of the present and the weight of the past are based on existing knowledge, whereas the pull of the future is based on our vision of what we consider possible.
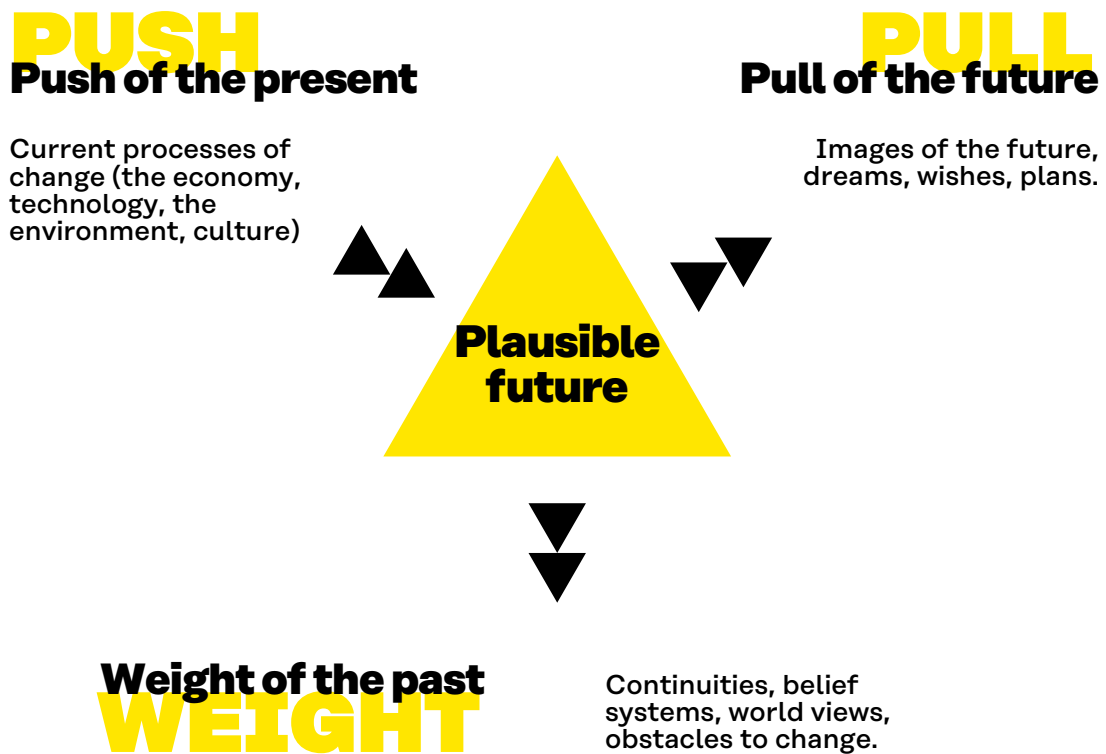
PUSH
Push of the present

Current processes of
change (the economy,
technology, the
environment, culture)

PULL
Pull of the future

Images of the future,
dreams, wishes, plans.

**Plausible
future**

Weight of the past
WEIGHT

Continuities, belief
systems, world views,
obstacles to change.

Figure 2. The Futures Triangle helps outline possible futures. Adapted from Inayatullah 2008.

The push of the present focuses attention on everything that is changing right now. This is the core content of trend reports and tends to be the area where different reports come to the same conclusions. Although the world seems to be in turmoil, megatrends, or major arcs of change, have not suddenly become completely new. The ecological sustainability crisis has not gone away, technology is still perceived to be developing rapidly and there have been unexpected changes in demography. That is why the five main themes highlighted in this report are similar to those presented in Sitra's megatrends 2020 report.

At the same time, however, certain changes have accelerated. The increase in remote working is one such example. The balance between changes subject to tensions

has changed. For instance, centralised power has increased relative to networked power. The broad arcs of change have taken on new layers, such as the need to phase out fossil fuels not only due to the climate crisis but also for geopolitical reasons.

When examining the push of the present, we need to focus on how the changes are interconnected and what interpretations they are given. Which changes are mutually reinforcing, and which are in tension? What are the different perspectives on change and how do the effects of change appear to different people? These questions are explored here in addition to the more conventional approach of listing trends.

The weight of the past guides us to look at what has brought us to where we are. A rule of thumb in future-oriented thinking

is that if you want to look 10 years into the future, you need to look at least 20 years into the past. Knowledge of history helps us identify path dependencies and the effects of past decisions. While they limit what is perceived to be possible in the present to some extent, they also provide a basis on which to build a desired future.

If the push of the present focuses on what is changing, the weight of the past is more about what inhibits change. The obstacles may be very palpable, such as the constraints imposed by the built environment or changes that have already occurred in atmospheric carbon dioxide levels. And yet change can also be inhibited by entrenched patterns of thinking and assumptions that go unchallenged.

Visions of the future can also limit what is considered possible and what is given attention. The future is not a blank slate on which you can freely draw a picture that appeals to you, but a collection of different views of desirable and undesirable futures that have been learned and presented by different people. Some of these views are so familiar that people are not even prepared to question them, even if they no longer lead in the desired direction.

The pull of the future covers views of the future, be they utopian, dystopian or something in between. Views of desirable futures drive us forward and answer the question of what kind of change is desirable. Threat scenarios, on the other hand, lead us to dwell on what is important and what we do not want to lose – as long as we're not paralysed by the fear associated with them.

The future can appear frightening at present. This is partly because many things are going in an undesirable direction, but also due to a lack of credible alternatives to the threat scenarios. Geoff Mulgan, the former Chief Executive of the think tank Nesta, writes about the crisis of political imagination, a lack of inspiring views of the future that drive society forward. Even more dramatically, Fred Polak, a pioneer of future studies, wrote in his book The Image of the Future, that societies only remain vibrant as long as they retain the ability to imagine a desirable future.

Right now, there is a pressing need to imagine other, inspiring futures. However, we should avoid making such imagined futures too abstract or only representative of the views of a small group. Still, the greatest danger is to assume that the imagined has already been accomplished, or that the possible is probable. Even if a future scenario has been carefully outlined and is completely plausible in principle, it does not mean that it will inevitably come true.

From insight to action

Imagining alternative futures is necessary for making informed and considered choices in the present. Understanding the big picture of change is a prerequisite for action, but it is not enough on its own. The future does not happen by itself; it is created together, through everyday choices and actions.

Influencing the future can also be examined with the help of the futures triangle. The push of the present helps us decide what changes to tackle and what trends to strengthen. The weight of the past tells us what we are building our preferred future on, and what can and should be challenged. The pull of the future gives us direction and also helps us understand the direction of others: what kind of future each of us is striving for.

This report aims to provide insight into the big picture of change, precisely so that we can build a better future in the present. Each chapter begins with a description of the push of the present – the current developments related to the theme in question, such as the environment, and their implications. The aim of that section is to help the reader under-

stand the overall picture of changes that have already taken place and are underway.

That overall picture is also described in relation to the obstacles to change, which represent the pressures of the past that need to be taken into account. What patterns of thinking and path dependencies keep us stuck in the past? The aim is to show that change does not happen by itself, but requires action at the level of behaviour, structures and paradigms.

After discussing the weight of the past, we turn our attention to the pull of the future. What kind of future is possible and what changes would it require? How can we build on the existing changes and address obstacles to change? We include threat scenarios, as they play a major role in shaping the debate on the future. The point is to highlight multiple perspectives on futures and provide insight into the current debate on the future.

The chapters also include a more detailed list of trends and a few statistics illustrating developments. Each chapter concludes with an interview with a person who works on the theme in question: how they perceive the impact of trends on their own life and how they are trying to influence their direction. The interviews are intended to highlight different perspectives on change and to emphasise agency: the future does not just come to you, but you can contribute to shaping it through your own actions.

The report concludes by summarising the actions and changes that are needed for building a sustainable future. Alongside the big picture of change, we also present a big picture of future opportunities. The end of the report includes practical tips on using the megatrends, a dictionary and a more detailed description of how the report was produced.

Nature's carrying capacity eroding

We are in the midst of an ecological sustainability crisis. Human activity is pushing living and non-living nature beyond its carrying capacity, threatening the very basis of our economy and well-being. There is a growing urgency for ecological reconstruction, a transition to a society that improves the state of nature and human well-being.

The push of the present: nature is vanishing

The ecological sustainability crisis is not only the future. It is the present. Since the end of the 19th century, the climate has already warmed by more than 1°C globally and by over 2°C in Finland. Carbon dioxide levels in the atmosphere are higher than at any time in human history and at current rates global temperatures are expected to rise by about 3°C. The more the temperature rises, the worse the impacts on food security, living conditions and biodiversity, among other things. Biodiversity is declining rapidly, with the rate of extinction of species being 100–1,000 times faster than in the last several million years. Many of the limits of the Earth's carrying capacity have already been exceeded.

The carrying capacity of nature can also be considered in addition to that of the planet. The limits of the carrying capacity of nature can be reached regionally and locally even if the planetary limits are not surpassed. For example, if pollination services are lost locally, the limits of nature's carrying capacity are exceeded even if the populations of pollinating insects are growing globally. For the purposes of this report, nature refers to both living (such as animals and plants) and non-living (such as climate and water resources) nature. The carrying capacity of nature is being eroded before our eyes.

Futurist and climate activist Alex Steffen has summarised the situation by pointing out that we are not yet ready for what has already happened. We still think that we have more time to ponder the situation, or that the change has not yet begun. But we are not completely unprepared. We already have several solutions to mitigate the heating of the climate and to improve the state of nature. The problem is that these solutions have not been sufficiently adopted, even though it would be in everyone's interest in the long term.

If we want to make a difference, we need a more radical change in human activity than is generally understood. Even if such a change is radical, it will probably seem completely obvious in hindsight and lead to a better world in many ways. At the heart of this change is an understanding and acceptance that we are completely dependent on nature and the ecosystem services. Food production, clean water, breathable air and many other essentials, our basic needs, depend on nature thriving. Nature also provides us with raw materials for everything ranging from houses to goods, medicines and the batteries needed for electrification. Without biodiversity, we cannot have prosperity or economic growth, which depend on the ecosystem services.

The slower we are to change our behaviour, the worse the impacts of the ecological sustainability crisis will be. Extreme weather events, such as flooding, drought and storms, are becoming ever more common and the decline in the ecosystem services to people will cause hundreds of billions of euros in economic losses annually. Extreme weather events, ecosystem collapse and soil degradation significantly increase uncertainty in food production. Fresh water is becoming scarce in many places. In the worst case, large areas, including coastal cities where millions of people live, could become uninhabitable.

Finland's climate will become hotter than the global average, but the climate will remain liveable. In our part of the world, biodiversity is declining particularly in forest ecosystems. The warming of the climate will bring new insect pests to our shores, while heatwaves, drought and floods will affect food production and human health. Rainer and wetter winter weather will increase the risk of mould damage in buildings and more frequent extreme weather will put infrastructure under pressure.

We are already dangerously close to tipping points of irreversible change. For example, when the heating of the climate reaches a certain point, it causes a domino effect whereby significant global warming can only be slowed down but not prevented.

Many natural environments can go through irreversible changes: for instance, the Amazon rainforest may become a savannah. We have already passed some tipping points – for example, most of the world's coral reefs are being destroyed and with them many vital ecosystems.

At the same time, we may be close to many tipping points in human behaviour and activity. Consumption, production, our relationship with nature and many other variables may be changing fast. People have become aware of the environmental impacts of fast fashion clothing and circular economy business models are becoming more common. Switching to a plant-based diet is now even easier than before. There are more and more reasons to phase out fossil fuels.

The weight of the past: the illusion of inconvenience

In its publication "A positive future for Finland", the Finnish Expert Panel for Sustainable Development refers to the illusion of inconvenience, the perception that the change needed is harder than it actually is. It also involves the idea of change as having to give something up, when in fact the changes in question are about building a different future that is more sustainable for people and the rest of nature and creates greater well-being.

The illusion of inconvenience stems partly from the fact that our current lifestyle may feel quite comfortable, even if there is some anxiety about the future. We are used to the way things are and change can seem burdensome, even if it ultimately makes life easier. It may also be partly true that change would have been easier 10–20 years ago, or at least we would have had more time. Now the situation is made more difficult by the greenhouse gases that have already been emitted, the habitats that have already been destroyed, and the other limits of the planet's carrying capacity that have already been

exceeded. It is therefore no longer enough to merely mitigate negative impacts, but to repair the damage already done and adapt to the changing environment.

We have consumed a large proportion of readily available mineral resources, raising concerns about the adequacy of materials needed for renewable energy production, for example. Indeed, the transition to a more sustainable world requires a change in how we act and think, and technological solutions are not enough. Yet, we are often stuck in the mindset of infinite natural resources and energy.

The current structures and ideals have led individuals to make unsustainable choices. In 2022, Finland's overshoot day was 31 March, marking the date by which Finns had consumed their calculated natural resources for 2022. A Finn's average carbon footprint is currently 10 tonnes per year. To limit climate warming to 1.5°C, the average carbon footprint would need to be reduced to about three tonnes by 2030. This sounds like a large cut, but it is completely feasible. Moreover, Finns are interested in reducing their carbon footprint – Sitra's lifestyle test has already provided tips on this to over a million users who have taken the test. Going forward, people will be increasingly able to make choices based on the ecological footprint of products and services, meaning that their biodiversity impacts can be taken into account.

Change may seem daunting because the future looks so bleak. People are concerned not only about the consequences of the climate crisis and biodiversity loss, but also the impact on their own lives and livelihoods. Uncertainty and disappointment that the promised future has not come about is likely to lead to deeper polarisation. The ecological sustainability crisis has become a weapon of identity politics.

The Great Nature Dialogue organised in March 2022 revealed that there are conflicts of views on nature not only between people but also within people. Finns have various parallel, sometimes even strained, relation-

ships with nature. They may see nature as having intrinsic value, but then see it as a resource to exploit. The actions of industrialised countries have thus far been driven by nature's monetary worth, but organisations such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) have underscored the need for different values and world views to be taken into account in decision-making. The better we learn to understand and discuss conflicting views, the better we can alleviate anxiety by taking action.

Change is also inhibited by the mindset of not seeing Finland as a major international player and failing to view sustainability solutions as a source of competitiveness. And yet Finland has everything it takes to be an international leader in this respect. As noted in Sitra's working paper Punching above our weight, "being a pioneer in climate action is not a form of charity but largely a way to defend national interests".

The pull of the future: ecological reconstruction

We do not have to drive off a cliff. We can change direction. Doing so requires a paradigm shift from wasteful overconsumption towards improving the well-being of the environment and people. The coming years will be challenging because of the need to simultaneously adapt to what has already changed and is changing, and to change our behaviour to avoid the worst consequences and achieve a more sustainable world for everyone.

Ecological reconstruction, as outlined by the BIOS research team, describes the changes needed in both physical infrastructure and the structures of the welfare state to enable the phasing out of fossil fuels. In addition to changes in the energy system, there is a need for changes in areas such as mobility, construction and food production,

but also in care services, education and governance.

In practice, the changes are reflected in the mainstreaming of the circular economy, reducing consumption, electrifying transport and shifting to plant-based diets and renewable energy. All of these changes are already underway. The share of renewables in Finland's total energy mix has already surpassed that of fossil fuels. The consumption of red meat is on the decline and the demand for plant proteins in increasing. There are examples of circular economy business models in many sectors.

Significant changes are also discussed in the EU's Strategic Foresight Report. It describes the digital and green twin transition where ecological sustainability and digitalisation can best support each other. The EU is guiding this transition through the European Green Deal, which includes sector-specific policy measures to promote the well-being and health of citizens and future generations. The plans, which extend to 2050, aim for a carbon-neutral Europe, which is also the goal of the EU Climate Law.

Some of the prevailing views of the future assume that all problems can be solved by technology. They include removing greenhouse gases from the atmosphere and cleaning plastic waste from the oceans using technology without changing the way we produce and consume. Geoengineering interventions targeted at the atmosphere or oceans have also been envisioned as a solution to climate warming.

While techno-utopian visions exist, there are also various counter scenarios of collapse and crisis. They envision societies becoming paralysed when they no longer have the same access to energy, materials, food or water that they are accustomed to. This would lead to The Great Simplification or societal collapse – or both. Usually, these scenarios end with collapse, but the solarpunk literary genre asks what might happen afterwards and how to rebuild society. These visions emphasise a new sense of community and the responsible use of technology.

POINT OF VIEW

JUUSO JOONA, FARMER
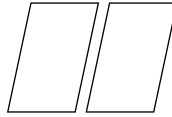
The soil on our farm was not in a great condition in the early 2000s. It was compact and not rich enough and did not yield good crops. It took a lot of work to get a successful harvest. When I started my studies in agronomy at the University of Helsinki, I gained access to researched knowledge.

I learned a lot about soil processes, micro-organisms and the dynamics of organic matter. I started to understand soil. For example, it has made me realise how important it is for fields to be continuously covered with vegetation.

My studies made me increasingly interested in the sustainability transformation, and I started to think about agriculture and society more broadly. I began to research the topic and train other farmers.

The crises of our time came as no surprise to me. Weather affects the life of all farmers, but the past two dry summers have not been a disaster for our farm because our soil is in good condition. Even Russia's invasion of Ukraine has not been as much of a problem for us as it has for many others, as we use relatively little fossil fuel and do not use any artificial fertilisers at all.

Such self-sufficiency and security of supply can be achieved more broadly in the agricultural sector, but the Finnish system of agricultural subsidies mainly consists of area-based subsidies that increase passivity. They do not provide incentives for high crop

"Agricultural policy cannot be solved without addressing taxation or social policy"

yields or improving soil fertility. Instead of the existing subsidies, the system should provide results-based support for ensuring the conditions for food production, namely soil fertility, climate change adaptation and mitigation, improving the ecological state of waterways and promoting biodiversity. The existing subsidies have driven us to a situation where we are dependent on Russian fertilisers and where food is cheap, but mainly for industry and trade.

As a society, we need a holistic vision of what we want Finnish food production to look like in 2050. This vision needs to be agreed collectively and to extend across multiple terms of parliament. There are many crises in the world, and they are all interconnected. Agricultural policy cannot be solved without addressing taxation or social policy.

When you look at the world right now, the future appears bleak. The way to get over that feeling is by doing things. You need to create the future you wish to see."

JUUSO

Juuso Joona is a Joutseno-based farmer, researcher and influencer who aims to promote restorative food production.

DATA

Figure 3.
Current emission reduction measures are not enough to reach the target of 1.5°C. Source: UN Emissions Gap Report 2022.

Trends in emissions and projected temperature

Projected climate warming by the end of the century

60	
50	2,8℃
40	2,4℃
30	
20	2,0℃
10	1,5℃
0	

1990 2000 2010 2020 2030 2040 2050

━━ Actual
━━ Measures under current policy
━━ All reported measures aimed at reducing emissions
━━ Emission reductions aligned with the 2°C target
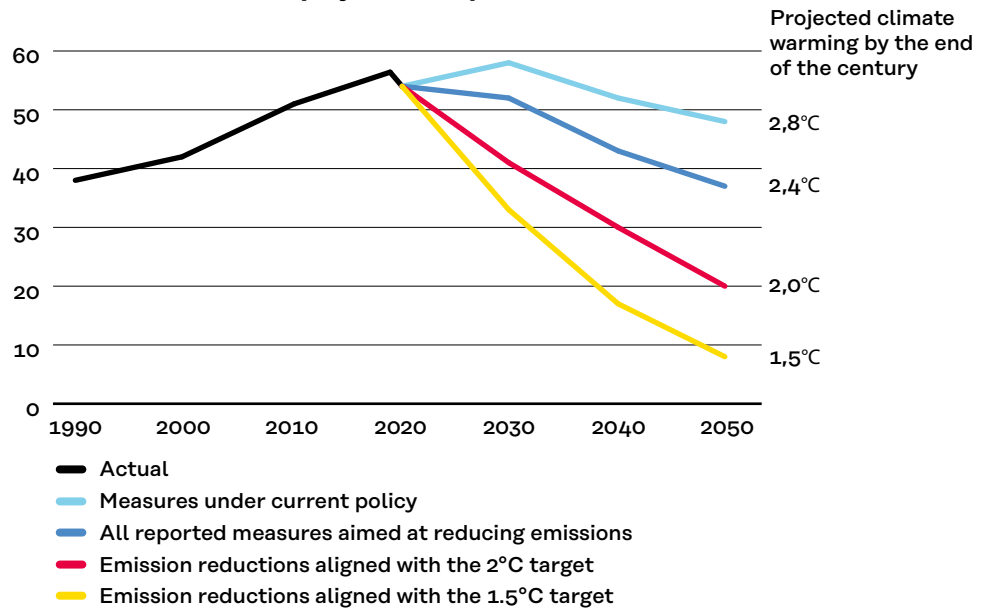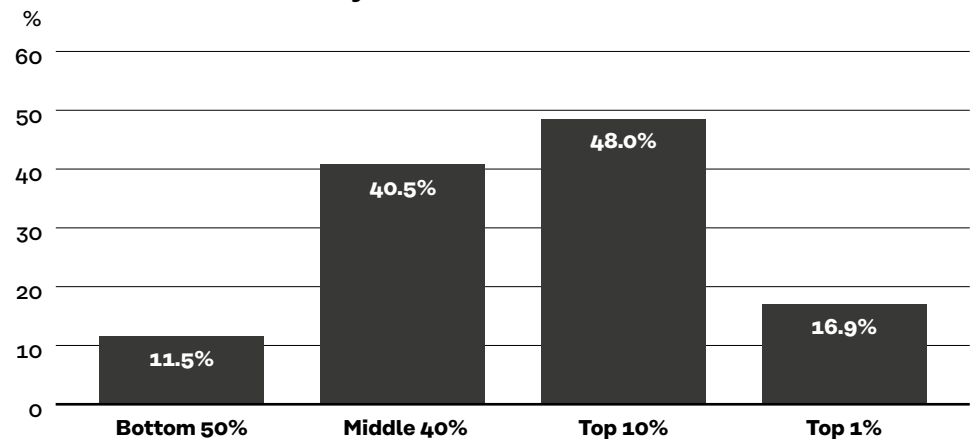━━ Emission reductions aligned with the 1.5°C target

Figure 4.
The wealthiest 10% of the world's population generates about half of all carbon dioxide emissions. Source: Chancel (2022)

Share of climate emissions by income class

%

60	
50	
40	
30	
20	
10	
0	

Bottom 50%: 11.5%
Middle 40%: 40.5%
Top 10%: 48.0%
Top 1%: 16.9%

DATA

Figure 5.
Accelerating biodiversity loss is a global phenomenon seen in all habitats. Source: National IPBES Panel (2019).

Natural ecosystems have declined by an average of 47%.

47%
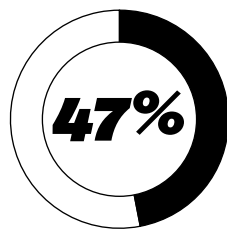
About 25% of the total estimated species of flora and fauna are at risk of extinction.

25%
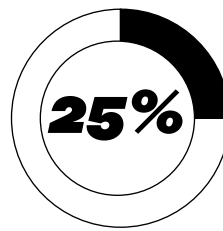
The abundance of land species and natural species has declined by an average of 23%.

23%
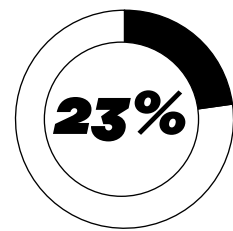
The total combined biomass of wild mammals has declined by 82%.

82%

Nature crucial for indigenous populations and local communities is declining. 72% of the indicators show a continuous decline.

72%

TRENDS

TRENDS

THE CLIMATE IS HEATING UP

The climate continues heat up, but the severity of the impacts will be influenced by the actions we take now. At the current rate, the climate will heat up by about 3°C this century, potentially by double that in Finland. That rate of climate change would result in irreversible changes and cause an uncontrollable chai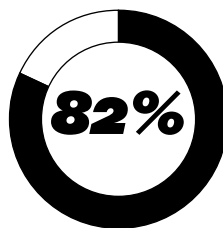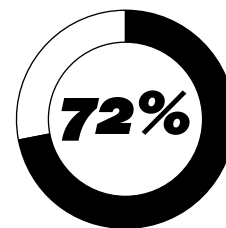n reaction. There is a need for stronger climate policy and more decisive action to reduce emissions to limit the warming of the climate to 1.5°C.

INCREASE IN EXTREME WEATHER EVENTS

Climate change will lead to more extreme weather events. Floods and droughts will become more common, as will more intense storms. Fluctuating weather conditions will challenge food production and infrastructure that was not originally designed for extreme weather. As intense heatwaves become more common, current Finnish summers will seem cool by comparison. The importance of societies' preparedness and adaptation will grow.

LOSS OF BIODIVERSITY

We are in the midst of a mass extinction of plants and animals caused by human activity. A million species are threatened by extinction within the next few decades. The degradation of nature threatens the well-being of hundreds of millions of people and will also cause annual economic losses measured in hundreds of billions of euros. Biodiversity loss can be slowed by reducing pressures on nature (land and sea use, climate change, pollution, resource utilisation and invasive species) and by managing, restoring and conserving habitats.

RESOURCE AVAILABILITY IS BECOMING INCREASINGLY UNCERTAIN

Growing consumption means that many resources are becoming increasingly scarce or costly to obtain. The availability of critical materials for industry may face challenges that will be reflected all the way to consumers. Resource uncertainty can be mitigated by developing substitute materials and by enhancing the recycling and reuse of materials.

SOIL DEGRADATION

At the current rate, 90% of the world's soil will be degraded by 2050 and the world risks running out of arable land in 60 years. Climate heating will make the situation worse with more extreme weather events. Preventing erosion and sequestering carbon dioxide in the soil can increase food security while also mitigating climate heating.

TRENDS

TRENDS

WASTE IS INCREASING

Due to rapid urbanisation and population growth, the amount of waste generated worldwide is predicted to increase by 70% by 2050. People in Finland generate 600 kg of waste per capita per year (2020), and the amount is expected to grow. Pharmaceutical residues in wastewater have also increased. Reducing waste requires a transition to a circular economy: preventing waste from being generated through smart product design, reusing and recycling materials, and removing hazardous chemicals and materials from circulation.

A STRONGER UNDERSTANDING OF THE INTRINSIC VALUE OF NATURE

Environmental awareness is growing. Nature is no longer viewed merely as a resource for people to exploit, but as having intrinsic value that underpins human well-being. Nevertheless, there is still a long way to go from awareness to large-scale action.

WILFUL INDIFFERENCE ABOUT THE STATE OF THE ENVIRONMENT IS INCREASING

Information on environmental degradation is available to everyone and environmental issues are increasingly in the news. Many people refuse to believe or else downplay the problems highlighted by science and opt to live like they always have. Tensions are growing between those who demand environmental action and those who belittle it.

STRONGER NON-HUMAN RIGHTS

There is a growing understanding of the rights of non-human animals. Fur farming has already been banned in 15 European countries and the debate on animal rights has also gathered momentum in Finland.

DEGRADATION OF THE SEAS

The warming and acidification of seas are destroying coral reefs and other fragile marine ecosystems. It also impacts the ability of seas to sequester carbon and, in the long term, oceanic currents will also be affected. Nutrient emissions are increasing eutrophication and causing oxygen depletion. Marine degradation also poses a threat to livelihoods and food security. Threats to marine ecosystems can be mitigated through climate action, the protection of the seas and reducing nutrient emissions.

Growing well-being challenges

Many changes in Finnish society and in the world are challenging human well-being. The population is ageing, diversifying and becoming concentrated in growth centres. Mental health problems are exacerbated by uncertainties related to working life and livelihoods, the ecological sustainability crisis and the pandemic.

The push of the present: people's resilience is being put to the test

When imagining the future, it is easy to think that many things will remain the same. This is particularly true of population, even though demographic trends can be accurately predicted. We know that the over-65 age group in Finland is growing relative to other age groups, but perhaps we do not understand the implications of this. We also may not realise that the period of the most rapid change is already behind us: the size of the working-age population decreased by over 130,000 between 2010 and 2020, and the population projections show a decrease over the next 20 years of 76,000. The size of Finland's population is projected to start declining in the 2030s, but the world's population is expected to grow from eight billion today to over 10 billion by the end of the century.

Demographic change affects many things. The size of the working-age population affects productivity and the financing of the welfare state. A system based on high employment and productivity therefore faces challenges due to population ageing. The growing number of older people has already increased the demand for services for them and the social security costs related to old age. The relative proportion of young people among voters is declining, which makes transgenerational responsibility and fairness an increasingly important theme. The ageing population should also be taken into consideration in the uptake of technology, for example.

Focusing on people is one way to bring future-oriented thinking to the everyday level. After all, the future is ultimately about the day-to-day: what we eat, where we live, what work and education we have, where we earn a living and find meaning in life, and who makes the decisions. The ecological sustainability crisis, economic turmoil, geopolitical tensions and technological developments are affecting people's daily lives, and everyday choices can shape the future.

People's daily lives have changed in recent years. The Covid-19 pandemic has made people more familiar with remote access and for some work has become mobile. Rising energy prices and geopolitical tensions have made energy-saving efforts a topical issue in a new way. Rising prices and the transformation of work raise concerns about coping with daily life. More and more people are starting to realise that there is no going back to the old normal.

Awareness of the ecological sustainability crisis is reflected in the travel and consumption choices and diets of many people. Vegan challenges, meatless October campaigns and Buy Nothing Day events inspire people to think about the sustainability of their lifestyles. At the same time, there is a growing polarisation and deliberate misunderstanding around the issue of sustainability. Some people downplay or outright deny their own or Finland's role in the ecological sustainability crisis.

The crisis is increasingly reflected in the transformation of working life. The rapid phasing out of fossil fuels and moving away from the overconsumption of resources will make some jobs disappear but will create many new ones. In such a transformation of entire industries, it is even more important to secure people's livelihoods across the junctures of working life. There is also an emphasis on continuous skills development and the opportunity to influence one's own job profile.

The physical health of Finns has improved and the expectation of healthy years has increased. Finns were also ranked as the happiest people in the world for the fifth consecutive year in the World Happiness Report commissioned by the UN. At the same time, though, mental health problems have increased. More than half of disability pensions are based on mental health disorders. The rise of mental health problems has

been particularly high among young people. While the Covid-19 pandemic has exacerbated the situation, it is also influenced by individualism, societal pressures, social media and general uncertainty about the future.

The ageing of the population, reduced physical activity and unhealthy lifestyles are reflected in an increase in disease. In the future, non-communicable diseases such as cardiovascular diseases, cancer, diabetes, asthma and allergies, as well as infectious diseases, may increase further. The heating of the climate, increased global travel and changes in land use make new infectious diseases more likely. Human health is interlinked with the health of the rest of nature.

The weight of the past: individualism and unsustainable patterns of thinking

The population structure cannot be substantially influenced quickly or without significant immigration, so the key question is how to adapt to population ageing. Ageing is often viewed as a negative, when in fact it should be seen as a success: people are living longer and healthier lives, and able bodied older people could be perceived as an asset. This perspective highlights how people's well-being has been successfully supported throughout their lives. Social and health services are often seen as costs but at their best they are investments that prevent more serious problems later on.

The Covid-19 pandemic and other crises increase uncertainty in people's lives and create challenges to the promotion of holistic well-being. The backlog of care accumulated during the pandemic due to the postponement of non-urgent treatment will take a long time to work through. The full impact of the crises on mental health, for example, may not yet be known. Health problems that have already arisen cannot be wiped away

but prepared for. At the same time, it is important to prevent the emergence of new problems.

Well-being and health are often approached in terms of the individual. This same individual centred approach can be seen in the debate concerning solutions to the ecological sustainability crisis. If a person wants to live a healthier and more ecologically sustainable life, it requires special awareness and effort. However, the solution to these does not rest solely with the individual. There is a need for structural change making it as easy as possible to adopt healthier and more sustainable lifestyles. This is made challenging by the individual centred mindset that sees the individual as a consumer separate from other people. But it is easy to think that people do not change their behaviour quickly.

There are also problematic paradigms about sustainability that are thought deep rooted. Humans are seen as separate from nature, superior to other species, and nature simply a human resource. Well-being is linked to material living standards, prioritising infinite economic growth and short-term gain. The focus is on individuals, who are presumed to act rationally. For the future, it is important to examine the mindsets, values and ideals that guide our actions and how they affect holistic well-being.

The pull of the future: holistic well-being

A more sustainable future for people and the rest of nature requires a change in paradigms and ideals. Instead of a materialistic and individual centred approach to well-being, the focus must shift to the long-term, the prevention of problems, ethical action and strengthening participation, collectivism and happiness. Well-being is not limited to the individual but is seen as intertwined with the well-being of the environment and communities.

In addition to treating the symptoms, it is important to address the root causes. Society should aim to eliminate risk factors such as poverty, discrimination and loneliness, and increase protective factors such as tolerance, community support, a sense of security, and the capacity for learning and life management. All groups of people need to be supported in the midst of crises and societal change in order to achieve a fair transition towards a more sustainable world.

Financing the welfare state is a key societal challenge. Instead of focusing on costs, we should consider what long-term investments are needed to prevent problems and how to measure their effectiveness. Solutions to this can be found, for instance, in various forms of impact investing. Technology also has a role to play in preventing problems. Health-measuring devices and health data make healthy choices easy and also support structural change.

Lifelong learning, or the continuous development of competence, has been talked about for a long time, and its role will further increase. When thinking about the future of work, the focus should be on livelihoods and the well-being of nature rather than the number of jobs. How can people's livelihoods be safeguarded as working life changes? What impacts will work have on the renewal of ecological and social capital?

The future views of well-being emphasise health, equality and happiness, but differ in whether they are preservative or regenerative. Many current visions of society aim to preserve the gains achieved. The welfare state is a major accomplishment, and one that people understandably want to hold on to. At the same time, however, it faces both economic and environmental challenges: the financial base of the welfare state is weakening as the working-age population declines, and current well-being has been achieved largely at the expense of the environment. However, the visions focused on conserving what we already have shown us what is important and what people want to retain. More regenerative visions of sustainable well-being are based on the fact that human well-being is completely dependent on the well-being of nature. They urge us to do away with the obsession with economic growth and to focus on solving the ecological sustainability crisis as a precondition for prosperity. In addition to material standard of living, attention must be paid to other factors that generate well-being, such as inclusion, social relations and the scope to act responsibly to promote the well-being of both people and nature.

Transhumanism paints a very different picture of the future. This seeks to overcome current human limitations through technology, for example by making ageing optional. For the individual, this could involve lifestyle optimisation based on collected data, the use of smart drugs or biohacking. At its most extreme, human technological evolution is expected to solve all well-being problems. Nevertheless, transhumanism raises many ethical questions related to issues such as human genome editing and the inequalities brought about by technological evolution.

More regenerative visions of sustainable well-being are based on the fact that human well-being is completely dependent on the well-being of nature.

POINT OF VIEW

EMILIA KUJALA, PSYCHOTHERAPIST

We have a mental health crisis in Finland, but solving it is not only the responsibility of mental health professionals. It's important to try to alleviate the symptoms, but the bigger question is how to create a society where people are as symptom-free as possible.

There is often a feeling in my field that people should just admit that they are powerless to do anything about structural issues. But the structures of society are not some abstract thing out there that we can blame for everything.

I believe that change can be achieved by questioning the prevailing truths. If we keep asking the same questions, we will never learn to see things differently. We need someone to shake things up.

I think of my columns, books, podcasts and social media accounts as social influencing. I want to believe that they have some significance not only to the individual but also for my field and Finnish society as a whole. We might question how much one person can do, but when others get involved, there may be the chance to influence structures – for example, the idea of a good person in this day and age.

We've been sold the idea that certainty is a natural state of affairs in the world, when

"The structures of society are not some abstract thing out there that we can blame for everything"

in fact we live in a time of crisis after crisis. Even the ideal person of our time is one who is able to control themselves, when it is precisely this uncertainty that we cannot manage by trying to control it. Research has shown that self-control is a useful skill in many areas of life. But could our capacity for self-control turn against us? If it drives us towards non-stop performance and efficiency?

Even for young people, we often say that ordinary is good enough or just do your best. Yet, all around us, at least between the lines, there is the message that you're not enough, you have to do even more.

As long as we focus on making individuals responsible for problems that are not just the responsibility of the individual, we won't be unable to change the structures that undermine people's well-being."

EMILIA

Emilia Kujala is a psychotherapist, trainer, non-fiction author and social media influencer.

DATA

Figure 6.

The demographic dependency ratio: the number of persons aged 15 or under and 65 or over per 100 persons of working-age; actual data for 1900–2020 and projection until 2070. Source: Official Statistics of Finland (OSF): Population projection 2021.

Demographic dependency ratio 1900–2070

● Under 15 years of age   ● Age 65 and older
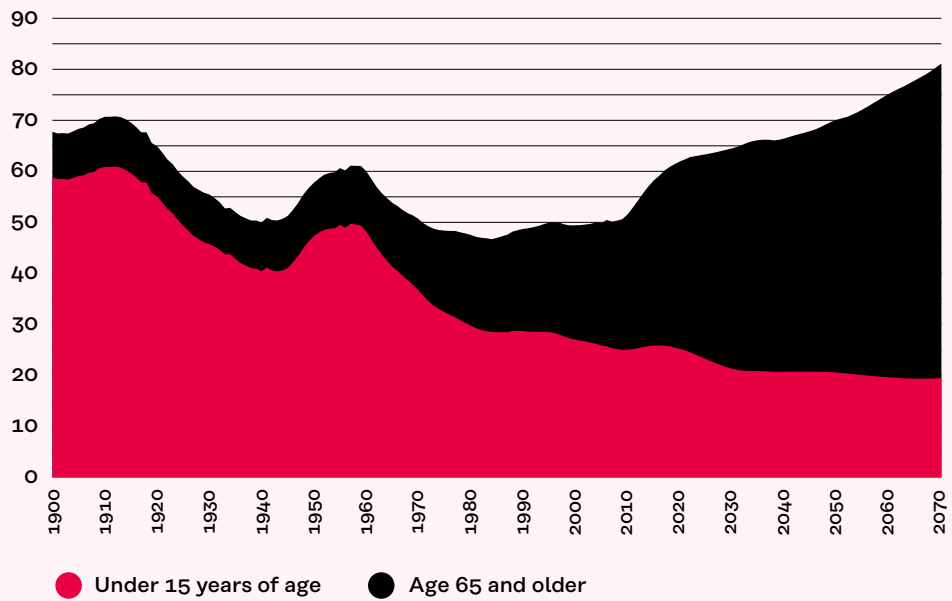
Figure 7.

Newly commenced sickness allowance periods based on the three most common main categories of illness. Source: Kelan sairausvakuutustilasto 2021.

Newly commenced sickness allowance periods based on the three most common main categories of illness

━ Injuries and poisoning

━ Musculoskeletal disorders

━ Mental health and behavioural disorders
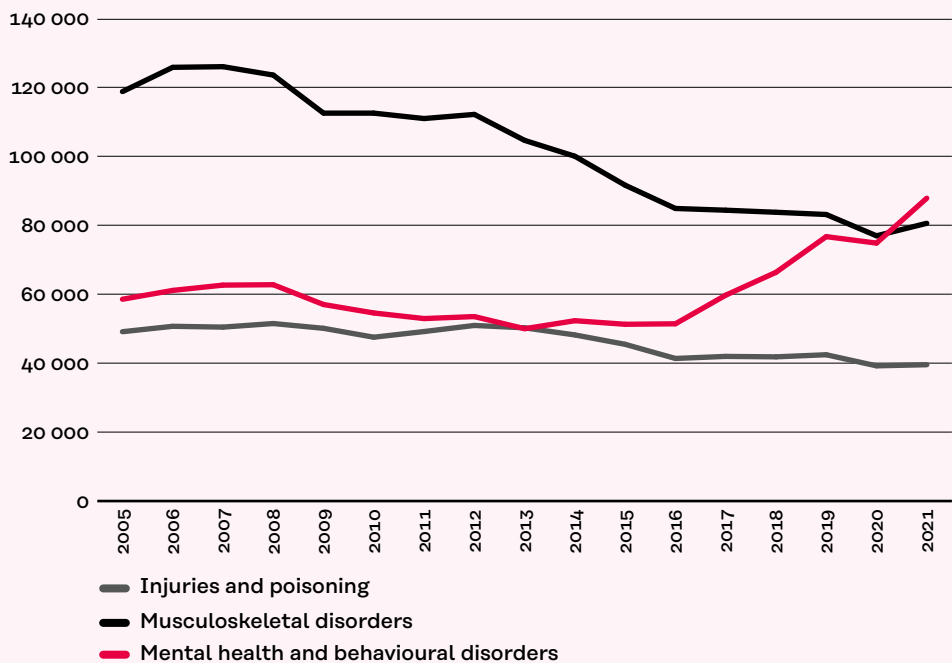
DATA

Figure 8.

More than half of Finns feel that their worldview has changed. Source: Yle News Lab and IROResearch (2022).

Has your world view changed over the past two years?

| 13 | 40 | 39 | 6 | 2 |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

- Very much
- Quite a lot
- Not much
- Not at all
- Don't know
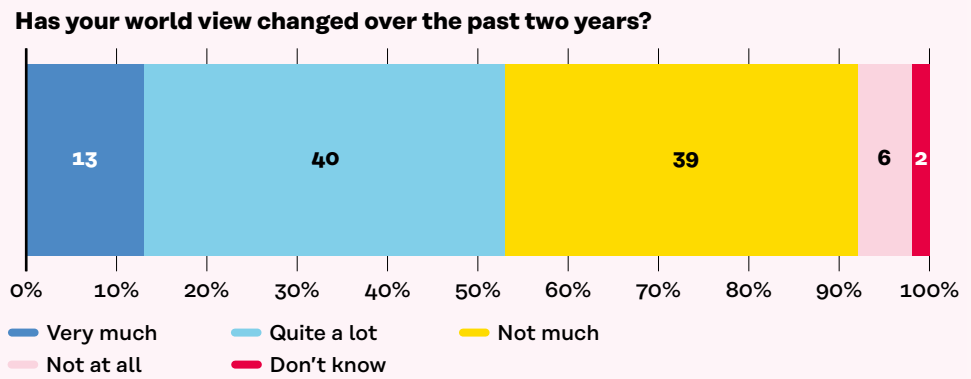
TRENDS

THE DEPENDENCY RATIO IS DECLINING

The population is ageing and the working-age population is shrinking. This weakens the dependency ratio, increasing the numbers of children and older people relative to the working-age population, and challenging us to consider how to ensure the quality and availability of services in society. The need for employment-based immigration is growing.

LONGER LIFE EXPECTANCY AND AN AGEING POPULATION

People are living longer and the population is ageing. In affluent societies, the birth rate is declining particularly among less educated population groups, and young people are in a minority. There need for services for an ageing population is growing. On the other hand, people's functional capacity may become a more age-defining factor in the future and more treatments for slowing down ageing may become available.

POPULATION CONCENTRATION

In Finland, the population is concentrated in southern Finland and a few large growth centres. In more remote regions the population is decreasing, and the portion of older people is growing. The gap between growth centres and low-migration municipalities is widening, although migration and multi-location that started during the Covid-19 pandemic have mitigated the migration loss in many municipalities and regions.

CONTINUED URBANISATION

Migration from rural areas to cities will continue globally. By 2050, nearly 70% of the world's population will live in cities. Rapid population growth is challenging urban infrastructure particularly in the megacities of Asia and Africa, and population inequality is growing. Cities have great potential to develop sustainable solutions if sufficient investment is made in urban planning.

INCREASING GLOBAL MIGRATION

Global migrations are growing due to changes in livelihoods, urbanisation, wars and environmental changes. The heating of the climate is making some regions uninhabitable. Immigration to Finland is also increasing, making immigrant integration more important.

PANDEMICS AND EPIDEMICS ARE INCREASING

Human activity increases the probability of widespread epidemics and pandemics. The fragmentation of natural habitats reduces the living space for animals, leading to a higher risk of zoonotic diseases. The heating of the climate exacerbates flooding and drought, increasing the incidence of infectious diseases. Mobility contributes to the rapid spread of diseases. Future pandemics can be prevented by protecting animal habitats and biodiversity.

TRENDS

MENTAL HEALTH PROBLEMS ARE INCREASING

Mental health problems are on the rise, particularly among young people. Absenteeism and disability are increasingly caused by mental health disorders. Stress is increased by various crises, information overload, the competitive nature of society and the growing complexity of life. At the same time, deprivation is accumulating. Tackling these problems requires adequate resources, multidisciplinary co-operation and focusing not only on the individual but also on the structures of society.

MINDSETS ABOUT HEALTH ARE CHANGING

Increasing antibiotic resistance and zoonotic diseases challenge people to take a more holistic approach to health. Human health is understood to be linked to the well-being of nature and the environment. Preventive measures, such as increasing biodiversity and reducing air and noise pollution, are being emphasised in addition to disease treatment.

THE CONCEPT OF WELL-BEING IS BROADENING

The income-centred view of individual well-being is expanding, and the importance of perceived well-being related to quality of life is growing alongside it. Well-being is not measured only in monetary terms, but also in terms of other factors, such as sustainable lifestyles, social relationships, experiences of meaningfulness and the opportunity to work for the common good.

THE CONTINUOUS SKILLS DEVELOPMENT IS BEING HIGHLIGHTED

Our changing working life and society require lifelong learning and continuous skills development. The importance of new learning, creativity, holistic thinking and meta-skills is increasing. Longer careers also create a growing need for continuous learning. The structures and practices for skills development are under growing pressure to change.

REMOTE AND HYBRID WORK ARE CHANGING THE LABOUR MARKET

The pandemic led many societies to go digital, as remote and hybrid working became more common. The increase in remote working has also led to the development of employers' practices for monitoring employee performance and productivity, raising questions about employer-employee trust. The labour market is changing as remote working enables new approaches to the organisation and decentralisation of work, even globally.

LABOUR MARKET MISMATCHES ARE INCREASING

Digitalisation is changing work in affluent societies. Labour market mismatches are increasing due to the lack of available talent to match the jobs on offer, and job-seekers face difficulties finding jobs that match their skills. Many jobs are automated or outsourced to countries with cheap labour.

POW

The battle for democracy intensifies

Societies are under duress as crises accumulate. Democracies have been both weakened and strengthened by crises. Whereas the global pandemic concentrated power and limited the freedoms that are important to democracies, Russia's invasion of Ukraine has galvanised civil society and alerted people to the crisis of democracy. The polarisation of debate, confusion and geopolitical power struggles create the need to reform decision-making and strengthen democracy, participation and citizen empowerment.

The push of the present: the crisis of democracy is deepening

Recent years have put the decision-making and operational capacity of societies under strain. The principles of open societies have been challenged. The Covid-19 pandemic led Finland to declare a state of emergency for the first time since the 1970s' oil crisis and to extraordinary restrictions on the rights of individuals, organisations and businesses. Russia's invasion of Ukraine destroyed any remaining hope of peaceful co-existence with authoritarian Russia, leading to Finland and Sweden to submit their applications for NATO membership at short notice. The importance of social media and digital platforms in shaping public opinion has opened up new opportunities for information influence. And in the midst of all of this, we need to move forward at pace with ecological reconstruction.

An orderly and harmonious transition towards a fairer and more sustainable world looks increasingly unlikely. Geopolitical power struggles have come back with a vengeance. Russia aims to assert its power in a situation where its key resources, fossil raw materials, are declining in importance. China has consolidated its position as an economic, technological, military and cultural superpower not only in Asia but also in many African countries and even in Europe. China is openly striving to become the world's leading superpower, which is creating tension between US and China reminiscent of the Cold War of the mid-to-late 20th century.

The ecological sustainability crisis is intensifying the struggle for raw materials and resources. At the same time, it is constraining the essential preconditions for decision-making, leading to resistance for fear of losing the right to self-determination. This in turn further slows down the response to the current crises and the reform of society to make it more crisis-resilient.

The struggle for resources is taking place on multiple fronts, shaping interdependencies between nations. How will global value chains evolve when the rest of the world seeks to reduce its dependence on China? Whose technology will be deployed? What will be the response to conflicts breaking out in different parts of the world? To reduce vulnerability, efforts are being made to decrease interdependencies between countries in many respects by increasing self-sufficiency, creating new partnerships or seeking alternative sources to raw materials and critical technologies.

The geopolitical power struggle is also a battle between social systems. The number of people living under authoritarian regimes has grown significantly in recent years, and more countries are moving towards authoritarianism than towards democracy. Of course, democracy has not been the only option in the past, but it is now being challenged with open hostility. Even in many well-established democracies, democratic ideals and principles are being questioned and authoritarian practices are being applied in both Europe and the United States.

The key question is: how do democracies cope with crises compared to authoritarian societies? Authoritarian regimes have the advantage of straightforward decision-making, but the strengths of democracies include the ability to vent frustrations, change political leaders, decentralise and, through plurality, gain a better picture of what is actually happening. In authoritarian systems, the picture is distorted for many reasons, such as when the authorities skew statistics, or people may be afraid to express their opinions. Democracies appear to be more effective than authoritarian regimes in certain respects, such as climate change mitigation and creating wealth equally. In authoritarian countries, wealth is traditionally concentrated in the hands of a smaller group of people, and many authoritarian countries have not been good at commercialising technological innovation.

When it comes to how societies handle pandemics, the decisive factor is not so much the form of social system as trust in decision-makers. Indeed, the erosion of trust is the biggest problem for both democratic and authoritarian societies, although democracies have more diverse means of building trust. Trust in decision-makers, institutions and other people has fallen to a dangerously low level in many societies, with misinformation and disinformation seen as fuelling distrust.

The transformation of the media and information environment, together with new communication platforms, has weakened the foundations of democracy globally. Targeted advertising on social media platforms has opened new avenues for electoral manipulation. Platform algorithms are weighted to sniping, confrontation and outrage, which contributes to the development of a culture of misunderstandings and polarised debate.

In addition to social media algorithms, other AI-driven systems – and new technologies more generally – can be used to erode the foundations of democracy and civic participation. Sophisticated surveillance systems based on facial recognition, data collection and data mining, and citizen scoring systems, enable governments to monitor and control people.

The weight of the past: a lack of societal imagination

Democracy needs to be reinforced and reformed. Reform is challenged by short-termism and self-interest. Building a fairer and more sustainable society in the longer term is largely overshadowed by managing current crises, even though they could go hand in hand. Vote fishing shortens the horizon to the span of electoral terms and self-interest is pursued narrowly, ignoring the bigger picture. Disputes become entrenched and the hostile tone of debate drives people away from political involvement.

The pursuit of self-interest is also highlighted in the relations between nations. For example, vaccines have been hoarded by rich countries during the Covid-19 pandemic, even though maximising the global vaccination coverage would be the best way to prevent the emergence of new variants of the virus. Immigration, energy prices, the availability of critical resources and many other issues are creating tensions between countries. Nationalistic overtones are increasingly prevalent in public debate. At the same time, the problems that need to be solved – such as the ecological sustainability crisis and pandemics – are global and interdependent issues that no country can solve alone.

Global collaboration is challenged by the destabilisation of the rules-based world order and the institutions that underpin it. The system built after the Second World War faces problems as the balance of power shifts. China's growing global power is actively challenging whose rules govern global governance. At the same time, the EU's problems are partly due to the fact that that the institutions created to satisfy the needs of the single market are not particularly effective for steering a political union. The EU has shown itself capable of putting up a united front in the face of external threats, but its internal tensions have not disappeared.

In a sense, the pursuit of self-interest is understandable in a situation where the future appears uncertain, even frightening. In such circumstances, holding on to the current advantages and bolstering one's position of power may seem logical. Indeed, the lack of societal imagination is one of the key challenges to the reform of democracy. Societal visions focus on preservation or countering threats. Such reactivity is problematic in a situation where there is a need for major reforms to the structures of society.

Imagination and new openings could be found by broadening participation. Finns would like to be more involved in decision-making if it were easier than it is at present. But decision-makers do not trust the public's ability to participate in the debate and decision-making on societal issues. There are also differences of opinions on the manner of participation: members of the public would like to participate through easy digital platforms, whereas decision-makers would prefer face-to-face meetings.

The pull of the future: strong trust and participation

Despite all the talk of crisis and the weight of the past, democracy remains the best way to build a society based on trust. Authoritarianism challenges democracy and is based on control and an underlying distrust of everyone and everything. Indeed, democracies may now increasingly see the awfulness and downsides of authoritarianism, which in turn reinforces the desire to develop and strengthen democracy and trust.

Strengthening and reforming democracy is possible and is being done through a number of initiatives. The key is to strengthen trust, not only in institutions and decision-making structures but also between people. This calls for constructive social debate, overcoming one's own bubbles and understanding multiple perspectives. Alongside institutional trust, public confidence in their own empowerment must also be strengthened. The development of democratic innovations is aimed precisely at these objectives, at strengthening the capacity of institutions to function, empowering people and rethinking the role of citizens. The resolution of multiple concurrent crises creates a wealth of meaningful decisions to be made and contributes to motivating participation. If we seize this chance to create

new opportunities for participation in decision-making structures, democracy itself can be strengthened at the same time.

The crisis of societal imagination can be addressed by expanding our power over the future: by increasing democratic participation and the diversity of perspectives of the future. New forms of involvement – such as participatory budgeting, citizens' panels and the use of digital platforms – can play a key role in this respect if participation is successfully linked to decision-making, starting with legislative drafting processes and agenda setting. Imagining and discussing alternative futures also calls for the strengthening of future-oriented thinking and a strong knowledge base. People in Finland have a solid understanding of the themes of technology, sustainability and the economy, which is important for upholding democracy.

In addition to broadening our vision of the future, there is a need to respond to the changes that have already taken place and to prevent their impact. This means, for example, tackling hate speech, emphasising the responsibility of social media companies, and highlighting the importance of critical technology literacy, meaning understanding the changed media and information environment. A fair rules-based or treaty-based world order that respects human dignity will concretise and strengthen global co-operation and solidarity – the challenges of our time are common to the entire planet.

Could the crisis of democracy spark new opportunities for the future? For example, what if the technological solutions that have thus far been harnessed for advertising were instead harnessed with equal precision for identifying societal needs and concerns, and inspiring enthusiasm about ways to exercise influence? Would the information influence used by authoritarian regimes finally prompt us to think about what a democratic information and media environment should look like? The more various digital systems become systems that influence the realisa-

tion of democracy, the more important it is that their development is driven by widely shared values and civic debate.

What if pandemics, geopolitical power struggles and the ecological sustainability crisis strengthen the power of the UN, the WHO and similar global institutions, or potentially lead to the emergence of a new global democratic institution that could enable humanity to address global challenges together? In a more technology-driven vision of the future, this type of world governance is based on <u>a decentralised decision-making system built on blockchains</u>.

A very different image of the future is represented by the idea of <u>an inevitable and historic transformation of our world</u> where only the strongest survive. This view of the future envisages entrenchment and self-interest. It may even make sense to promote transformation and crises, provided that the entrenched society believes it can survive or thrive inside its fortress while the world around it burns.

At present, there is no shortage of threat scenarios such as World War Three or a nuclear war that destroys a large proportion of humankind. Instead of dwelling on imagined threats, we need to consider the interests behind such images. While it is important to prepare for various possible futures and prevent the escalation of conflicts, threat scenarios are often used to further an agenda, such as the entrenchment mentioned above.

The key is to strengthen trust, not only in institutions and decision-making structures but also between people.

POINT OF VIEW

ADINA NIVUKOSKI, STUDENT

When I was 16, I went to the United States as an exchange student. That was in 2016–2017, around the time of the presidential elections. Having grown up in a stable and safe country like Finland, it was a bit of a shock to see how big and imperfect the world out there is.

Before that, I hadn't really figured out what is important to me. In the US, I saw how the opportunity to get an education often depends on money, and gender equality in executive positions is still taboo.

It was then that I started to form a picture of the kind of world I want to live in and work for. I want to live in a world where access to education does not depend on gender or income.

I still think every day about my role as an influencer in the future. I don't want to decide yet whether my future lies in an NGO or in journalism, for example. On the other hand, since I was little I have wanted to be a diplomat. I'm very interested in international cooperation, and while the UN is an old institution with old ways of doing things, it has been really good at involving young people, at least when it comes to education. Despite its problems, the UN is our best hope for solving global challenges.

Right now, I want to focus on influencing issues that are important to me in whatever way feels right at the time – for example, by writing.

I respect those who decide to get involved in politics but, for me, choosing one political party and putting yourself inside

"When I talk to people my age, the world and the future appear beautiful"

that bubble at this age feels too limiting. Still, I do have a lot of friends across party lines who have entered politics, and I believe in their visions and what they want to do to reshape old party structures. I'm really proud of them. I want to make a difference, but through other channels.

I don't understand why my generation is dissed because we're interested in human rights, climate issues and equality. I have a lot of faith in my generation. When I talk to people my age, the world and the future appear beautiful.

I think it's kind of funny that now, when minorities are being listened to for the first time in human history, it makes some people feel very agitated. They've never had to think about things from anyone else's perspective.

Of course, you can't ever put yourself in another person's shoes 100 per cent, but you can listen to that other person as if they were someone you love and want to understand. And not from the perspective of how this person, who has different feelings than me, is threatening me."

ADINA

Adina Nivukoski is a 22-year-old student, columnist and the former Chair of the Union of Upper Secondary School Students in Finland.

DATA

Figure 9:
The number of people living in autocracies has grown. Source: Democracy report 2022.

The proportion of the world's population living under autocratic regimes

49% 2011

70% 2021
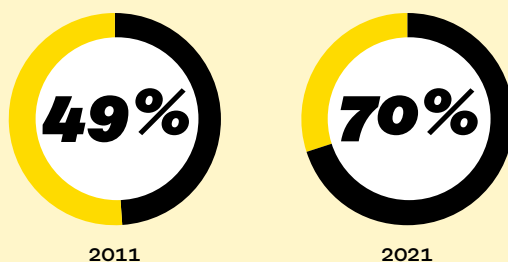
Figure 10:
There is a large disparity between the views of Finland's risks and global risks. Source: WEF (2022).

The five most significant risks over the next two years

GLOBALLY

- Failure of climate action
- Extreme weather events
- Biodiversity loss
- Eroding sense of solidarity
- Income-related crises

FOR FINLAND

- Prolonged period of slow economic growth
- Debt crisis of large economies
- Failure of climate action
- The bursting of the wealth bubble in large economies
- Infectious diseases

Figure 11:
People do not trust decision-makers, and decision-makers do not trust the people. Source: Jämsén et al. (2022).

To what extent can political decision-makers be generally trusted?

Members of the public

| 1 | 13 | 31 | 32 | 23 |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

● 5 Can trust fully ● 4 ● 3 ● 2 ● 1 Can't be too cautious
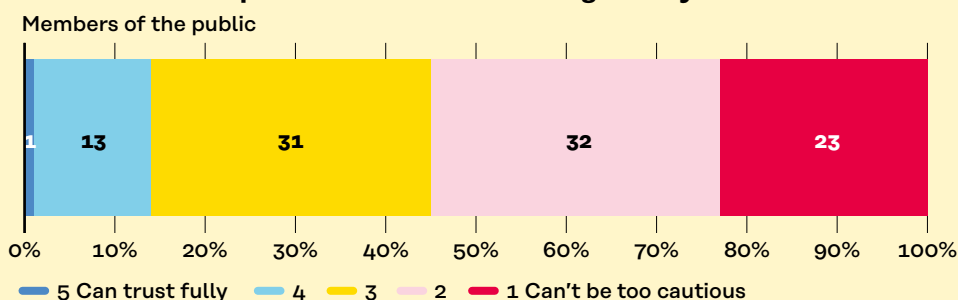
In general, members of the public have sufficient capacity to participate in discussions on complex decisions

Public officials and elected representatives

| 3 | 15 | 39 | 36 | 6 |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

● 5 Agree completely ● 4 ● 3 ● 2 ● 1 Disagree completely
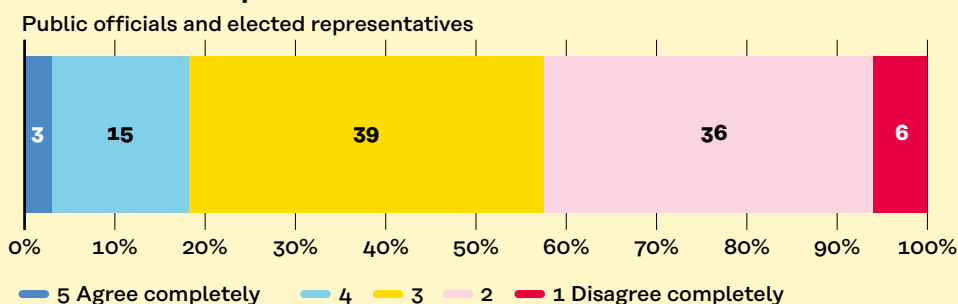
TRENDS

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INFORMATION INFLUENCE CREATES A MORE POLARISED ATMOSPHERE

Misinformation and hybrid operations are increasing due to actions taken by provocateurs inside countries as well as by international operators. Efforts to influence opinions are increasingly geared towards causing confusion and discord. Polarised debate, defamation and hate speech make many people withdraw from exercising an influence on society. There is a need for responsible communication, information literacy and channels for constructive social debate.

GEOPOLITICAL TENSIONS ARE INCREASING

The divisions between countries worldwide are becoming sharper and the differences and tensions between different social systems of society are becoming more pronounced. The rules-based world order is teetering, spheres of influence are returning to the foreign policy debate, and power struggles over resources such as critical metals are emerging. The pursuit of self-interest is increasing in politics. The tense situation increases uncertainty in international relations, in the markets and in people's minds. The need for diplomacy and conflict prevention is growing in importance.

GROWING PERSONALISATION OF POWER

The political debate in the media is becoming focused on personalities, and social media amplifies the personalisation of power. Individual politicians may become more prominent than the parties they represent. While personalisation makes decision-makers more approachable, it can blur the differences between political parties and the structural problems of the political system. It may also turn politics into entertainment, leading to important issues taking a back seat. Participating in politics increasingly requires politicians to manage and exploit publicity.

POPULIST PARTIES ARE GAINING POWER

Uncertainty about the future and the perception of an increasingly complex world make many people long for simple solutions. The energy transition, the impacts of the pandemic and the need for ecological reconstruction intensify this mood. Right-wing populist parties appeal to voters by defending conservative values and national interests in the midst of crises. Populist parties are seizing power in many countries.

TRUST IS BEING PUT TO THE TEST

Internationally, people's trust in political decision-makers has declined and more and more people have reservations about the information published by mainstream media. In Finland, trust is relatively high and the recent crises have strengthened trust in decision-makers. Still, there are significant differences in trust between regions and population groups. High-quality information provided by social institutions is seen as an important factor in building trust.

TRENDS

THE BATTLE FOR SPACE SUPREMACY IS INTENSIFYING

Human activity in space has increased and the competition for space is growing. The diversity of those involved and the lack of common rules increase the risk of the militarisation of space. This fierce competition is also leading to a growing amount of space debris that can pose challenges to satellite operations.

RAPID AND DIRECT CIVIC ENGAGEMENT IS BECOMING MORE COMMON

Commitment to NGOs is decreasing and fewer people want to influence society through traditional political parties. People — especially young people — are looking for quick and direct engagement. Digitalisation and the platforms and networks it enables have revolutionised the way we produce, distribute and use information. Microactivism is becoming increasingly common, and more and more people are using social media for civic engagement. New initiatives are emerging and spreading quickly.

DEMOCRACY CONTINUES TO DECLINE

Democracy continues to decline globally and authoritarianism is on the rise. Some 70% of the world's population now live in countries categorised as non-democratic. At the same time, there is a growing awareness of the need to actively defend democracy. Developing democracy calls for determined action to enhance engagement and reform decision-making practices and structures.

THE ROLE OF RELIGIONS AND IDEOLOGIES IN SOCIETY IS GROWING

The importance of religions is growing globally and the role of religion in political decision-making has strengthened. Examples of this include the restriction of abortion rights on religious grounds and the success of political parties with religious affiliations in elections in different countries. Religion has also been used as a tool of politics and influence in Finnish society, for instance, in connection with the reform of the Marriage Act. Alongside traditional religions, new ideologies such as posthumanism and dataism are emerging.

TECHN

OLOGY

Competition for digital power gears up

Technology is developing rapidly, and new technologies are being introduced in new areas of life. Increasingly more data is being collected and used to provide new customised services to individuals and organisations. At the same time, there are disputes over digital power, who collects and uses data, the ground rules of the digital world, the resources required by technology and, more generally, the direction of technological development.

The push of the present: technology and data are becoming embedded in daily life

Technological developments are a major driver of future trends, and one that is rarely questioned. Technology is perceived as developing quickly, but there is less attention on who determines its direction. What new technologies will be introduced and on what conditions? Where do future visions of the use of technology come from?

Digitalisation has been the most crucial technological development in recent times, cutting across practically all sectors. The way we write, listen to music, watch films, use banking services, socialise and work has already changed, and digital services have become more common in areas such as healthcare, mobility and learning. The use of remote access grew substantially during the Covid-19 pandemic.

The digitalisation of text, images, music and video has created digital data that can be reproduced endlessly. At the same time a modern data economy has emerged. Data has become one of the most important economic commodities of our time. We are in the midst of a historic transformation of technology and the economy, with digitalisation and the data economy enabling a surge in prosperity and labour productivity.

As we have increasingly moved to digital environments, "intelligence" – the collection and use of data – has crept into urban environments, industry, homes and even on our bodies. Data is being amassed on traffic flows, air quality, energy consumption, the condition of appliances and even on our private activities: when are we at home, and what we say to our smart speakers. Artificial intelligence is no longer just a prospect but is already being used to turn all this data into usable information for such things as traffic optimisation, maintenance schedules and search recommendations.

Amidst the maelstrom of change, the ground rules of the digital world have not been carefully thought through in advance. Of course, doing so would have been difficult to do so, as it would have been impossible to imagine all the implications. But we are now in a situation where a significant part of our daily activities take place in an environment whose rules are effectively decided by a handful of multinational technology companies. They also have a strong desire to take interactions further into virtual environments, into metaverse environments. The current data-driven economy is unfair because the power over the data of individuals is concentrated among a few data giants. The distorted competitive landscape and the lack of rules governing the data economy harms both people and societies.

In terms of technology, the big breakthrough may be the weakening of the position of traditional gatekeepers. As we approach the next stage of internet applications, known as Web 3.0, decentralised solutions based on blockchain technology could challenge the power of the current technology giants and financial industry operators. At the same time, the traditional digital powerhouses are trying to hold on to their position by developing new products to stave off their challenges. Similar competition between traditional gatekeepers and new challengers can also be seen elsewhere. Renewable energy production and smart grids may decentralise energy production. Traditionally high-investment biotechnology has become so significantly cheaper that gene editing can now be done by amateurs.

This change is particularly evident in how we work and create new skills needs. Technological development enables more decentralised activities, with an emphasis on building and orchestrating ecosystems. As more and more data accumulate, there is a growing need to be able to process it more efficiently and use it in acceptable and responsible ways. As technology presents

opportunities ranging from facial recognition to reshaping the environment, it becomes increasingly important to consider the terms on which technology is deployed. In particular, we need to consider how new technology fits within the limits of the carrying capacity of nature and actually improves the state of nature in line with the goals of the digital and green twin transition.

The issue of the direction of technological development is really a question of power over the future: who determines the vision of the future, whose interests are served and who is represented in it? The risk is that views of the future are defined on the basis of values and interests that we do not share, or which are at odd with European values. And yet there is a risk of failing to seize the opportunities presented by technological developments. As long as it is utilised correctly, technology can provide solutions in areas such as well-being, resource monitoring and sustainable production.

The weight of the past: lack of resources and skills

As mentioned above, decentralisation requires particular skills. Skills are not needed for new technologies only and their use, but also for understanding their social implications and ethical issues. To address this broader range of competencies, it is necessary to consider digital Bildung rather than digital skills in a narrower sense. Interdisciplinarity and continuous competence development are becoming increasingly important.

The resources and energy use required by new technology are also an issue. For example, proof-of-work blockchains, such as the cryptocurrencies like Bitcoin, consume vast amounts of energy, and the energy consumption caused by their mining has increased rapidly. But they are still only a small part of a bigger picture where all everyday digital services consume large quantities of energy. Devices and digital infrastructure also require large amounts of metals and other materials. At the same time, a large volume of electronic waste is being generated and its recycling remains inadequate. Technological development and deployment cannot rely on a "more is more" mindset, but must aim to use fewer resources and less energy.

In addition to the availability of raw materials, availability issues, intellectual property rights and data rights related to devices and components – such as semiconductors – have become increasingly important geopolitical issues. At present, the playing field is largely dominated by US and Chinese companies. This dependence on technology and the resulting vulnerability brings challenges to strategic autonomy, which refers to operating successfully in a landscape of heightened geopolitical tensions.

The data economy has grown rapidly and its regulation has been fragmented, ambiguous and woefully behind the times. However, the EU is tightening its data economy legislation. There is growing concern in Europe about our ability to innovate and develop rules for the data economy based on European values. New legislation and rules related to digital services are now being drafted with increasing urgency in Europe. These are aimed at ensuring that European consumers have access to safe digital products and services and that there is greater transparency and control concerning the data collected about them. By reforming its data regulations in the internal market, the EU seeks to influence the rules of data governance and the digital environment internationally. In practice, non-European companies and organisations will have to comply with EU regulations if they wish to operate in the EU's internal market. At the same time, competing sets of rules are being drafted in the US and China.

The pull of the future: a decentralised and fair digital world

Technological development is taking place on multiple fronts beyond digital solutions. Nevertheless, the collection and use of data usually plays an important role. In synthetic biology, for example, the aim is to programme organisms to produce medicines, fuel or new materials. Indeed, many trend reports highlight data and digitalisation, artificial intelligence, blockchains and quantum computing.

So what might the next digital transformation look like? It can be summed up in three changes: the erosion of gatekeeper power, the proliferation of open interfaces and the balancing of power arrangements. Web 3.0, the decentralised internet, challenges the power of the technology giants. Its core technology is the blockchain, a decentralised digital ledger. Instead of being controlled by a single operator, the ledger is validated by the users of the blockchain collectively through consensus mechanisms.

Verification is moving from energy-intensive proof-of-work to proof-of-stake, where the energy consumption of the blockchain is comparable to normal web browsing. Blockchain development should also be viewed from a global perspective: for example, almost two billion people in the world have no access to banking or financial services. Blockchains can provide more people with the opportunity to access these services. However, like other technology, blockchains can also be used for criminal activities, and cryptocurrencies are already being used for monetary transactions by organised crime.

It is possible to build smart contracts on top of blockchains. These self-supervising contracts eliminate the need for a third party to build trust. When smart contracts are used to embed the rules of a community, a new form of organisation known as a DAO, or decentralised autonomous organisation, is created. DAOs can be considered as the co-operatives of the digital era. Instead of ownership and control of digital services being in the hands of a few, they can be decentralised between all of the users. DAOs can be seen as the next step in the development of online communities. The current internet enables loose communities, to which DAOs introduce a model of decentralised decision-making, the scope to manage resources and a more specifically defined purpose.

Decentralisation requires common interfaces, involving agreement on how data can be transferred between different services. In the decentralised digital world, data flows seamlessly from one service to another, ensuring that the user is not locked into a single service provider. There are already blockchain-based solutions to verify identity and ownership. Non-fungible tokens, or NFTs, are digital proof of ownership. Some of the first uses of NFTs include digital art, collectibles, music, videos and concert tickets.

A decentralised digital world is not automatically fair and problem-free. At present, the technically proficient minority is determining how it will be shaped. The transition to a fairer digital world requires challenging existing power structures. Individual users currently have practically no way of negotiating the terms of use of a service. Forming data collectives comprised of users is one way of addressing the negotiation disparity between users and service providers.

Stricter legislation is another way to create a fairer market, something the EU is actively working on. In its strategies, the EU emphasises the digital transition in parallel to the green transition and has actively promoted the individual's right to control their own data. In the EU's vision, digital

solutions are also key to achieving carbon neutrality, reducing pollution and increasing biodiversity.

There are also very different views of the future. More technology-driven visions highlight the accelerating development of artificial intelligence and other technologies, to the point of technological singularity. This is where development is so rapid and uncontrollable that humans can no longer keep up with it and societies will be radically transformed. This vision usually involves the idea of an omnipotent artificial intelligence that far surpasses human intelligence. The exponential growth of technology is also invoked in more human-driven views of the future. Utopias of a world of abundance rely on

technological growth to solve all of our current problems and bring unlimited prosperity to all.

The growing amount of data has also led to the emergence of dataism, which represents another perspective on the future of humanity. Coined by David Brooks in 2013, the meaning of the term has since expanded from highlighting the significance of data analysis to describing societies as data processing systems. The more effectively a society can process the mass of data it constantly generates, the better it is expected to perform. In this context, data must be allowed to flow as efficiently and freely as possible, even if it means the end of privacy.

The transition to a fairer digital world requires challenging existing power structures.

POINT OF VIEW

MIKAEL RINNETMÄKI, START-UP ENTREPRENEUR

I was diagnosed with Type 1 diabetes in 1999, when I was 23 years old. For a long time, I was frustrated by how 1980s all the software used in diabetes treatment felt.

Getting a continuous glucose monitor had a big effect on my treatment, but I also wanted to understand why my blood sugar fluctuated the way it did. I started making visualisations based on data obtained from a smartwatch and a phone, which gave me a better understanding of the data. I did that just for myself for a couple of years. Then, during the start-up boom of the early 2010s, I realised that the tool I had developed could benefit others too. As it turned out, getting an application into use in public healthcare wasn't so easy.

There is way too much polarisation between the public sector and the private sector in Finland. When the public sector tries to build everything itself, there is hardly any role left for businesses. It also seems to me that the Nordic welfare states try to be overly protective of people. They seem to be afraid that people will use their personal health data stupidly.

I wish they'd have more courage and more faith in people in this. In diabetes treatment, there are many great examples of dramatic improvements in treatment outcomes when patients are given access to their personal health data through programming interfaces and applications.

I've always been an engineer at heart. If something's broken, let's fix it. When I went into business and realised there were these challenges in society, I wanted to fix them too. That's why I'm now involved in politics

"The next industrial revolution will be a revolution of data and artificial intelligence"

in my well-being services county, and I'm also an active participant in diabetes organisations and the MyData movement.

We are on the brink of a revolution, and this next industrial revolution will be a revolution of data and artificial intelligence. Ideally, improved efficiency will free all of us to engage in more creative and meaningful pursuits, and focusing on intangible services will help solve the climate crisis. Still, there is a big risk that the revolution will have only a small number of winners and many losers.

The US and China are currently the major players in the data economy. Europe is trying to forge its own path by focusing on the rights of the individual. The key is to find the right balance between responsibilities and freedoms. Regulation is needed for preventing blatant abuses and guiding all parties in a common European direction. But it's important to enable innovation and provide incentives for businesses and individuals to share their data and use it in beneficial ways. There's still room for improvement when it comes to creating those incentives."

MIKAEL

Mikael Rinnetmäki is a health tech start-up entrepreneur with Sensotrend and a MyData activist.

DATA

Figure 12.

We are creating increasingly more data for different services. Source: Domo (2022).

One minute on the internet

Category	2013	2022
Million Google searches	2	5.9
Hours of video uploaded on YouTube	48	500
Thousand photos shared on Instagram	3.6	66
Thousand tweets	100	347
Thousand items of content shared on Facebook	684	1700
Million e-mails sent	204	231

● 2013   ● 2022
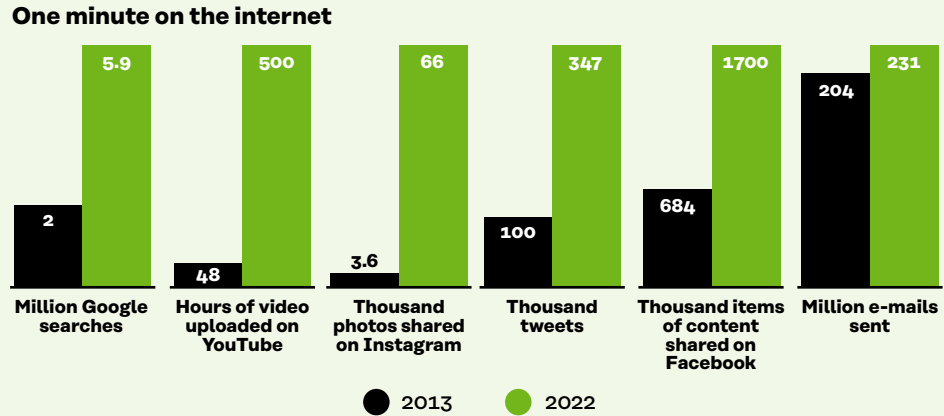
Figure 13.

Improvements in energy efficiency have curbed the growth of the internet's energy use as data volumes have grown. Source: IEA 2022.

Change 2015–2021

60%
3 bn ➔ 4.9 bn
Internet users

440%
0,6 ZB ➔ 3.4 ZB
Internet traffic

10-60%
200 TWh ➔ 220-320 TWh
Data centre energy use

20-60%
220 TWh ➔ 260-340 TWh
Data transmission network energy use

2300-3300%
4 TWh ➔ 100-140 TWh
Crypto mining energy use

Figure 14.

The production price of renewable energy has fallen below that of fossil fuels. Source: IRENA (2021).

Levelised cost of electricity

USD/kWh

Price range of fossil energy

━━ Offshore wind power   ━━ Onshore wind power   ━━ Solar power

TRENDS

TECHNOLOGY TRANSFORMS THE WAY WE DO THINGS

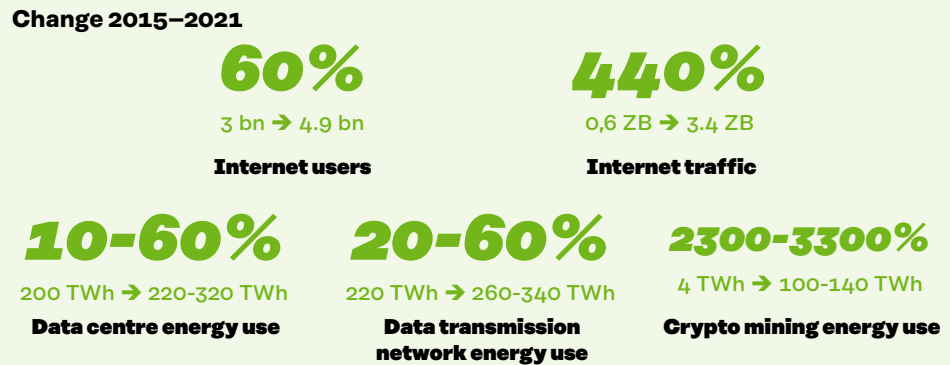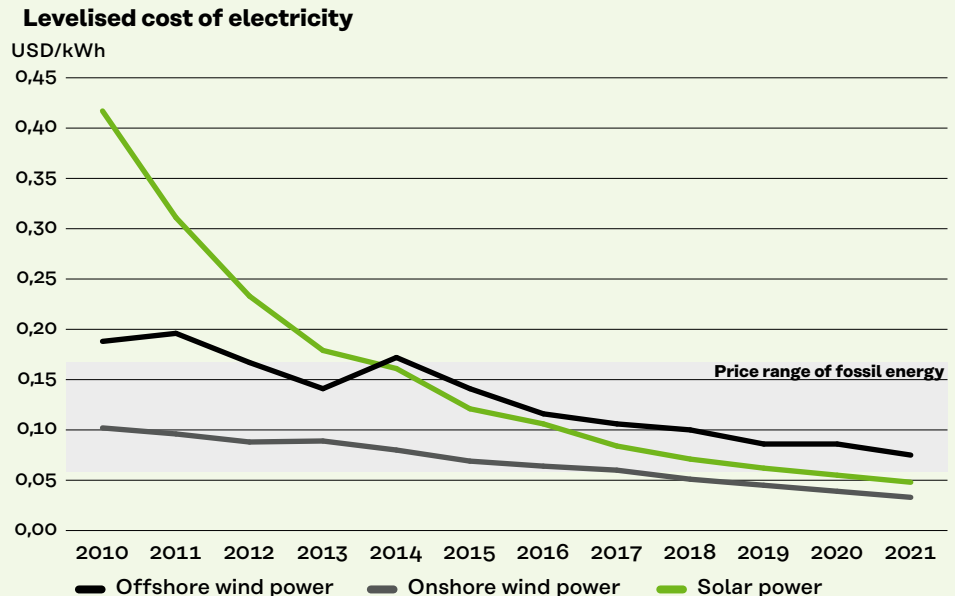Technology is developing rapidly, changing production methods and operating models. Things are increasingly automated, production and operations are decentralised and interaction takes place remotely or in a virtual environment.

AI APPLICATIONS PERMEATE SOCIETY

Self-driving cars, talking to devices, customised recommendations and other AI applications are becoming more usual. More and more decision-making power is assigned to algorithms, raising questions about data collection, transparency and accountability. It is also important to understand the biases in the data used by AI.

THE DATA ECONOMY IS GROWING

The data economy is growing exponentially. Web 3.0 — blockchains, the metaverse, data growth, open interfaces and decentralised services — are changing the way we operate in information networks. There are high expectations for the future of the data economy and the potential for growth is massive. But the direction of development remains unclear: will the power of the digital giants continue to grow, or will we be able to create ground rules for the data economy that are fair with regard to nature, society and individuals?

HEALTH TECHNOLOGIES ARE BECOMING MORE WIDESPREAD

Wearable devices to monitor health have become increasingly common and continue to evolve. Wellness guidance and services that are customised according to each user's individual measurement data are increasing, and access to data enables preventive healthcare. New treatments are also being developed based on genome editing and modifying the microbiome, for example.

THE USES OF SYNTHETIC BIOLOGY ARE EXPANDING

Synthetic biology refers to man-made biological systems, cells, cell components or organisms not found in nature. It involves designing genetic codes by computer, chemically modifying them into equivalent DNA, and introducing them into a cell. Applications include vaccine development, sequestering atmospheric carbon dioxide, producing synthetic fuels, new materials, breeding plants to withstand extreme weather events and storing data.

RENEWABLE ENERGY IS BECOMING MORE WIDESPREAD

Geopolitical tensions and climate targets are accelerating the energy transition and the shift to renewable energy sources. Solar and wind power are becoming more widely used and battery technology related to the storage of solar and wind electricity is developing quickly. There are high expectations for the hydrogen economy. At the same time, energy production will become increasingly decentralised as more and more people produce energy and sell what they have left over.

GREATER EMPHASIS ON UNDERSTANDING TECHNOLOGY

The significance of technology skills will increase in both professional and non-professional contexts. In addition to technical capabilities, there is a growing need for understanding technology. Digital Bildung helps people judge online content, recognise misinformation, understand algorithms and how the data economy functions, and look after their security, rights and obligations in an increasingly digital society.

TRENDS

TECHNOLOGY CREATES INEQUALITY

The rapid development of technology creates disparate technological realities. Different age and population groups use technology differently. As society's services and activities move online, there is a risk that people's agency in society will become more segregated. Making use of technology requires new skills and devices that not everyone can afford. Service development should include careful consideration of accessibility and ensuring that development takes place in terms of people, not technology.

BLOCKCHAINS ARE CHANGING HOW THINGS WORK

Blockchains, or decentralised digital ledgers, eliminate the need for trusted third parties, such as banks, and create the foundation for decentralised digital services that operate independently of government and local regulation. They can be used as platforms for financial services, identity verification and proof of ownership. They also enable decentralised autonomous organisations, DAOs, which can be seen as the co-operatives of the digital era.

DATA COLLECTION IS INCREASING

Data is increasingly collected in different environments: in cities, in industry, in homes, and from people through smart devices. Digital twins created on the basis of collected data, such as simulations of industrial equipment, are becoming more usual and facilitate the provision of maintenance services and production efficiency. As the amount of data increases, the importance of interpretation and the acceptability of data collection increases: what information does the data actually tell us and how can it be used responsibly? Who owns the data, and who has access to it?

3D PRINTING IS TRANSFORMING PRODUCTION

Industrial 3D printing is growing, while the use of renewable and recyclable raw materials in 3D printing continues to increase. Various components and spare parts can be easily produced locally, which reduces transport and storage costs and climate emissions. The opportunities presented by 3D printing are increasingly being used in new fields, such as medicine.

BLURRED BOUNDARIES BETWEEN THE PHYSICAL WORLD AND THE VIRTUAL WORLD

People are in constant interaction with the digital environment, as virtual content can be combined with non-digital environments in various ways. Content previously viewed on the screen of a computer or smartphone is integrated into the sensory experience when devices such as wearable lenses add a layer of augmented reality on top of the real world. If the user experience is highly personalised, very different experiences of reality can emerge.

THE DIGITALISING WORLD IS INCREASINGLY VULNERABLE

As societies become more technological, they become more vulnerable to power and data network blackouts. Cyber attacks can also paralyse companies or entire societies. Ensuring a high level of cyber security is now linked security of supply, to ensuring society's capacity to function under crisis conditions.

QUANTUM COMPUTING WILL PROLIFERATE COMPUTING POWER

Advances in quantum computing are enabling complex computational problems to be solved much more efficiently than with today's computers. They can be used in areas such as pharmaceutical development and the engineering of novel materials. Quantum computers can also be used to quickly break many of the encryption methods currently used on the internet.

Economic foundations are cracking

The growth of global inequalities and the ecological sustainability crisis create the need to reform the economy. Wealth is concentrated in the hands of an ever smaller group of people, while increasing extreme weather events and the collapse of the ecosystem services are eroding the operating capacity of the economy. Responsibility is being emphasised in all activities.

The push of the present: the conditions for prosperity are crumbling

The media debate on the future of the economy in Finland is narrow, short-sighted and characterised by a focus on crises. Attention concentrates on economic indicators that often disregard the linkages between the economy and other ongoing changes. Globally, many have realised that the economic system in its current form is not sustainable for people and nature. In the G20, three in four people on average would like to see economic goals reformed to make them less economically oriented and more geared towards sustainable well-being. As described in Sitra's 2020 megatrend report, the economy is seeking direction.

The links between the economy and other changes have become very apparent in recent years. The Covid-19 pandemic had a dramatic impact on many industries and global production chains. It also led to large amounts of stimulus funding that was also aimed at driving the green transition. Russia's invasion of Ukraine increased uncertainty particularly in the energy markets and reduced the supply of energy, leading to significant increases in prices. Combined with higher production costs, these factors have accelerated inflation, which has obvious financial impacts on both businesses and consumers.

Government debt in Finland has increased over the past 10 years. The Covid-19 pandemic and stimulus measures increased government borrowing in many countries. Borrowing is influenced particularly by higher costs in areas such as healthcare. In addition to keeping an eye on financial debt, it is important to also pay attention to indicators such as climate debt, meaning how far we are behind the targets for reducing climate emissions and, more broadly, ecological debt.

Humanity has prospered at the expense of the environment. Of course, greater prosperity has increased well-being. For example, the proportion of people living in extreme poverty has been falling for a long time. In 2020, however, that trend was reversed due to the Covid-19 pandemic. Globally, wealth has become concentrated in the hands of fewer and fewer people, and during the pandemic the richest have become richer at an even faster rate.

The ecological sustainability crisis is increasingly affecting the economy. For example, flood and storm devastation, the harm to health caused by heatwaves and drought, and the diminishing ecosystem services are already imposing significant costs. Increasing importance is being assigned to the solutions to the ecological sustainability crisis, such as the circular economy and energy efficiency, and adaptation to the changes already taking place.

Corporate responsibility has become increasingly important in recent years. Corporate responsibility requirements in relation to human rights and the impacts of business operations on nature have increased. At the same time, the concept of responsibility has been expanded from managing the footprint to leaving a handprint or shifting from harm reduction to having a positive impact. The growing focus on transgenerationality extends the time horizon for evaluating responsibility in both the business sector and the public administration. The expansion of responsibility reflects a broader need to rethink the role of the economy and what the economy actually stands for.

The weight of the past: a lack of vision

Economic reform is inhibited particularly by old ways of thinking and power structures. The economic debate is past-oriented,

focused on crises and tends to measure economic development using conventional indicators. It is mainly economists, business and labour market and leading politicians. In other words, there is little room for new ways of thinking and challenging power structures.

There is also considerable support for the current system and the gains made, even if there is also a drive for reform. For example, government budgets have featured more environmentally damaging appropriations and tax subsidies than carbon-neutral ones. Furthermore, a larger share of energy-related Covid-19 stimulus payments has been allocated to the fossil economy both in Finland and globally. The economy is so interconnected that rapid changes in taxation or subsidy policies, for example, seem almost impossible.

The economy is also dependent on global value chains. The prolonged trend of globalisation with a focus on efficiency and world trade has led to a highly interdependent world, where disruptions in one key location – such as the Suez Canal – result in global supply chain problems. The pandemic and increased geopolitical tensions may usher in a new stage of globalisation where more emphasis is placed on the security of supply, local economies and resilience – the capacity to operate in changing circumstances, deal with disruptions and crises and even emerge stronger thereafter.

At the heart of the current economic debate lies the assumption of perpetual economic growth. Economic growth is viewed as a condition for securing prosperity. As infinite material growth on a finite planet is impossible, there is more talk about decoupling, or reducing the consumption of materials and focusing on immaterial and sustainable growth. Relative decoupling in the form of efficiency gains have been seen, but absolute decoupling in the sense of reducing the consumption of materials or decoupling material consumption from

economic growth has not occurred except in some limited cases. Absolute decoupling has so far not been accomplished quickly and extensively enough to achieve climate goals, for example. Decoupling is therefore not a perfect solution, and the key goal with respect to the state of nature – and, consequently, the future of the economy – is to cut consumption.

The pull of the future: restorative and regenerative economy

It is not enough simply to reduce harm: we need to repair the damage that has already been caused and change our behaviour in a restorative direction, which means maintaining and developing the building blocks of the future, such as our ecological and social capital. With this in mind, the focus has begun to shift from the footprint – the damage done – to the handprint, the positive impacts of activities on the environment or well-being. This paradigm shift may be the most significant change in the economy in the coming years.

Action has also been taken. The EU Green Deal, for example, includes comprehensive plans to reform the economy to fit it within the boundaries of our one planet. The primary long-term goal of the EU's Environment Action Programme is that "by 2050 at the latest, people live well, within the planetary boundaries in a well-being economy where nothing is wasted, growth is regenerative, climate neutrality in the Union has been achieved and inequalities have been significantly reduced".

Such changes need to be monitored, but existing indicators do not give a comprehensive view of progress in these respects. The conventional economic indicators need to be complemented by ecosystem accounting, which takes account of the benefits created by nature's ecosystem services and the

adverse impacts on nature caused by human activity. This is being introduced in the EU, for example.

The green transition requires investments that will <u>drive economic growth and job creation</u> in the long term. <u>The cost of not investing will be higher if it is not done</u>. When long-term impacts on the environment and well-being are incorporated into economic accounting, it becomes obvious that present investments pass the cost-benefit test.

Although the media debate on the future of the economy is narrow, there is no shortage of initiatives for a fair and sustainable economy. <u>Transition paths towards a fairer and more sustainable economy</u> are outlined by concepts such the doughnut economy, the welfare economy, the eco-welfare state, ecological reconstruction and mission-oriented innovation policy. While each of these has its own perspective, the initiatives can be roughly divided into two categories. Some of the initiatives are geared towards a transition achieved through profound changes to the economic system, with emphasis on moving beyond growth dependence. Other initiatives aim for a fair and sustainable economy using the current economic system as the starting point, with an emphasis on market-driven tools for green growth.

Nature, well-being and justice are interdependent, and they cannot be promoted in isolation. Environmental measures must be able to be implemented fairly, while simultaneously reducing social inequality. <u>A restorative economy</u> involves the regeneration of not only ecological capital but also social capital through a focus on areas such as skills, Bildung, shared values and norms, social networks, viable communities and societal trust.

The future of the economy can also be approached <u>in terms of competitiveness</u>. Key drivers of change for Finland's competitiveness include changes in geopolitics, widening inequality, the development of the data economy, changing and diversifying of values, competence building and the availability of skilled professionals, as well as the ecological sustainability crisis and its impacts. Pioneering companies have the ability to interpret the new competitiveness-related challenges and opportunities from the perspective of their business.

The gloomier economic outlook highlights recession, inflation and unemployment, or stagflation. In that scenario, Finland – or all of Europe – will fall behind in the struggle for competitiveness and competence, and exports will suffer. Resource and energy prices will soar and many companies will go bankrupt. The services of the welfare state will need to be dismantled and economic inequality will increase further.

A restorative economy involves the regeneration of not only ecological capital but also social capital.

POINT OF VIEW

SONJA FINÉR, EXECUTIVE DIRECTOR

I'm really pessimistic about the situation we're in. We have exceeded the planetary boundaries. And yet humanity has shown itself to be an intelligent species, and I believe that we will ultimately – maybe only after trying all the wrong options – solve our global problems.

In my work at Finnwatch, I have realised that generating information is one of the most important ways of influencing things. You need it to understand the right ways to address problems. We genuinely need information ourselves, as it enables us to give research-based and sensible recommendations for decisions.

Most of the regulations enacted in Finland originate from the EU, and the right time to influence regulatory developments is during the drafting stage. If you try to influence things only in Finland, the window of opportunity has already closed.

In the past, corporate social responsibility may have been viewed as voluntary and transnational. Now, binding EU legislation is on the way, which is something that NGOs have long been calling for. If things turn out well, the directive will also cover climate and biodiversity issues. That would in turn lead to companies being required to align their business models with the 1.5°C climate target. It would change the entire business sector, first in the EU, but it would undoubtedly have tremendous global spill-over

"The climate is a human rights issue, and companies need to take that into account"

effects. Climate is a human rights issue, and companies need to take that into consideration.

I'm motivated by seeing the results of my work. NGOs have played a key role in promoting corporate responsibility on climate and taxation, for example. It is now understood that the poor management of responsibility issues means that a company is badly managed anyway.

But the choices and actions of ordinary people are also immensely important. People can join the debate and contact decision-makers. When you start to think about things in your own daily life, you can see how the existing structures are wrong. The world will not change if people do not change it.

I believe that a world where human rights are respected is also a better world for my child and for the generations to come. I think of myself as doing my work for them. If I didn't get paid to do it, I would do it as a volunteer."

SONJA

Sonja Finér is the Executive Director of the non-governmental organisation Finnwatch.

DATA

Figure 15.
Environmental responsibility, social responsibility and good governance (ESG) are being emphasised in the investment markets. Source: Broadridge (2021).

ESG assets under management

USD
7.8
trillion
2021

USD
14-19
trillion
2025

USD
20-30
trillion
2030

Figure 16.
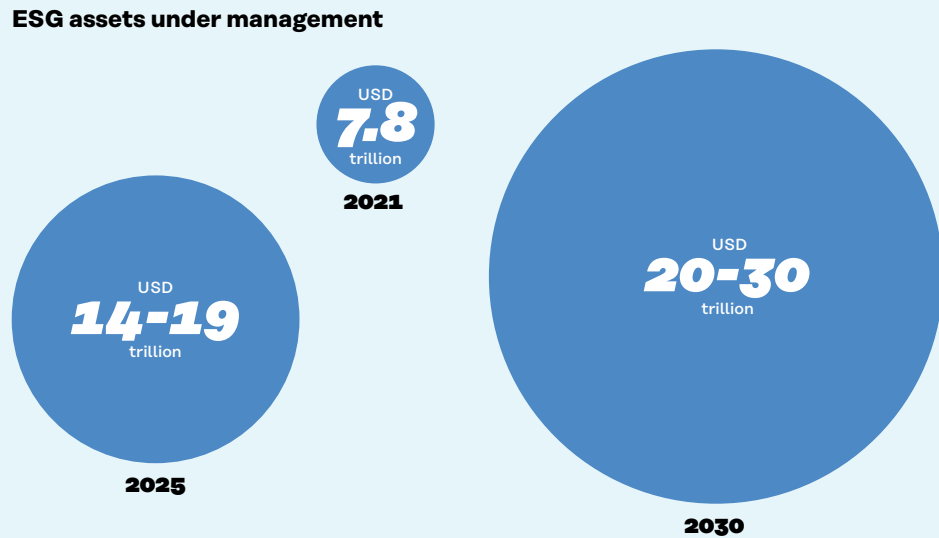Companies that have focused on ESG issues at an early stage have shown themselves to be more resilient to disruptions in times of crisis. Source: World Business Council for Sustainable Development (2020).

Year-to-date comparison between the European members of the World Business Council for Sustainable Development (WBCSD) and Euro Stoxx 600 companies in 2020

Legend: ▬ Euro Stoxx 600   ▬ WBCSD (Europe)
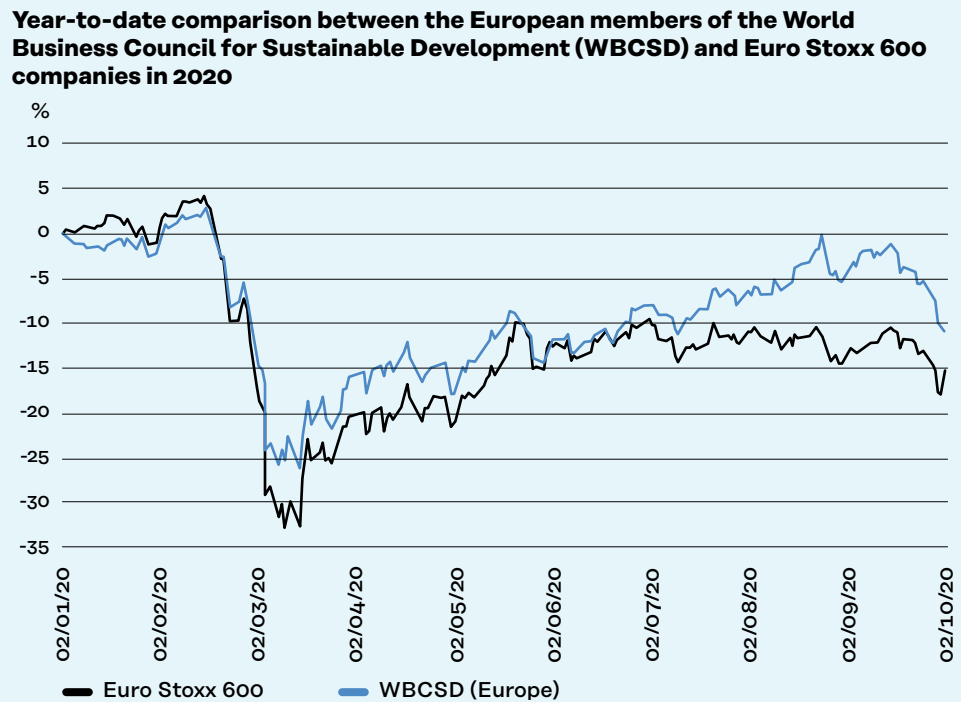
DATA

Figure 17.
The richest 10% of
the global popula-
tion takes 52% of
global income and
owns 76% of all
wealth. Source:
World Inequality
Report (2022).

Global distribution of income and wealth, 2021

Share of total income or wealth

Bottom 50%   Middle 50%   Top 10%

TRENDS

THE CIRCULAR ECONOMY IS BECOMING IMPERATIVE

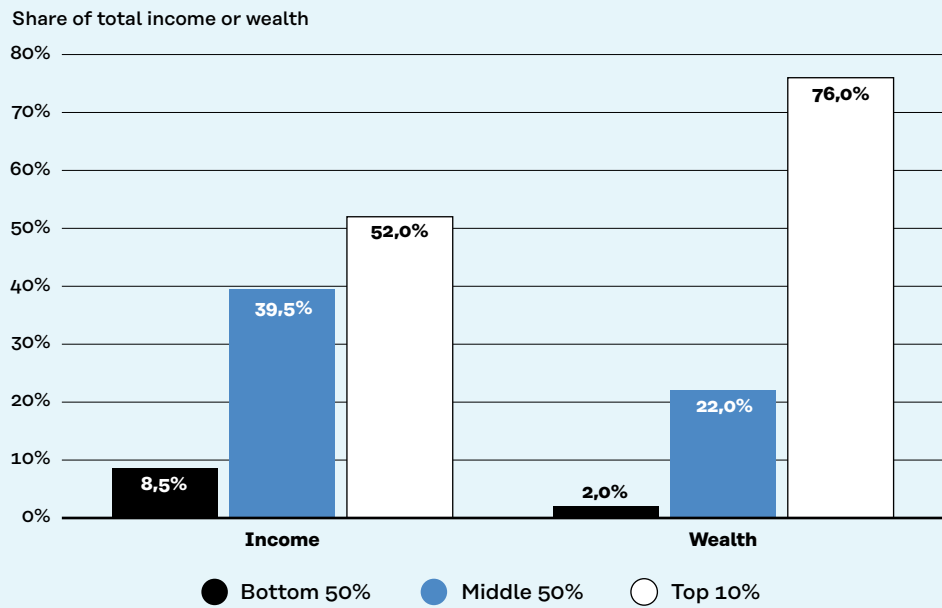Instead of constantly producing new products, a circular economy makes use of existing resources as efficiently as possible, such as by keeping products and materials in productive circulation for as long as possible. The circular economy is not only about recycling, but also new economic operating models and services, such as sharing, renting, repair and reuse, in which new technology plays a key role.

THE DEBATE OVER THE DIRECTION OF THE ECONOMY IS INTENSIFYING

There is growing agreement about the need to reform economic structures and paradigms, but views vary about the scope of these reforms. The debate over the new direction of the economy is intensifying. Is the aim to fit the economy within nature's carrying capacity, or a restorative economy that is nature-positive and increases human well-being?

CONCENTRATION OF WEALTH AND GROWING INEQUALITY

Wealth gaps are widening in Finland and globally. In Finland, the richest 10% own nearly half of total net wealth. Globally, the richest 10% own 75% of total wealth. The impacts of various societal and global crises further increase inequality.

CONSUMERS AS INFLUENCERS

Consumption — or choosing not to consume — is increasingly seen as a means of influencing society. From the perspective of economic impact, the significance of women and older people as makers of consumption decisions is growing.

CORPORATE RESPONSIBILITY IS EXPANDING

Companies are actively looking for ways to increase the positive impact of their activities (handprint) in addition to minimising their negative impacts (footprint). Many companies' activities contribute to addressing the sustainability challenges of our time. Intergenerational thinking is becoming a more prominent aspect of sustainability thinking. NGOs, the media, investors, public authorities and decision-makers require companies to be responsible and transparent.

TRENDS

MAKING ECONOMIC VALUE CHAINS MORE SUSTAINABLE

The Covid-19 pandemic and geopolitical developments have highlighted our dependence on global value chains but also their vulnerability. Crises have increased the need for sustainable value chains and ensuring the security of supply. At the same time, our understanding of the environmental and human rights impacts of the global economy has grown, amplifying the need for sustainable and flexible value chains and circular economy solutions.

NEW ECONOMIC INDICATORS ARE BEING ADOPTED

Alternative economic indicators, such as ecosystem accounting, the genuine progress indicator and the happy planet index are receiving more and more attention. In addition to illustrating economic development, the new indicators provide information on human and environmental well-being and reflect changes in the values and goals behind economic thinking.

NEW KINDS OF ECONOMIC THINKING ARE BECOMING MORE COMMON

People want to promote new economic thinking in practice. Shared ownership, exchanging goods and various lending services are changing the way markets operate. Field sharing and the direct distribution of local food from producers to consumers are becoming more common practices.

LABOUR AND SKILLS NEEDS ARE CHANGING

The ecological reconstruction is reshaping the labour market. Jobs that are directly or indirectly linked to fossil energy are gradually disappearing. Jobs are being created in new industries, and entirely new job descriptions are emerging. Ecological sustainability aspects are becoming more important in nearly all professions. To achieve a fair transition, society must support the reorientation of work and skills.

A MORE VARIED UNDERSTANDING OF DIFFERENT FORMS OF CAPITAL

In addition to the resource flows and revenue streams in the economy, increasing attention is being paid to nature capital, which is vital to the functioning of the economy and includes natural resources and environmental quality — and social capital, such as skills and social trust. At the same time, the pandemic, the energy crisis and the ecological crisis have put the role of financing and debt in the economy under new scrutiny.

Approaching a time of adaptation and reform – and opportunities

Much has already changed, much is changing and much still needs to change to move towards a sustainable future. These changes are intertwined, reinforcing each other or creating tensions. Where there is change, there is also opportunity. The future is not predetermined – we can act to create the future we desire. This chapter explores how we can adapt to change and at the same time reform society to make it more sustainable, to strengthen its future resilience. We also present a big picture of future opportunities.

Strengthening future resilience

Sirkka Heinonen, Professor emerita in futures research, describes future resilience as not only the ability to cope with challenges, crises and surprises, but also to reform and learn. This requires understanding current changes, imagining different futures and actively working towards a desirable future.

What does this mean in concrete terms? Below are some examples of what concurrent adaptation and reform might look like.

Food production needs to adapt to increasing extreme weather conditions, such as drought and heavy rainfall, while being able to sequester carbon from the atmosphere into the soil. Future-resilient agriculture is therefore an important source of solutions to both climate warming and increasing biodiversity through carbon farming and agroforestry. The shift to a more plant-based diet will increase the demand for plant proteins.

The increase of extreme weather events will also affect **housing and construction**. There will be an increasing emphasis on moisture control, heating solutions that suit exceptional circumstances and energy efficiency. In new construction and renovation activities, efforts can be made to not only reduce the carbon footprint but also promote carbon sequestration by making appropriate choices of materials. Remote accessibility and digital services increase multi-locality.

In transport and mobility, the key change involves phasing out fossil fuels. This calls for the electrification and servitisation of transport. The number of cars will decrease, especially in cities, as different modes of transport can be easily combined. Increased physical activity will also have a beneficial impact on health.

Education and training play a key role in creating a sustainable future. We urgently need new knowledge and skills to understand and adapt to the changes around us, while influencing the course of the future. We also need Bildung to guide us to make ethically sustainable choices and to influence society in the different roles we take on in working life and as citizens.

Future opportunities

This report started by outlining the bigger picture of what has already changed, what is currently changing, and how the changes are interconnected. If we focus only on the push of the present and the weight of the past, we may miss the opportunities of other, alternative futures. The recent crises, such as the Covid-19 pandemic and Russia's invasion of Ukraine, have shown that many developments previously thought unlikely are actually highly likely.

Although we tend to think of the future as a continuum from the present, the future is not predetermined, we can influence it and even rapid change is possible. That is why it is worth paying attention not only in the big picture of change but also future possibilities of the future and the actions that take us towards a future we want. This can also be a source of hope and agency in a bleak and uncertain time. Figure 18 shows one overall picture of the possibilities of the future. At the heart of it all is **ecological reconstruction**, the rapid transition away from fossil fuels and overconsumption of resources. To achieve this

Figure 18: The big picture of future opportunities

we need transgenerational decision-making, sustainable lifestyles, a digital green transition, and shift to a circular economy.

Sustainable lifestyles are also a precondition for **holistic well-being**, where the well-being of people and nature are seen as fully interdependent. Improving well-being requires long-term investment aimed at preventing health problems and strengthening social capital, and that the economy acts as an underlying driver of change. **In a restorative and regenerative economy**, the handprint of the economy is larger than its footprint.

The crisis of democracy can be addressed by **building trust** in democratic institutions and individual empowerment. This requires democratic innovation and new ways to exercise influence and digital Bildung. At the same time, we can broaden digital power and build **a fair digital world** where the use of data creates prosperity and competitiveness and helps develop societies. Fairness means balancing the interests of individuals, businesses and society.

A fair, sustainable and inspiring future is possible, but it will not happen by itself. It must be made together.

If we focus only on the push of the present and the weight of the past, we may miss the opportunities of other, alternative futures.

Getting to grips with megatrends

Megatrends may seem big and daunting, but they are a useful tool for thinking about the future. In this chapter, we provide practical tips for further thinking about megatrends and using them. You can use megatrends for developing a vision, crafting a strategy, broadening your thinking, or learning.

We are living in a time when more and more things feel difficult, familiar things become unfamiliar and unfamiliar things can suddenly become part of daily life. In a time of uncertainty, the future horizon is narrowed and shortened: it is difficult to look at a year, five years, 10 years or decades ahead when you feel acute uncertainty about what the world will look like six months from now. It is understandable that our attention is focused on the present and its challenges.

But in a time of uncertainty, it pays to think about the big trajectories that will affect the future. Megatrends offer a way to contextualise the changes happening around us and help us think about what kind of future we want to be involved in building. We have listed a few tips on how to use the megatrends and discuss why it's worth thinking about megatrends and anticipating them in general.

We hope you find the tips and arguments useful. You can also share your own tips with others over coffee or on social media with the hashtag #megatrends. Check out Sitra's website for more ideas on using the megatrends.

MEGATRENDS...

...IN DEVELOPING A VISION

A vision is a description of a desired future. A vision depicts one's aspirations and requires action to achieve the world it describes. A good vision takes megatrends as its starting point but also dares to envisage a better future and not just react to the megatrends.

▶ **Try this**: Choose a megatrend that is interesting or relevant to your organisation or community. What would be the best possible course of development for that trend and what kind of world would it lead to? Write your vision in the form "In the future, who/what/where + verb + what". Feel free to look several decades ahead!

? **Rationale**: Crises create states of discontinuity where future trends are more vague than usual. This means that now is the right time to create bold visions and give traction to our desired futures instead of the dystopias that surround us.

...IN STRATEGY WORK

Strategy work is future-oriented and looks to the changes happening in the world. Megatrends provide a good basis for strategy discussions. What changes are happening in the world? How do they affect what we do? How do we want to influence the future?

▶ **Try this**: Choose megatrends that are relevant to the activities of your organisation or community that you think will have a significant impact on the operating environment. Think about the positive and negative changes those trends could bring about. What definite impact could such changes have on your organisation?

? **Rationale**: Megatrends as a tool in strategy work you to focus directly on changes that affect your activities. No speculation, just researched, solidly factual information.

...IN BROADENING YOUR THINKING

We tend to think about the future only from our own familiar perspective. But not everyone sees future developments in the same way, and you can broaden your thinking by looking at trends from new and surprising perspectives.

▶ **Try this**: Choose a megatrend and a perspective that interests your organisation. Think about how this megatrend looks from your chosen perspective. For example, how does the concentration of wealth look like from the perspective of a child, a forest owner or a spruce tree in your local forest?

? **Rationale**: If we look at futures only from our own perspective, we easily miss many of the opportunities as well as threats and conflicts related to different future scenarios. Taking a different perspective provides new insight into megatrends.

...IN LEARNING

Understanding the broad arcs of future development is an important part of learning. In every sector, it is good to understand the changes that are happening in the world around us and how they will affect the future. Megatrends are also well suited as a learning tool. It is not only about what we need to know and be able to do in the future, but also about how we can influence the future and what changes a sustainable future requires of us.

▶ **Try this**: Choose a megatrend that interests you and explore it using this report and your own background research. Then think about how that trend affects the future of your field or topic. Then think about what scope you have to influence that trend.

? **Rationale**: Curricula at different levels are geared towards building a sustainable future and active citizenship. Megatrends help achieve the aims of curricula by providing information on the direction of future trends and opportunities for influence.

...IN RISK ASSESSMENT

Future developments involve a wide range of risks for which it is important to be prepared. Megatrends can help you assess the impact of changes on the future prospects of your sector and to better plan for it.

▶ **Try this**: Assess your existing plans against different megatrends. How do they affect your plans? What do they affect your plans? Do they support or hinder your plans?

? **Rationale**: By systematically using megatrends in your risk assessment, you can ensure that the broad arcs of change that affect your business environment are comprehensively taken into account in your assessments. The result will be more comprehensive and therefore of higher quality.

...IN THINKING ABOUT THE FUTURE IN GENERAL

Do you want to develop your future-oriented thinking or think about future developments in general? The futures triangle, on which this report is based, helps you to see the bigger picture and identify desirable futures and barriers to change.

▶ **Try this**: Look at the futures triangle and its three components — the push of the present, the weight of the past and the pull of the future — on page 11 of this report. Choose a future-related topic that you want to explore in depth. Think through the following questions, using the megatrends listed in this report: 1) Which of the trends and processes of change that are under way will influence the future of your chosen topic and challenge you to change how you act? 2) What prevents you from moving forward? 3) What kinds of images of the future are associated with the topic? What is the best thing that could happen?

You can use the results of your analysis in a variety of ways: for example, your assessment of the push of the present or the weight of the past may help you identify issues you want to influence, or you can start working on a shared vision based on your assessment of the pull of the future. There are many possibilities.

? **Rationale**: The futures triangle is an easy-to-use tool for getting to grips with any phenomenon and looking at the trends that affect it. You don't need lengthy preparations. You can get started right away and apply the tool to various situations.

Remember the cards!

Megatrend cards make it easy to use the megatrends and discuss the future. The deck consists of 55 cards covering the trends highlighted in this report. You can order a deck by using the order form available on Sitra's website (sitra.fi/en/megatrends) or use the digital cards online.

The cards make it easy to facilitate joint discussions in a wide variety of situations concerning the future. The simplest way is to draw a card and challenge your interlocutor to consider the change in question and its potential implications. You can also select the cards that you find most interesting or challenging and use them for discussion. Find your own way to use the cards and share it on social media!

FINALLY IN DIGITAL FORMAT!

sitra.fi/megatrendcards

SITRA

MEGA TREND CARDS

Know your future.

Dictionary

Biodiversity loss

A collapse of biodiversity caused by human activity, which is taking place across the planet. Nature is disappearing one hundred or even one thousand times faster than at any time in human history. The sixth mass extinction in Earth's history is under way.

Blockchain

A continuously accumulating decentralised data entity in which all transactions are chronological, validated by all parties and stored in a way that cannot be altered or falsified. A blockchain generates a digital log of transactions. The log records are copied and stored in a decentralised way in public digital networks without a dominant server. Ethereum (2014) is the largest and best known blockchain. A blockchain can be used to create a variety of web 3.0 applications, services and products. It is practically impossible to alter or tamper with the transactions recorded in the blockchain afterwards, because each block in the blockchain contains the hashtag of the preceding block.

Carbon footprint

Climate emissions caused by human activity. Can be measured for a business, organisation, activity or product. In addition to carbon dioxide emissions, a carbon footprint also takes into account other significant greenhouse gas emissions, such as methane and nitrous oxide.

Circular economy

An economic model that shifts from the continuous production of new goods to consumption that is based on using services: sharing, renting and recycling goods instead of owning them. The materials are not ultimately destroyed but are used over and over again to create new products.

Data collective

A collective aiming to make it easier for individuals to manage data. A data collective can be established to manage a specific data entity, or it may aim to influence the conditions under which data is used in specific situations. A data collective may aim to influence, for example, how data use can be restricted and how the terms of use are presented in a specific online service. A data collective may be in a better position to influence the terms of use of data than individuals.

Data economy

An area of the economy where the collection and use of data are a key part of activities.

Decentralised autonomous organisation (DAO)

An organisation that operates independently or autonomously, without the management structure of a normal organisation, using blockchain technology. The members direct operations directly with smart contracts and tokens in their possession. Decentralised autonomous organisations can be considered as the co-operatives of the digital age. The operational and

decision-making rules of a decentralised autonomous organisation are stored as smart contracts, which are based on blockchain technology. The same technology is also used for storing the decisions of the organisation. The organisation operates according to rules that it defines itself. For example, every member of the organisation can propose decisions that are voted on. decentralised autonomous organisations can be used for investing in and collecting art, among other things. In Finland, the need for legislative changes is currently being assessed, for example whether decentralised autonomous organisations should be classified as legal persons.

Decoupling

Separating previously interlinked things so that both can be realised independently of each other. For example, decoupling perceived well-being and economic growth from the consumption of natural resources.

Digital Bildung

Ethical, intellectual and societal understanding in the digital environment that enables one to act with trust, clear self-expression and in collaboration with others in a respectful and safe manner in networked environments.

Digital power

Digital power is the ability to connect the dots between different data sources and thereby refine data and increase its value. This makes it possible to map and anticipate the movements and interactions of people, ideas and networks.

Ecological reconstruction

The transition of society from the massive use of fossil fuels, which requires changes to physical infrastructure and the structures of the welfare state. In addition to changes to the energy system, changes are needed in areas such as mobility, construction, food production, care services, education and governance.

Ecosystem accounting

An extension of environmental accounting that aims to describe the extent and state of ecosystems and the ecosystem services they provide in terms of statistics and with physical and monetary indicators. Ecosystem accounting makes it possible to monitor the development of the state of ecosystems and to examine their connections with the indicators of the economy, employment and well-being.

Empowerment

The steps taken by a government or other institution to improve the position and influence of people on matters that concern them.

Future-oriented thinking

Identifying and challenging changes and assumptions about the future, imagining alternative futures and linking them with the choices we make now.

Impact investing

A means of channelling private capital for the development of society. Aims not only for financial returns but also to benefit society.

Megatrend

A broad arc of change consists of several phenomena, such as the ecological sustainability crisis. Megatrends are often seen as occurring at a global level and are often believed to continue in the same direction.

Metaverse

The metaverse brings a sense of space and characters to the internet, creating a network that connects virtual worlds. The metaverse can be used for communication, creating events and gatherings, for example, and suchlike.

Non-fungible token, NFT

A certificate of the right to a digital copy whose current owner and possession history have been verified using blockchain technology. Reference to the ownership of an item is usually by web link. The owned item may be a digital work, property, art object, building, degree or a company's share. The rights enjoyed by the owner depend on the contract between the seller and buyer of the NFT, which can include intellectual property rights, such as copyright, property right or right of possession. Some NFTs sold through centralised intermediary services do not contain any legally recognised rights, as their legal status remains unclear.

Path dependency

Path dependency - how past decisions affect the present. For instance, we cannot build a carbon-neutral city from scratch, but past decisions on the site of buildings, the building materials used, and many other things influence the choices we are able to make today.

Postnormal times

A period of time when the world is perceived as increasingly complex, contradictory and even chaotic. Surprises, discontinuities and tensions become more frequent, and the notion of normality is rendered meaningless.

Smart contract

A programme implemented using blockchain technology that enables the automatic exchange of items of value under pre-defined rules. The operating logic and results of a smart contract are public. A smart contract removes intermediaries from the process and makes it reliable. Smart contracts are used in numerous different areas, such as decentralised finance.

Synthetic biology

Synthetic biology refers to man-made biological systems, cells, cell components or organisms that do not exist in nature. Synthetic biology combines biology, engineering, robotics, computer science and artificial intelligence. Desired genetic codes are engineered with the aid of computer, based on which chemically synthesised DNA is produced. The DNA is inserted into a cell as part of an organism's genome and as the cell divides, all new cells produced carry the new genetic information. The methods of synthetic biology can be used to develop innovative ways of upcycling industrial side streams, waste and carbon dioxide into new materials, for example.

Technology literacy

The ability to adopt and use new technologies and understand their implications. It involves a more comprehensive approach than media literacy in an era where the boundaries between media and audience, influencer and influenced, and digital and physical are increasingly blurred.

Trend

A path of development, the direction of change that is currently visible.

Token

A token that describes the thing exchanged between parties in a blockchain. A digital token can represent value (such as cryptocurrency), right of possession (such as non-fungible token — NFT) or investment (such as shares or decision-making power in an organisation). Similar in mechanism to real world tokens.

Web 3.0

A development phase of the internet, which aims to provide services that enable decentralised decision-making and commerce. Decentralised decision-making can use decentralised autonomous organisations and trading can use cryptocurrencies or non-fungible tokens, for example, typically authenticated by blockchains. Web 1.0 refers to the early days of the internet, when web pages were read-only, while Web 2.0 to the current development phase of the internet, where interactive web services are mainstream. Web 3.0 has emerged in response to the problems of the current internet, where the digital giants have accumulated considerable power and individuals have very little control over their data and how it is used.

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Appendix: How this report was produced

The era of surprises requires a new approach to writing a megatrend report. Instead of simply listing trends, we wanted to emphasise the importance of influencing the future. Postnormal times and transformative foresight are our starting points. The futures triangle is used as the analytical framework. The work is based on a review of literature and workshops and comments from Sitra's personnel.

Postnormal times and transformative foresight

The starting point for this report is that we are now in postnormal times, which require a new approach to future-oriented thinking. Postnormal times are characterised by growing complexity, surprises, conflicts and even chaos. The concept of "normal" becomes increasingly meaningless and the idea of "a return to normal" or "the new normal" becomes increasingly vague. From this perspective, crises are not just a temporary disturbance, but a symptom of a deeper transformation underway.

Postnormal times challenge the perception of the future as a continuum of the present. As uncertainty grows, forecasts and projections increasingly miss the mark. In a time of high uncertainty, it is essential to take a critical and transformative approach to foresight. This means identifying and challenging existing assumptions, outlining new possibilities and potential futures and being attuned to emerging phenomena. Rather than trying to prepare for the future or chart a specific path towards a desired future, the focus is on opening up new paths forward, emphasising plurality and agency in making futures.

So how do megatrends fit into such transformative foresight? One of the basic assumptions behind this report was that megatrends do not actually exist as such, but are an interpretative framework based on past and current change. Megatrends consist of multiple ongoing changes and the big picture formed by them. Still, changes are not always as unambiguous or unidirectional as one might think based on megatrends and there are always exceptions.

Of course, changes are taking place and different conclusions about the future can be made based on them. In that sense, megatrends are useful generalisations that support future-oriented thinking. Things that have happened cannot be swept away by wishful thinking, but it is necessary to be aware of what has already changed and what is now changing. This does not mean that the future is predetermined or that all changes are inevitable.

Transformative foresight is about influencing the future rather than knowing it. Knowing about the future implies that there exists a future to know about. The focus is therefore on future knowledge. Influencing

futures, on the other hand, assumes from the outset that there is no specific predetermined future, as the future is shaped by the actions taken – and not taken – in the present. The focus is therefore on action and the conditions for action.

In other words, it is not enough to study megatrends. The important thing is how to use megatrends in taking action towards desired futures. Trends are not merely objective descriptions of change. They appear different from different perspectives. In addition to trends, there is emphasis on recognising different images and assumptions about the future. To articulate this diversity of futures and the big picture of future-oriented thinking, the report uses the futures triangle as its analytical framework.

The Futures Triangle

The futurist Sohail Inayatullah presents the Futures Triangle as one of the ways of mapping plausible futures. In the Futures Triangle, trends represent the push of the present, where Inayatullah emphasises quantifiable drivers and changes that affect the future. This report has sought to describe not only individual changes but also the linkages and tensions between them.

According to Inayatullah, the pull of the future is often based on five archetypal images of the future: continuous technological progress, the collapse of society, the Gaia myth, globalism, and a return to the past. These archetypes can be used to identify and categorise the images of the future that are being discussed and debated. In this report, the future imagery presented under heading 'the pull of the future' is more specific to our selected themes, but many of Inayatullah's archetypes are present.

The weight of the past describes obstacles to the change we would like to see. The obstacles depend on the perspective provided by the pull of the future. Here, the obstacles are discussed from the perspective

of Sitra's vision, outlining obstacles that inhibit us from moving towards a fair, sustainable and inspiring future. The past also contains many positive elements on which to build a desirable future, and it is important to identify these too.

Progress of the work on megatrends

Work started on the report in late spring 2022 by defining its objectives. What kind of discussion of the current changes in our world is needed? The accumulation of crises, the narrowing of views of the future and general uncertainty highlight the need for seeing the big picture and thinking long-term. Various lists of trends have already been written, but we wanted to create a big picture view that is written from the perspective of Finnish society and would inspire readers to build a better future.

The aims of our work on megatrends:
- To provide a big picture view of changes related to futures.
- To help readers understand the impact and interdependencies of changes and different attitudes to change as such.
- To reframe the debate on the future: from preparedness and preservation to reform and regeneration.
- To inspire people to act for better futures.

Several dozen trend reports were reviewed as part of the background work for the report. The main ones are listed in the references. They provided a good overview of the changes that are currently happening and to some extent insights into the obstacles to change and different images of the future. In categorising change, we made use of the PESTE categories to determine whether it is political, economic, social, technological or environmental.

In September, we held three workshops for Sitra's personnel and used the futures

triangle to focus particularly on the pull of the future and the weight of the past. At the same time, we explored how the different changes are interlinked. We summarised the results of the workshops and, based on the workshop summaries and our review of trend reports, we produced a content outline. We structured the outline with the help of the futures triangle and the themes used in the previous report (2020), based on the PESTE categories.

The first draft of the report was written in October. It was distributed to everyone at Sitra for comment. In the subsequent editing of the report, we paid special attention to making the content clear and understandable. At the same time, we updated the megatrend cards.

As our aim was to help readers understand different attitudes towards trends and their impact, we experimented with various ways of taking multiple perspectives into account during the autumn. The options we considered included writing profiles based on surveys, creating fictional personas, writing stories about the future from different perspectives, and interviewing change-makers. In the end, we decided to include an interview for each of the themes covered in the report. The interviewees are agents of change or insightful thinkers who, one way or another, are 'taking control' of megatrends to influence the future. The interviewing and writing of the stories were outsourced to freelance journalist Tuomo Tamminen. Longer versions of the interviews are available on Sitra's website.

This report is not the only outcome of the work on megatrends that we began last spring. In addition to the aforementioned megatrend cards, we produced a video containing the key messages, a set of slides and various templates for using the trends. This report is also not the end of the work on megatrends. The Futures Barometer, to be published in spring 2023, will describe the views of Finns regarding the trends outlined in this report.

Sitra's megatrend reports and other megatrend materials have found their way to companies, the public administration, schools and individuals interested in future-oriented thinking. We hope that this report and the new materials will prove useful as we collectively seek to build a fair, sustainable and inspiring future.