

A SYSTEM CHANGE COMPASS

IMPLEMENTING THE EUROPEAN GREEN DEAL IN A TIME OF RECOVERY

EXECUTIVE SUMMARY - OCTOBER 2020

Co-authored by

SYSTEMIQ



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FOREWORD BY URSULA VON DER LEYEN, PRESIDENT OF THE EUROPEAN COMMISSION



The European Union is undertaking an unprecedented effort: a green and digital transformation. The European Green Deal and the NextGenerationEU recovery and resilience facility will shape the social, economic, and ecological architecture of the continent for decades to come. To use their potential to the fullest and to build the Europe we all want to live in, we must adopt a systemic approach.

We introduced the European Green Deal as Europe's new growth strategy – one that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy that emits zero net emissions of greenhouse gases in 2050 and achieves economic growth decoupled from resource use. Recent extreme weather events and the coronavirus pandemic have exposed the greatest challenges of our time: to keep ourselves and our planet, but also our economy, healthy.

This report provides guidance for a systemic realisation of the European Green Deal by addressing the real drivers of resource use and environmental pressures. It examines what our future industrial landscape could look like and how we may rebuild our economy through future-fit industries. It takes societal needs as a reference point for all economic activities, embraces resource productivity as a source of future competitiveness, and provides a framework for progress on the European Green Deal.

Implementation of the European Green Deal and the coronavirus recovery are two sides of the same coin. Europe has the potential to emerge from the current crisis to become a fairer, more prosperous, more sustainable and more resilient society.

People in Europe are rightly calling for progress on the European Green Deal. The need to act on this challenge is overwhelming and urgent. This report will give us welcome counsel on how best to act.



EXECUTIVE SUMMARY

Earlier than expected, we are confronted with a choice: whether to only treat the symptoms of the existing pandemic or to take this opportunity and also create the paradigm shift necessary to recover and prepare against future shocks.

The European Green Deal provides a timely North Star for a prosperous and sustainable Europe. However, as a political programme that bridges old and new theories of change, it is vulnerable. This report lays out an integrated systems perspective, based on a System Change Compass. It is applied to the European economic system as a whole and to its individual economic building blocks, which deliver societal needs. For this generational project to succeed, and to achieve the desired system change, we must apply the System Change Compass.

Never since the formation of the European Union has there been a better moment for Europe to transform itself on the inside and to lead on the outside. The European Green Deal (EGD) and a European COVID-19 response can – if handled well – address Europe's climate, biodiversity, pollution, economic, political and health crises, and at the same time strengthen its institutions and reignite popular support for the European project. Efforts that, in their own way, support the EU's delivery of the UN Sustainable Development Goals (SDGs). However, Europe's Green Deal and its recovery strategy could equally split into antagonistic, competing strategies – which both fail. Clearly, the first avenue is far more promising. But it is onerous, requiring reconciliation of long-term systemic changes with short-term demands. What will it take for both to succeed? This report aims to provide the answers.

Europe's history is rich and full of turning points. The ongoing COVID-19 crisis may well be such a turning point. We cannot yet gauge its true impact on societies and economies, but the pandemic leaves us with three inescapable realisations:

First, our global and tightly coupled human-ecological system is failing. After decades of economic growth evaluated against GDP indicators, societal needs are still unmet, economic gains are shared unequally and the social contract is eroding. In parallel, humanity's impact on the Earth's natural systems now poses an existential risk to human survival. The double crises of climate change and biodiversity collapse – as predicted by the 1972 report to the Club of Rome "The Limits to Growth" and generations of scientists since – have finally arrived. These crises are compounded by the COVID-19 pandemic, which has further increased the pressure on our public institutions to meet the societal needs of Europe's citizens and prevent economic collapse. We had singular attempts at changing elements of the system in the past. But these efforts failed to take sufficient account of the relationships between our economic activities, the environmental impacts of human activities and the societal needs of our citizens. Underestimating these relationships threatens the adequacy of our response in the present.

Second, deep transformational change is needed, and we now know that when faced with an emergency, people and societies can make change work. Through the COVID-19 pandemic, we have learned that we can and must work more closely across boundaries for human survival: we can transform our work practices, value chains and community engagement. Transformational change has occurred through a crisis of massive proportions. Now it must be designed for future resilience. Today's challenges defy conventional policies. A fresh approach is needed.

The European Commission's EGD and Next Generation EU recovery packages reflect such an approach, at least in their objectives and principles. It is an approach that rebalances resilience and efficiency, addresses the need for green and social foundations across all policy domains,

and suggests new governance structures. Importantly, this approach considers sustainability and the COVID-19 crisis recovery as two sides of the same coin. The EGD sets out a strong and clear ambition of how to transform Europe into a more sustainable, equitable and inclusive economy. It also taps into an important element in the popular mood: opinion polls show how many people realise that the “old normal” was far from perfect and want the experiences of the past months to yield something better.

Third, we recognise that we struggle to bring this transformational vision to life. Business-as-usual proponents criticise the EGD as unaffordable or untimely. And even supporters cannot agree on how to begin such a transformational economic and social change. We can describe the target parameters – net-zero emissions, decoupling economic growth from resource use, leaving no person and no place behind – but we cannot agree on the road to take us there. And, in the meantime, urgency increases and political pressure mounts.

Europe's determination for a green and social recovery through a robust EGD sets the direction for a more sustainable, low-carbon, equitable and inclusive economy. **By treating the EGD and COVID-19 crisis recovery as two sides of the same coin, the European Commission is demonstrating genuine leadership. This report is written at a critical juncture for the EGD's success and, ultimately, for its implementation across European Member States.** Its authors – SYSTEMIQ and the Club of Rome – strive to identify the underlying, system-level changes required for the EGD to succeed in a post-COVID-19 world. At the same time, we offer a holistic plan to enhance the EGD with a systems perspective that multiplies and optimises solutions for change and translates into on-the-ground impact, so that European and global citizens truly understand the benefits of a joined-up social and green economy.



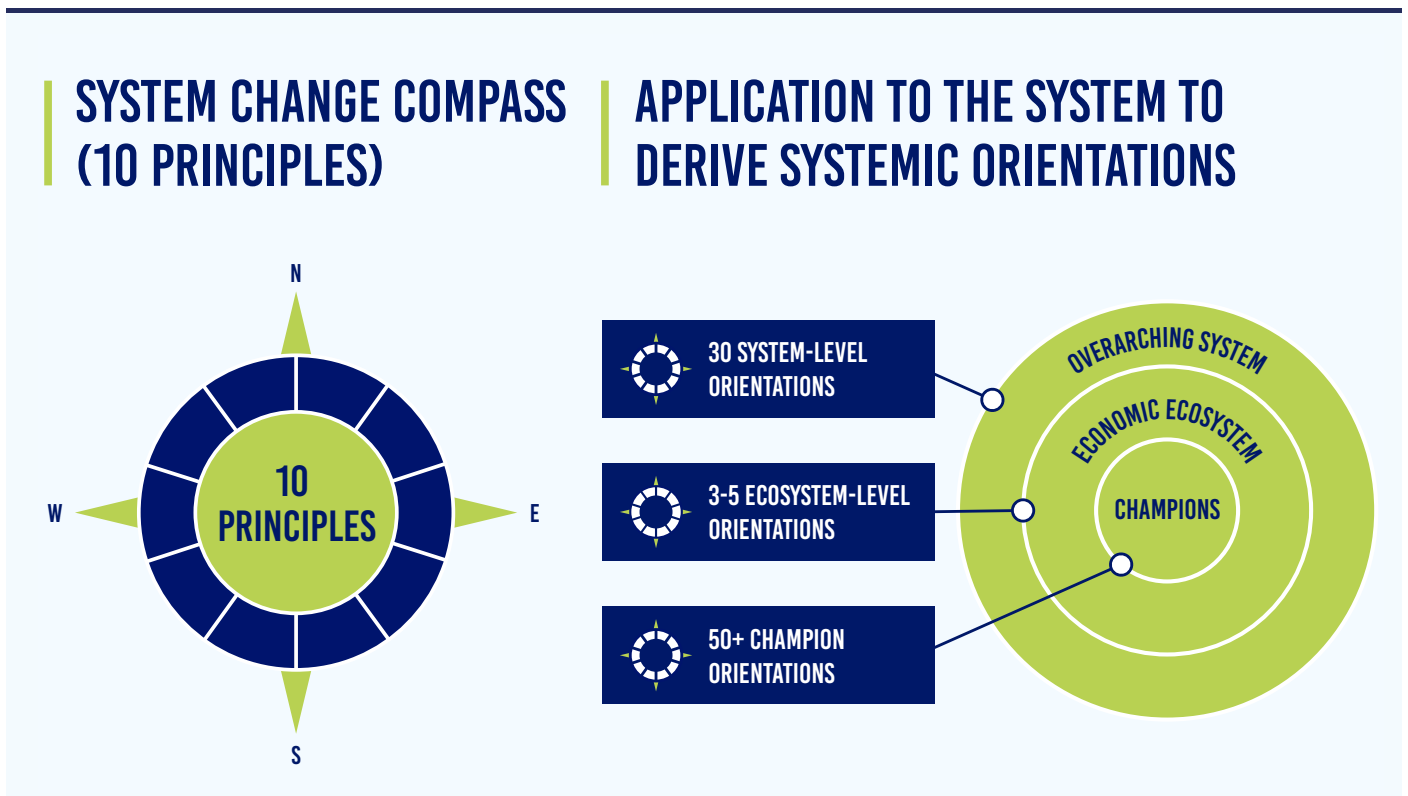
This report:

- adopts a simple and coherent perspective: the excessive use of natural resources is one of the root causes of climate change, biodiversity losses, pollution and negative human health effects. Radical resource decoupling and sustainability provide the answer to many of our environmental, social and health challenges
- offers a systems perspective, from a diverse set of authors working on systems change
- starts from the human drivers for change and the pressure on the Earth's systems, as a way of better understanding core systems breakdown, symptoms and adequate responses
- offers a set of principles that will support the EU in delivering the SDGs and ensure a just transition
- takes natural systems as the starting point for the design of the new wealth-creating economic systems we need. It demonstrates that these should be integrated, interdependent, efficient, resilient and adaptive. Europe's next industrial backbone should mirror naturally regenerative ecological systems, rather than resource-depleting systems. Much like these ecological systems, what we call new economic ecosystems will meet the societal needs of their respective constituents, while being regenerative and not exploitative

To achieve this system-level change, this report puts forward a System Change Compass. This addresses three fundamental barriers to a rapid rollout of the EGD. These barriers are the lack of:

1. shared policy orientations at the overall system level
2. systemic orientations for each individual economic ecosystem that delivers societal needs
3. a shared target picture and roadmap for Europe's next industrial backbone and Champions

TRANSLATING THE SYSTEM CHANGE COMPASS TO SYSTEMIC ORIENTATIONS



““ Applying the System Change Compass will address the drivers and pressures of our economic system and ensure that the EGD’s vision is not derailed. ””

The System Change Compass: the EGD is built on explicit and implicit assumptions. We identify 10 principles that need to be debated and eventually agreed among the actors. Some of the principles – such as political target metrics, producer obligations or resource market design – depart fundamentally from the way our economic system currently works. Applying the System Change Compass will address the drivers and pressures of our economic system and ensure that the EGD’s vision is not derailed.

The 10 principles are not ranked – they are intended to be of equal weight and importance. All mutually reinforce each other. Together, they will support the vision of the EGD and help in the realisation of the SDGs.

Applying the System Change Compass to the system gives us:

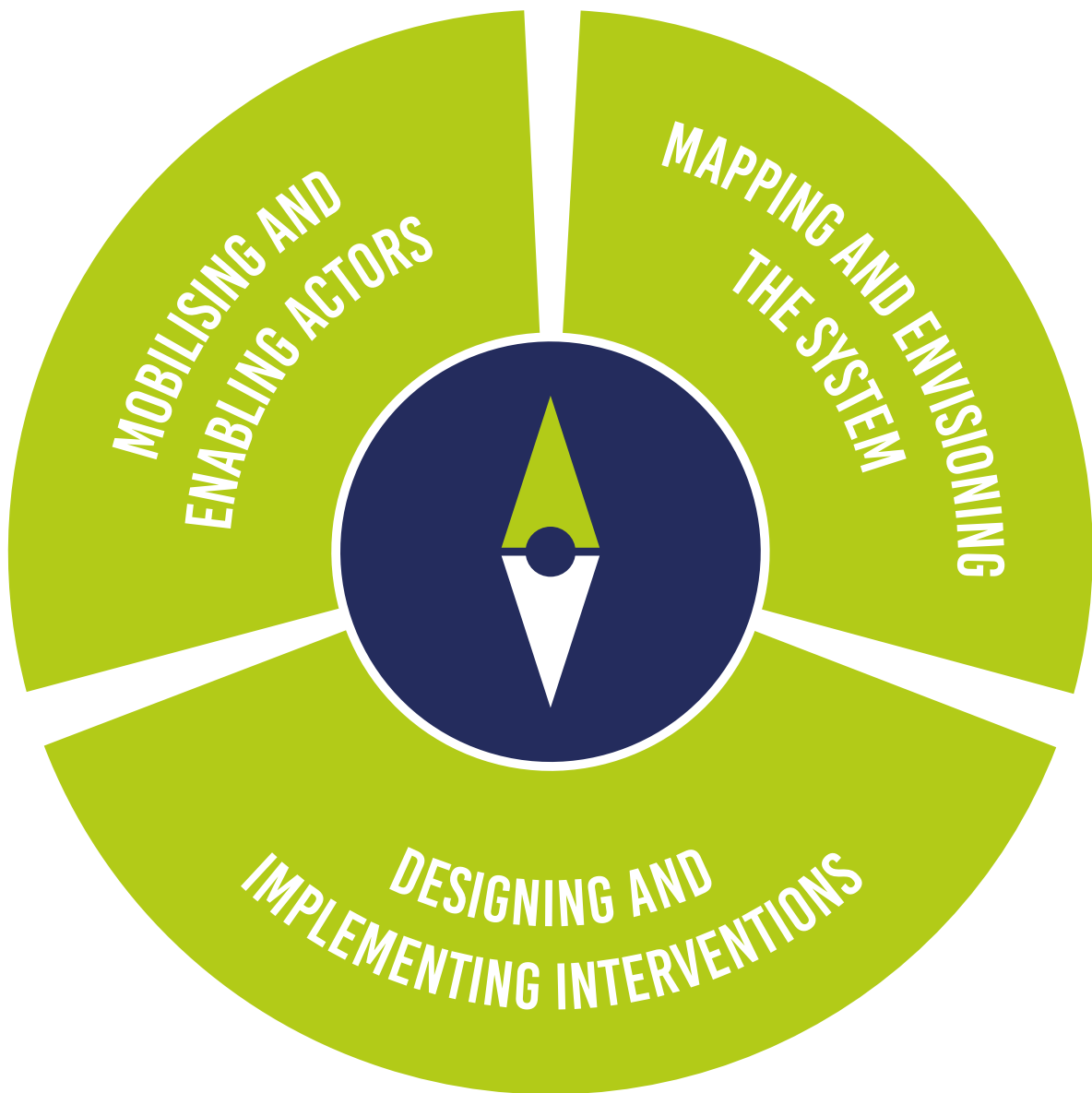
- **30 system-level political orientations for the overarching system.** The reset of foundational premises can be translated into policy orientations and instruments. We identify 30 such policy orientations in the overarching system. These orientations serve as a checklist for policymakers in charge of activating the EGD and as a guide on how to tackle challenges that have so far gone unaddressed.
- **8 ecosystems and 3–5 ecosystem-level orientations for Europe’s future industrial backbone.** We identify 8 pivotal “economic ecosystems” that will provide Europe’s productive core and be the long-term successors to today’s industrial base. For each of the economic ecosystems, we identify a set of 3–5 ecosystem-level orientations to guide policymaking and prioritisation of COVID-19 recovery funds.
- **50+ champion orientations that form a view of industrial priorities:** Europe’s future will not be dominated by today’s corporations and industries but by tomorrow’s economic systems and their respective emerging “champions”. The 50+ champion orientations are a first attempt at sketching Europe’s exciting future industrial landscape. They represent specific, investable opportunities to create jobs and build a more sustainable future through COVID-19 recovery funds.

Orientations are so-called because they set the direction that needs to be taken. They are not prescriptive, nor do they suggest a “central planner” approach. At the Champion level, orientations guide the way economic development should proceed to build the industrial backbone of a sustainable and resilient European economy in the 21st century.



A NEW SYSTEM CHANGE COMPASS

As the global and European context shifts rapidly, long-held beliefs require review. The EGD is a bridge into a new world and offers a new theory of change, though admittedly with pillars still resting in the old world. To make the EGD successful and to deliver the SDGs, 10 system conditions need to be addressed and redefined. These equally important principles for a System Change Compass provide intellectual guidance on how to transition towards a more sustainable, resilient and equitable model fostering a greater balance between people–planet–prosperity while underpinning a new type of value-driven growth.



SYSTEM CHANGE COMPASS



FROM...	...TO
01 REDEFINING PROSPERITY: Prosperity defined by aggregate economic growth	Prosperity defined by fair and social economic development
02 REDEFINING NATURAL RESOURCE USE: Prosperity based on natural resource consumption	Prosperity decoupled from resource consumption through efficiency, sufficiency and a shift to responsible use of natural resources
03 REDEFINING PROGRESS: Growing economic activities and sectors	Focusing on societal needs that need to be fulfilled without transgressing planetary boundaries
04 REDEFINING METRICS: Decisions driven by optimising for GDP growth	Decisions driven by holistic metrics including natural capital and social indicators
05 REDEFINING COMPETITIVENESS: Massive dependency of Europe on imports of natural resources	A resilient Europe based on low-carbon products, services and digital optimisation
06 REDEFINING INCENTIVES: Incentives supporting the status quo	Incentives aligned with Green Deal ambitions and economic ecosystems
07 REDEFINING CONSUMPTION: Owning products as part of individual identity	Experiencing and using products and services as part of individual, shared and collective identity
08 REDEFINING FINANCE: Subsidising and investing in "old" industries	Supporting and facilitating economic ecosystems
09 REDEFINING GOVERNANCE: Top-down, static, slow normative policy processes	Transparent, flexible, inclusive, participatory models of governance influenced by science
10 REDEFINING LEADERSHIP: Traditional leadership roles and expectations	System leadership based on an intergenerational agreement

30 SYSTEM-LEVEL POLICY ORIENTATIONS FOR THE OVERARCHING SYSTEM

When applied to the overarching system, the 10 principles of the System Change Compass translate into 30 system-level policy orientations for rule-makers. These orientations are guidelines to enable policymakers to shape economic activities in a way that ensures they stay within our planetary boundaries.

COMPASS PRINCIPLES	SYSTEM-LEVEL ORIENTATIONS
<p>01 REDEFINING PROSPERITY: EMBRACING SOCIAL FAIRNESS FOR REAL PROSPERITY</p>	<ul style="list-style-type: none"> ① Balance policy attention from income and wealth creation to income and wealth distribution, and ensure that economic transition contributes to equality and social fairness by guaranteeing universal basic services and minimum levels of income ② Create conditions for social acceptance of the transition by: enhancing reskilling and educational programmes; introducing a funding mechanism to support transition; supporting lower- and middle-income groups to help absorb the costs introduced by all economic ecosystems ③ Replace part of the income-based taxes with resource-based taxes to address resource as well as social policy targets
<p>02 REDEFINING NATURAL RESOURCE USE: PROSPERITY DECOUPLED FROM NATURAL RESOURCE USE</p>	<ul style="list-style-type: none"> ① Complement energy and GHG-related targets by introducing science-based resource use (absolute) decoupling targets following sufficiency principles ② Assess all policy proposals by dematerialisation and energy-efficient decarbonisation impacts ③ Align current legal and financial systems with circular and carbon-free principles; support the necessary infrastructure and research to contribute to achieving a carbon-free circular transition
<p>03 REDEFINING PROGRESS: MEETING SOCIETAL NEEDS AS THE PURPOSE OF A MODEL BASED ON ECONOMIC ECOSYSTEMS</p>	<ul style="list-style-type: none"> ① Ensure that societal needs are met inside a safe operating space and respecting planetary boundaries; set this as a primary goal for all European institutions and national governments ② Replace short-term-based governance – driving public, private and financial policy decisions – with a longer-term strategic approach and incentives ③ Reorganise European institutions, governments and other governing bodies and promote industrial dialogue to address societal needs, economic ecosystems logic, and other complex challenges; avoid an approach based on individual silos
<p>04 REDEFINING METRICS: PERFORMANCE MEASUREMENT UPDATED</p>	<ul style="list-style-type: none"> ① Replace GDP with a new, comprehensive well-being measure that also integrates social and environmental needs, accompanied by a set of additional indicators ② Introduce natural capital accounting ③ Standardise company and investor reporting with a decoupling lens against indicators of societal needs, pollution and emissions related to production
<p>05 REDEFINING COMPETITIVENESS: DIGITALISATION AND SMART PROSPERITY AT THE HEART OF EUROPEAN COMPETITIVENESS</p>	<ul style="list-style-type: none"> ① Build EU competitiveness based on resource, including energy and productivity; use digitalisation and spatial planning to optimise competitiveness ② Support the development and deployment of new digital services-based or other resource- and energy-reducing models ③ Support solutions that will strengthen resilience and strategic autonomy of the European economy, provide new local jobs and enhance education and job (re-training) programmes

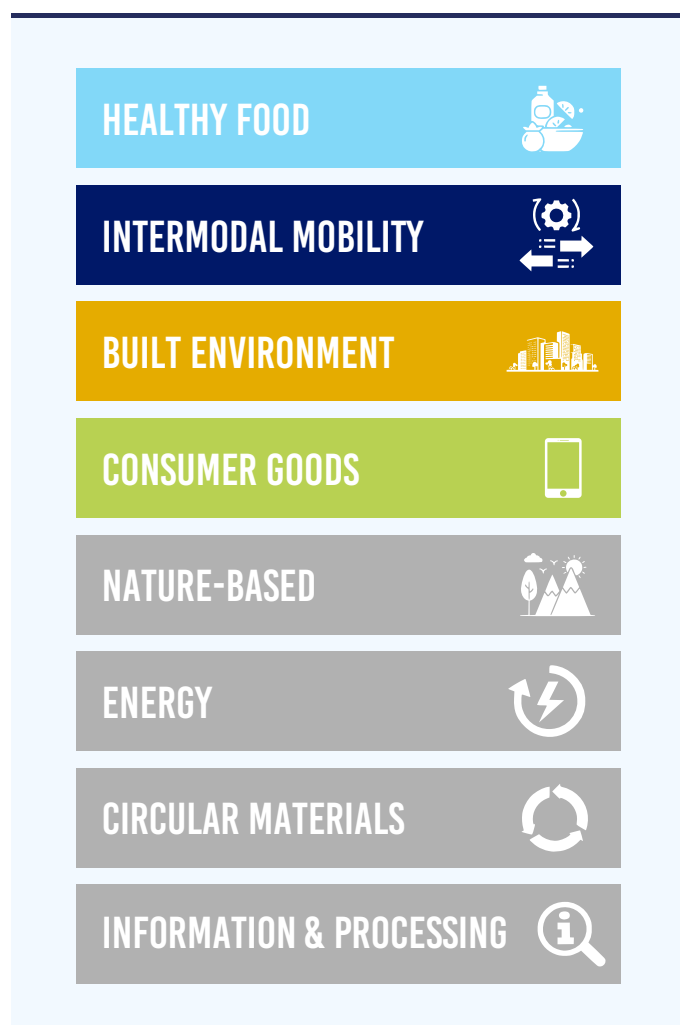
COMPASS PRINCIPLES	SYSTEM-LEVEL ORIENTATIONS
<p>06 REDEFINING INCENTIVES: INTRODUCING THE REAL VALUE OF SOCIAL AND NATURAL CAPITAL</p>	<ul style="list-style-type: none"> ① Follow the policy principles in all economic ecosystems, which would reflect and include all costs, like carbon pricing or resource taxes, related to environmental and health impacts (so-called "externalities") ② Reduce, without further delay, all harmful and unsustainable subsidies supporting extraction, consumption and disposal of natural resources; strengthen producer liability and use freed-up funding to support activities reducing natural resource use, especially in hard-to-abate sectors ③ Prioritise investments in "rebooting" nature and update environmental standards to take into consideration systemic interactions between climate–biodiversity–health, to ensure greater resilience to future shocks
<p>07 REDEFINING CONSUMPTION: FROM OWNING TO USING</p>	<ul style="list-style-type: none"> ① Educate consumers and provide them with information, such as product passports, to empower them for informed choices ② Explore the opportunities offered by a less ownership-biased younger generation and provide consumers with alternative options to meet their needs ③ Support transition of governance, legal and financial systems to enable producer ownership business models
<p>08 REDEFINING FINANCE: THE FACILITATOR OF THE TRANSITION</p>	<ul style="list-style-type: none"> ① Ensure financial accounting and risk assessment fully disclose climate, nature and diversity impact indicators of investment portfolios ② Orientate all public investments to catalyse system change, along the lines of compass orientations and economic ecosystems while considering immediate "symptomatic" action needs ③ Support and de-risk private investment and expand blended financing in emerging economic ecosystems and their respective champions
<p>09 REDEFINING GOVERNANCE: SHARING SOVEREIGNTY AND WORKING TOGETHER</p>	<ul style="list-style-type: none"> ① Support inclusive, informed, fair and participatory governance systems, ensuring that all relevant stakeholders have voice, agree and share the ownership of necessary system change ② Explore the establishment of an international resource management convention and ensure better inclusion of resource management in all existing international agreements ③ Lead the implementation of more innovative, deliberative formats for policymaking, especially at supranational level; provide development funds to promote decoupling globally through co-creating or fostering new projects and programmes that are "bottom-up", and enhance governance models to support those implementing them
<p>10 REDEFINING LEADERSHIP: INTERGENERATIONAL AGREEMENT BY SYSTEM CHANGE LEADERS</p>	<ul style="list-style-type: none"> ① Build trust through stronger commitment to – and rules on – science-informed policymaking, based on credible knowledge from diverse knowledge systems at all governance levels, and better define how the precautionary principle should be used in practice to strengthen resilience and build preparedness ② Empower and support system change leaders at all levels to drive the change: from private to public, local to global, ensuring equality and diversity of leadership ③ Ensure that the rights of future generations are considered in policymaking and their voices are better heard and included in decision-making debates

8 ECONOMIC ECOSYSTEMS TO MEET SOCIETAL NEEDS

To achieve the objectives of the EGD, the economy needs to fulfil societal needs, while not transgressing planetary boundaries. **This report focuses on four societal needs: nutrition, housing, mobility and daily functional needs met through consumer goods (such as hygiene, clothing or communication equipment).** We focus on these societal needs because they have the biggest impact on our resource consumption in Europe and are closest to the areas addressed through the EGD. We recognise that there are many other societal needs, including education, health, political voice and quality. We invite further efforts to systematically address these areas both in the context of the EGD and outside the European Union.

Meeting societal needs while not overstepping our planetary boundaries is the key system challenge that the EGD needs to address. To do this, the current organisational model must move from being focused on economic activities to being organised around economic ecosystems that are holistic in scope and demonstrate a direct link to natural capital and our respect for the planetary boundaries. The core idea is simple: **people don't need products and services; they need their societal needs to be met. So, for example, they don't need cars, but mobility; they don't need refrigerators, but fresh and healthy food; they don't need house ownership, but high-quality, affordable and safe living space.**

8 ECONOMIC ECOSYSTEMS



To meet these societal needs, we identify 8 economic ecosystems. Four of these directly meet a specific societal need (the healthy food, built environment, intermodal mobility, and consumer goods ecosystems). Four additional economic ecosystems support the first four ecosystems in their delivery of societal needs. These supporting economic ecosystems are the energy, nature-based, circular materials, and information and processing ecosystems.

Just as natural ecosystems are intertwined, so are economic ecosystems. They overlap and interact through various feedback loops; they are interdependent. **Structuring an economy along the lines of these economic ecosystems allows policymakers a clearer view of the connection between these systems.** This in turn enables policymakers to identify the trade-offs required to meet both societal needs and planetary boundaries, in order to enact the necessary policy and financial interventions.

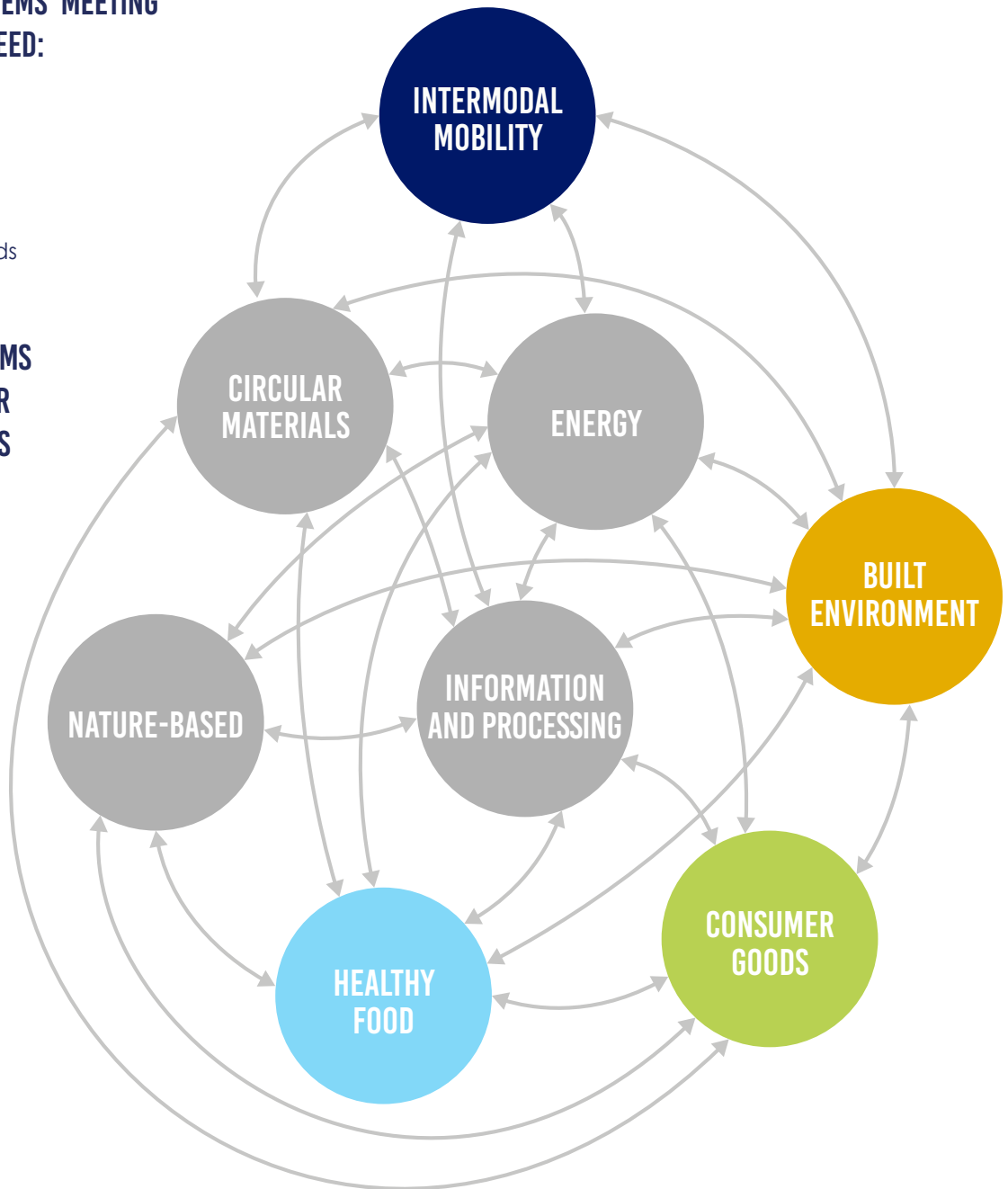
HELPING THE EGD MEET SOCIETAL NEEDS THROUGH 8 ECONOMIC ECOSYSTEMS

4 ECONOMIC ECOSYSTEMS MEETING A SPECIFIC SOCIETAL NEED:

- Nutrition
- Mobility
- Housing
- Daily functional needs

4 ECONOMIC ECOSYSTEMS SUPPORTING THE OTHER ECONOMIC ECOSYSTEMS IN THEIR DELIVERY OF SOCIETAL NEEDS:

- Nature-based
- Energy
- Circular materials
- Information and processing



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50+ CHAMPION ORIENTATIONS

Within each economic ecosystem, we identified a first map of Champion orientations. They form a view of industrial priorities and – if developed – can transform into interconnected Champion industries or simply “Champions”. They would become the **growth engines of the 21st-century economy that also enable the green, resilient and fair post-COVID-19 economy that Europe wants to build**. These Champions can contribute to fulfilling essential societal needs, have significant economic size and/or growth potential, contribute to the ambitious climate change agenda of the EGD, and have the capacity to support decent and lasting job creation that contributes to the reduction of inequalities. They also offer discrete investable opportunities to direct COVID-19 recovery funds at a European or national level.

This list of Champion orientations should not be regarded as a prescriptive group of economic winners. The actual economic activity – the businesses and entrepreneurs that make up those Champions – might develop differently,

depending on the particular challenges and needs that will develop over time. What unites the Champion orientations is their organising principle around the 8 economic ecosystems and the Champions’ ability to future-proof the EU’s economic development in line with environmental limitations.

Champion orientations do not advocate for the systematic merger and consolidation of players into national or supranational monopolies. Rather, they are **teconomic sub-ecosystems for which Europe should aim to build a cutting-edge know-how, a sizeable market and infrastructure, and an international competitive advantage to enable new business models and to scale solutions**. Post-COVID-19 stimulus money and future research and innovation funding at a national and European level should be invested into these Champions to create the future economic and resilience backbone of the European economy, in harmony with planetary boundaries.



HEALTHY FOOD

- Organic food and beverages
- Regenerative agriculture
- Sustainable aquaculture and fishing
- Reduce and valorise food waste
- Urban agriculture
- Product reformulation for nutritious food
- Alternative proteins

CONSUMER GOODS

- Product-as-a-Service models
- Maintenance and value retention in products
- Peer-to-peer product sharing platforms

CIRCULAR MATERIALS

- Localised and distributed value chain systems
- Asset recovery systems and reverse logistics
- Markets for secondary materials
- High-value material recycling
- Materials-as-a-Service models
- New materials and high-performing substitutes
- Additive manufacturing

BUILT ENVIRONMENT

- Smart urban planning
- Rethink built environment ownership
- Repurpose underused buildings
- Retrofit existing buildings
- Fluid and sufficiency-oriented space management
- Circular and net-zero housing

NATURE-BASED

- Restoration of degraded land and coasts
- Urban greening
- Systems for paid ecosystem services
- Seaweed
- Marine and land-based environmental protection areas
- Ecotourism
- Smart forest management

INFORMATION & PROCESSING

- Distributed manufacturing
- High-speed digital infrastructure
- Digital material information and tracking systems
- Data generation, processing and protection
- Artificial intelligence for societal challenges

INTERMODAL MOBILITY

- Fast charging infrastructure
- High-speed railway infrastructure
- Modern and adapted transit infrastructure
- Car- and ride-sharing models
- End-of-life management for vehicles
- Electric and autonomous vehicles
- Infrastructure to improve traffic flow and AV adoption
- Green aviation
- Green shipping
- Walking/cycling infrastructure

ENERGY

- Renewable power generation
- Energy storage
- Hydrogen economy
- Smart metering and (point-of use) energy management
- Grid integration and technologies
- Production of low-carbon gaseous and liquid fuels (*transition technology only*)
- Carbon capture infrastructure (*transition technology only*)

LEVERAGING GREEN RECOVERY TO ACCELERATE THE TRANSITIONS: TWO SIDES OF THE SAME COIN

Implementing the EGD and its related implementation documents – while addressing the most urgent economy recovery needs – is the best way to deliver Europe's future prosperity. To provide an effective recovery process it is crucial to strategically strengthen Europe's preparedness and resilience – and to position the global and European economy alongside true societal needs while respecting the safe operating space of planetary boundaries.

This report offers a comprehensive System Change Compass and sets of orientations for each level of the system required to deliver the ambition presented to our generation by the EGD.

The need to act on this challenge is overwhelming and urgent. This report maps out how it can be done.





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