drift for transition

Counting on Nature

Transitions to a natural capital positive economy by creating an enabling environment for Natural Capital Approaches

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About DRIFT

DRIFT is a leading research institute in the field of sustainability transitions. We develop and share transformative knowledge to support people, cities, sectors, and organisations to actively engage in societal change. Together we aim to accelerate transitions towards more just, sustainable, and resilient societies.

DRIFT has four main activities that complement, ground, and inspire each other: academic research, consultancy, education and public dialogue & debate. The strong link between all of these activities allows us to combine theory-development with critical feedback and various ways of testing and validating our insights.

Report commissioned by the Dutch Ministry of agriculture, nature, and food quality to serve as background document to the *Governments Dialogue on Enabling Natural Capital Approaches* to be held during the *World Forum on Natural Capital* on November 27 in Edinburgh, Scotland.

Executive summary

To achieve a deep transformation towards an economy within ecological boundaries that offers prosperity to all is the grand challenge of our time. It requires a reinvention of the ways in which we collective produce, consume, and live. This means a fundamental change in what we value and how, shifting from prioritizing economic growth at the expense of society and ecology to living well in balance with nature and biodiversity. Governments should play a critical role in this great transformation by changing their own roles and cultures, as well as by helping to create enabling environments for business and civil society to build this new sustainable economy. This report brings together sustainability transitions research and natural capital approaches to offer a strategic perspective and concrete policy menu for governments to navigate and accelerate this desired great transformation. Our key messages are:

1. Natural capital ('NC') approaches show great promise for governments, businesses, and other organizations to start considering natural capital when making decisions, but need to be understood and implemented in the broader context of wider societal transitions occurring in national economies.
2. Natural capital approaches need to be used instrumentally to contribute to the desired transitions to economic systems that take natural capital into account (positive natural capital) and institutionalized within a longer-term strategic perspective.
3. The transition governance framework and the developed policy menu provide concrete and practical guidelines for governments to deal with natural capital approaches in a systematic manner.

The perspective of sustainability transitions provides starting points for such a strategic and systematic implementation of natural capital approaches. Sustainability transitions are defined as large-scale systemic changes in sub-systems of our economy such as energy, food, mobility, housing, health care, and finance. Increasingly, growing sustainability concerns and maturing alternative solutions are putting pressure on the ways in which such sectors have historically been organized. We argue that natural capital approaches offer a specific type of interventions that could help create an enabling environment for the acceleration of desired transitions. We formulate four specific actions for governments to do this.

1. **Mapping**: focus on a specific transition (region/economic sector) and map the transition dynamics using the x-curve shown here. *For a detailed explanation see section 5.1*

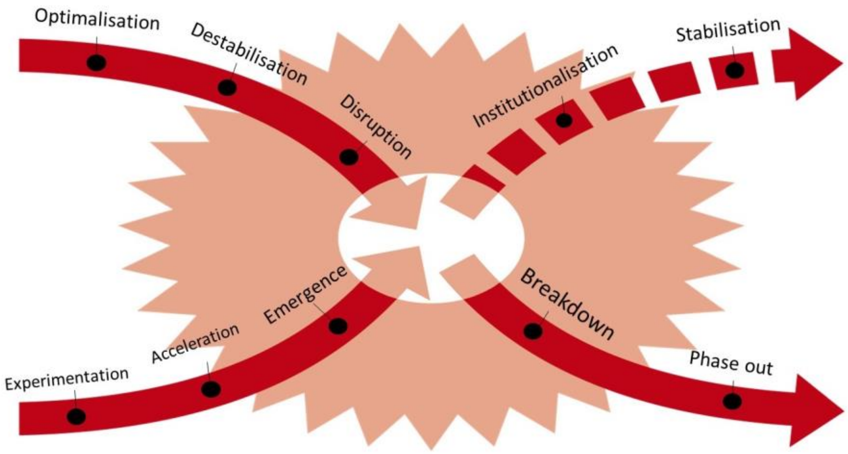

Figure 1 X-curve: transition phases and pathways

2. **Goal setting and Transition Governance**: introduce natural capital thinking and approaches into broader societal processes of moving towards a natural capital positive economy, together with selected sector partners and stakeholders, build shared agenda's, and develop transition pathways for the use of natural capital approaches *For a detailed explanation see section 5.2*

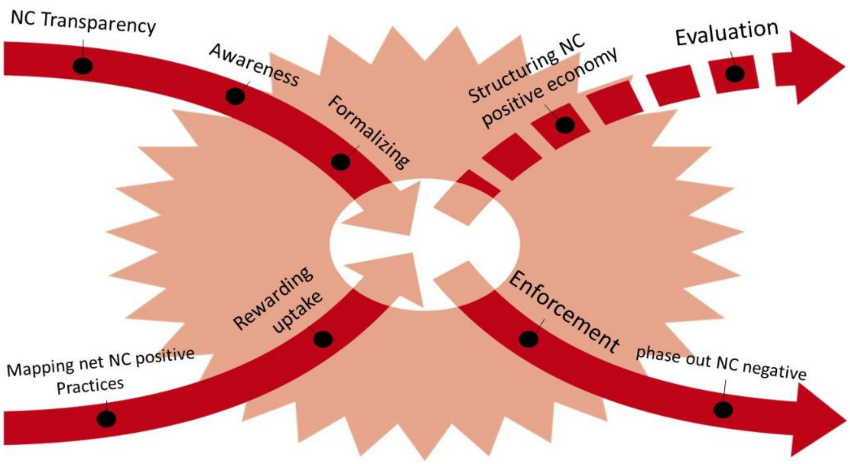

Figure 2 functions of natural capital approaches in the pathway to a natural capital positive economy

3. **Governance mix and experiments**: for each phase of the transition, different strategies and instruments can be used to create an enabling environment for the up-take of natural capital approaches. We distinguish between the build-up of new (business) practices that have the potential to regenerate, or have a positive impact on, natural capital ('regenerative') and the transformation or phase out of business practices with a negative effect on natural capital. *For a detailed explanation, see section 5.3.*

Table 1 related policy and governance instruments for sustainability transitions

Transform ('top down')	**Envision and adapt**
Legal and regulatory instruments Market and pricing instruments Industry policies (international) Collaboration, agreements and accords Institutional and organizational labelling	Societal dialogues and transition arenas Future visioning and imaging Scenarios, roadmaps Reflexive monitoring Social learning and evaluation
Innovation instruments Subsidies and niche management Network instruments Experimentation areas and urban labs Impact investment funds Incubators and right to challenge	Phase out pathways Divestment strategies Training and retraining Financial support stranded assets Prohibitions and penalties Removal and decommissioning
Build ('bottom up')	**Phase out**

4. **Institutional embedment and reflexivity**: the long term goal is to strive towards embedding natural capital approaches in the institutional structure, culture, and practices of governmental policies and markets. This implies changes beyond formal and regulatory, including also behavioral, cultural and practical changes. This means having attention for learning processes and the adaptability of both policy makers and policies and developing reflexive and transformative capacities. *For a detailed explanation, see section 6.2*

The practical recommendations flowing from the framework developed in this paper are summarized in the policy menu presented in the table below. The policy menu is explained in more detail in chapter 6.

Table 2 Policy menu for an enabling environment

<table>
<tr><th colspan="2">Menu of possible government actions for an enabling environment for natural capital approaches</th></tr>
<tr><td>Policy goal: Transform ('top down')</td><td>Policy goal: Envision and adapt</td></tr>
<tr><td>

Determine the extent to which collaboration occurs across government agencies, and set up mechanisms to facilitate where intra-governmental interaction is lacking.
Support collaborative platforms and data/information hubs that enable interaction and data/information sharing between businesses, between countries, and between business and countries
Raise awareness of natural capital approaches among government agencies, making a stronger societal case for attracting talent, expertise and resources into this area.
Map the natural capital in your country. For example by performing a TEEB Country Study which has been done by several countries since 2011
Explore collaborative regional approaches between business and government, if appropriate at sector level, and aid businesses in using natural capital approaches such as the Natural Capital Protocol
Explore how natural capital accounting at a national level can be linked to natural capital assessment at a business level in your country
Accommodate natural capital approaches in regulatory frameworks (e.g. France has adopted reporting requirements for 'climate and transition risks')

</td><td>

Facilitate transition arenas in relevant sectors. Look for willing partners (e.g. Businesses, accountants, financial institutions, conservation organizations) with the capacity to act as change agents in their organizations to set-up the arena.
Co-develop a positive natural capital narrative
Develop transition goals and sectoral agenda's to increase uptake of natural capital assessments showing how natural capital approaches work towards realizing the positive narrative
Promote economic production that has a net positive impact on natural capital through innovation oriented procurement policies
Use reflexive monitoring and social learning to iterate and adjust transition interventions
Develop institutional structures for natural capital approaches on a sectoral level as building blocks towards a transformation approach for national economies
Take up natural capital approaches in educational programs (e.g. all accountants follow natural capital accounting courses, business students learn about impacts and dependencies)
Standardize business practices with a positive impact on natural capital and start optimizing the new natural capital positive regime

</td></tr>
<tr><td>Policy goal: Build ('bottom up')</td><td>Policy goal: Phase out</td></tr>
<tr><td>

Capacity building within the government; create awareness of natural capital approaches among civil servants and support learning by-doing processes.
Map businesses and sectors that are, or should be, carrying out natural capital assessments and/or should be developing net positive approaches
Develop strategic experimentation and learning programs around natural capital approaches and economic conditions
Create networks of front-runner businesses to help accelerate their experiments and set up an innovation fund for businesses carrying out natural capital assessments and for businesses developing business models with a positive impact on natural capital (front-runners)
Explore new technologies and engagement platforms for data gathering and assessment
Create space for niche experiments (e.g. 'net-positive natural capital start-up incubator') based on strategic transition agendas

</td><td>

Develop and implement a natural capital alignment 'policy check'; all government policies should be in line with the goals for the natural capital agenda.
Start diffusing natural capital thinking throughout the different departments in governmental organization to help facilitate the 'policy check'
Promote economic production that has less negative impact on natural capital through innovation oriented procurement policies
Instate enforcing regulation and/or taxes on negative impacts on natural capital
Natural Capital Fund fed by tax raised on negative effects on natural capital of production processes. The fund can be used to restore natural capital and reward companies with a positive impact
Phase-out of natural capital 'negative' practices

</td></tr>
</table>

Implementation of the interventions set out in the policy menu can only be successful if the following four challenges are addressed:

1. **Institutional space:** political commitment to sustainability transitions is needed, including support for creating operational capacity and institutional legitimacy to work with natural capital

approaches, to be able to invest the necessary time but also to, later on in the transition process, be able to institutionalize the developments around natural capital.

2. **Knowledge:** knowledge about the possibilities, different methods, and previous experiences with the implementation and use of natural capital approaches, and (access to) knowledge about the implementation context is required.

3. **Organizational structure:** policy officials need to be able to exchange, collaborate, and provide and ask for support in effective ways across departments and government levels. This requires organizational support, communication platforms, institutional embedding and self-organizational capacities.

4. **Capacities:** to be able to identify change and change agents, to work with a diversity of actors, to be able to challenge incumbent ideas and interests, and to creatively adapt methods and tools to different contexts requires specific skills and capacities. This suggest recruiting people with different capacities and backgrounds to be part of implementing natural capital approaches.

Contents

List of Abbreviations

E P&L – Environmental profit and loss

ES – ecosystem services

EU B@B - The EU Business @ Biodiversity platform
GCP – Global Canopy Programme

ICAEW – Institute of Chartered Accountants in England and Wales

NC – natural capital

NCFA – Natural Capital Finance Alliance

SDG's – Sustainable Development Goals

TG – Transition Governance

TM – Transition Management

UNEP – United Nations Environment Programme

UNEP FI - United Nations Environment Programme Finance Initiative

UNU – United Nations University

UN SEEA – United Nations System of Environmental-Economic Accounting

VBDO – Dutch Association of Investors for Sustainable Development

WAVES partnership – Wealth Accounting and the Valuation of Ecosystem Services

WBCSD – World Business Council for Sustainable Development

1. Introduction

This paper, prepared by the *Dutch Research Institute for Transitions* (DRIFT), on behalf of the Dutch Ministry of Agriculture, Nature and Food Quality,[1] presents a framework based on transitions theory for the creation of an enabling environment for economic transitions and the mainstreaming of natural capital approaches (the framework) and a policy menu *(*the menu) with practical policy recommendations. It served as input to, and background document for, the inaugural *Government Dialogue on Natural Capital* (Governments' Dialogue) held at the 2017 World Forum on Natural Capital in Edinburgh, Scotland. The Governments' Dialogue involved representatives from 16 countries and took a first step in exploring, understanding, and strengthening the role of (national) governments, in upscaling and mainstreaming natural capital approaches.

1.1. Natural capital and natural capital approaches

Natural capital is the stock of renewable and non-renewable natural resources (plants, animals, air, water, soils, and minerals) that combine to yield a flow of benefits to people (Natural Capital Coalition, 2016). The neglect of the value of natural capital in traditional ways of measuring (economic) welfare and business decision making has led to the depletion or degeneration of these stocks and related flows. Initiatives aimed at remediating this are referred to as 'natural capital approaches'. These approaches are *natural capital assessment,* which is the process of identifying, measuring and valuing natural capital impacts and dependencies and *natural capital accounting,* which is a framework or method of collecting and systemizing information on natural capital and its associated flows. They provide insight in the impacts and dependencies businesses, governments, and landowners- and managers have on natural capital and allows them to incorporate these into decision-making (Ruijs & van Egmond, 2017).

1.2. Sustainability transitions and transitions governance

Transitions are large scale disruptive changes in societal (sub-)systems that emerge over a period of decades. They occur in societal systems that face persistent problems due to historical path-dependencies and lock-ins. In this light a transition is a non-linear, and relatively uncontrolled, structural shift resulting from the interaction between increasing societal pressures, internal crises, and competing alternatives in the societal system. It usually takes decades for such pressures to build, after that, in a relatively short period (one or two decades), a fundamentally different way of thinking, doing, and organizing becomes dominant. A well-known present-day example of this is the energy transition that has been gradually building momentum in Western countries since the 1970's. Here, only in the last decade, with the large-scale diffusion of renewable energy technologies, real acceleration has started to take place. Understanding how such transitions evolve and develop offers possibilities for achieving the desired large-scale societal changes much more quickly than when following business-as-usual inspired (policy) scenarios and pathways.

From the study of past and ongoing transitions, insights have been derived on how governments can make use of the dynamics in transitions to influence their direction and speed. These insights have been grouped under the headings of *Transition governance* and *Transition Management*. Transitions governance gives a range of principles, methods, and instruments that governments can use to upscale and mainstream the use of natural capital approaches within a larger transition towards an economy that takes natural capital into account.

[1] The report is developed with inputs from a Steering Group led by the Netherlands Ministry of Agriculture, Nature and Food Quality, with a representation of the World Bank, International Finance Corporation, Natural Capital Coalition, Natural Capital Finance Alliance, European Commission, ICAEW, Scottish Government, and Netherlands Ministry of Foreign Affairs.

1.3. An enabling environment

An *enabling environment* is defined as the context (i.e. policy, institutional, regulatory, infrastructure, and cultural) needed to support the transition to a society in which natural capital accounting/assessments are an integral part of public and private sector decision making.
An *enabling environment* comprises aspects such as:

- Supportive legal and policy frameworks and their implementation and enforcement
- Institutions with sufficient strength and coordination, and clear roles and responsibilities of key entities (e.g. government, non-state actors, civil society)
- Capacity and expertise of all actors so they can play their roles
- Dialogue including participation of relevant stakeholders

1.4. Paper outline

Chapter 2 introduces a transition perspective on economic change in developed economies to explain the patterns and mechanisms of change that can be used to accelerate systemic change. Chapter 3 describes natural capital approaches in the context of this economic transition, and how it is developing from niche to mainstream. Chapter 4 introduces transition governance and its principles, methods, and tools. Chapter 5 describes the implications this has for using and implementing natural capital approaches to help guide and accelerate sustainability transitions. Chapter 6 translates this to an actionable policy menu for government(s).

2. Economic transitions perspective

There is an increasing awareness about the need to transition away from the dominant economic development pathway based on linearity, growth, and fossil resources. Over the past decades policy, business, and society have been experimenting with alternative visions, practices, and business models under the umbrella term 'sustainable development'. So far, however, such efforts have not resulted in significant reorientation of (economic) development and solutions to persistent problems such as climate change, inequalities, or resource depletion. Recently more structural and systemic changes seem to be emerging or, at least, deemed increasingly viable. The breakthrough of renewables, the emerging shift to electric mobility, and the rapid growth of sustainable food alternatives, circular business models, cooperatives, and serious policy commitment to institutional changes such as introducing climate laws, divestment, or changes in taxation are all elements of such potential systemic changes. In this chapter, we introduce our perspective on sustainability transitions and how these relate to economic development.

2.1. The dominant economic regime

Most (Western) economies refer to themselves as being 'capitalist', meaning they use market organization to govern production and distribution of goods and services, and believe that this is the best way to do this. However, in essence, they are 'mixed economies' using, to different extents, both markets and the government to organize economic activity (Nelson, 2011). Such 'mixed economies' are either 'liberalized' or 'coordinated', referring to either emphasizing market principles or market coordination as mechanisms for coordinating economic actors (Akkermans, Castaldi, & Los, 2009). In structure and governance, current economies are heavily influenced by the (neo) liberal paradigm and a dominant (societal) orientation towards economic growth as the main goal of the economy. This paradigm is operationalized by incentivizing competition through free trade, allowing free capital flows, deregulation, and maintaining a small government through privatization and limits on public debt and fiscal deficits (austerity) (Ostry, Loungani, & Furceri, 2016).

Policy, business, and society have developed shared values and discourses (culture), rules, institutions and networks (structure), and routines (practices) towards progress, growth and innovation through markets over a period of decades. This growth-based orientation solidified under the influence of globalized markets, financial systems, and related facilitating structures. In this process the financial system has become increasingly detached from the real economy, and has incorporated incentives that reward speculation instead of long-term wealth creation. Financial innovation has broken the link between credit and deposits (Kelly, McQuinn, & Stuart, 2013) and there is increasing evidence that this financial sector growth is also having negative effects on real economic growth (Cecchetti & Kharroubi, 2015). This detachment and growth in speculation has further entrenched the need for growth into the system, for example, in order to balance out the large growth in bank assets. Moreover, due to growing returns on capital relative to labor, it has led to rising income inequality in most economies (Piketty, 2013), which has high social and economic costs (Dabla-Norris, Kochhar, Suphaphiphat, Ricka, & Tsounta, 2015).

On a micro scale, these structures and ways of thinking have led to a culture of seeing humans as 'rational economic agents' and 'consumers' rather than as human beings with different values, aspirations and emotions. Although strict rationality assumptions about human behavior in economic exchanges have been disproven and abandoned a long time ago, it is still pervasive to this day. Most notably by triggering all sorts of actions, such as marketing and nudging, that aim to nurture the 'consumer' part of every individual and associated consumer behavior. This has contributed to making people (and arguably business as well) more self-interested, calculating, and detached from others and nature (Raworth, 2017, 94-128). Nevertheless, although still very prominent in today's economy, neoliberalism as a governance ideology, and the related structures and cultures described above, are being questioned as a result of the (global) economic and environmental crises and the growth of inequality (Ostry, Loungani, & Furceri, 2016; Stiglitz, 2017).

Within transitions theory the description of our current economies given above is conceptualized as a ‘regime’: the prevailing structures, cultures, and practices of a system that emerge and evolve over time (Loorbach, Frantzeskaki, & Huffenreuter, 2015). These three regime dimensions reinforce and stabilize each other leading to a degree of path-dependency and lock-in in societal (sub) systems. The dominant culture (worldviews, paradigms, discourse, and guiding values) in a particular regime leads to, and reinforces, structural elements such as institutions, rules, and networks. This in turn ‘structures’ and guides practices and behavior of actors, which reinforces shared values and structures (Giddens, 1984; Grin et al., 2010). This dynamic creates a path dependency or ‘lock-in’ within which actors by definition seek to improve the existing and are unable to change course fundamentally. What then happens is that optimizing incumbent regimes within a changing societal context leads to increasing tensions and pressures such as the recent economic crisis. Rather than addressing the root causes, initial responses from the regime will seek to re-stabilize and further optimize the existing regime.

In transition research this is referred to as ‘persistent unsustainability’: efforts to address unsustainable practices reinforce regime structures and thereby become part of the problem instead of driving change. Ever since the ‘Limits to Growth’ report (Meadows, D., Meadows, D., Randers, J., Behrens,W., 1972) and its relatives, it has become increasingly clear that the foundations for the currently dominant economic regime have originated in an ‘empty world’ with abundant sources and sinks, a small population, and expectations of technological advance. As we now have become aware that we are facing planetary boundaries, that technology cannot solve everything, and that the economic growth paradigm not necessarily leads to more well-being, it is increasingly evident that we need to transition to an economy that is compatible with our current ‘full world’ state. This can only be done by uncovering, and engaging with, the inherent unsustainable practices in our economic regimes instead of just addressing the symptoms of unsustainability. It forces us to think about ‘inherently better’ and ‘different’, rather than ‘less bad’ or ‘more efficient’.

It has become clear from transitions research (Brown, Vergragt, & Cohen, 2013; Grin et al., 2010) that while actors embedded within regimes seek to sustain the status quo, other actors start to develop and experiment with alternatives. Initially they might be ridiculed (labelled ‘alternative’, ‘not working’, or ‘too expensive’) but over time they can mature and develop through learning effects, cost reductions, and social diffusion (Haxeltine et al., 2017). Such alternative ‘niches’ are more vulnerable but also more flexible than regime players and often they anticipate, or play into, broader societal trends and changes that regime actors are less able to respond to. These could be changing demographics, (geo) politics, a changing climate and increasing sustainability concerns, or revolutions in ICT and manufacturing. As this leads to increasing pressures on regimes structures, the niches develop and, through diffusion by people, businesses, and organizations, are increasingly recognized as viable and possible. These dynamics enhance the friction in the current regime to such a level that it starts to destabilize. This is when the actual transition is starting to occur: a shock wise process of systemic change in which new and dynamically stable combinations of actors, values, structures, and practices are formed.

Such transition dynamics can be visualized using the x-curve (Figure 3). Following an ideal typical s-curve niches move along a pathway of experimentation, acceleration, emergence, institutionalization and stabilization, replacing the old regime. Conversely, the existing regime follows a downward s-curve from optimization, via destabilization and disruption, to a breakdown and phase-out. In reality, these transition pathways are of course more chaotic and less-clear cut, with actors moving in different, and sometimes opposed directions. Moreover, it is not necessarily a conscious process where those involved are aware of the ongoing transition. Based on studying historical transitions and doing experimental action research in ongoing transitions, it was found that transitions take decades to materialize but that the actual period of transition is a relatively short (10-15 years) disruption of otherwise 'dynamically stable equilibria'. In other words, societies develop specific regimes, within sectors and regions, that are path dependent and that they naturally optimize. But, over time the regimes can experience, following the specific pattern of transitions, increasing destabilization and external pressure and competition leading to a deep systemic reorientation.

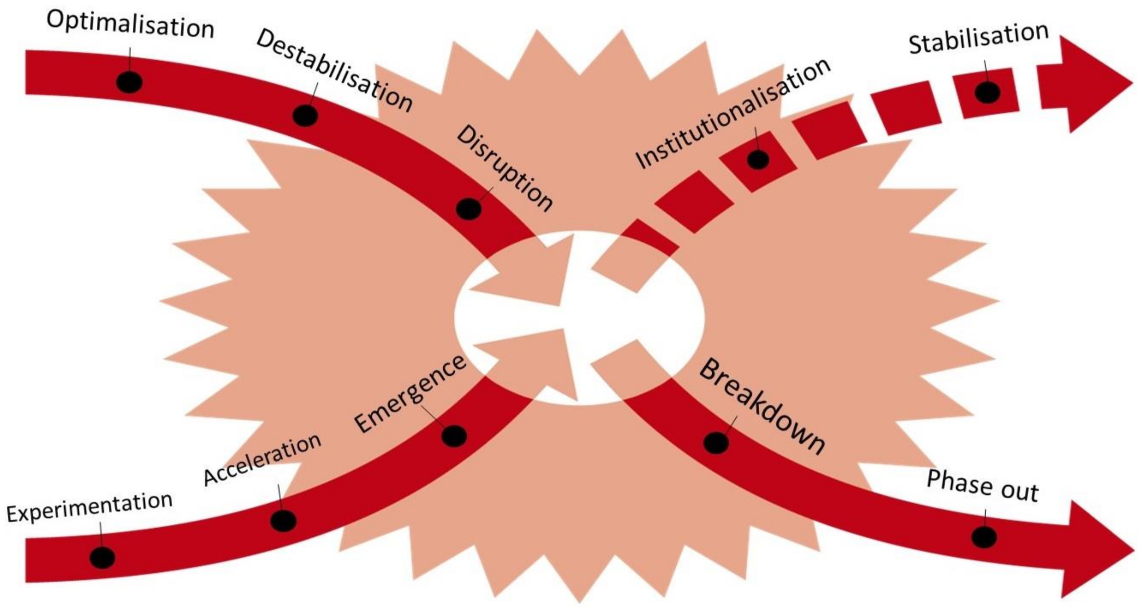

Figure 3 The x-curve: transition pathways (Loorbach, 2017)

2.2. In what phase of the transition is 'the economy'?

The economic and environmental crises we have faced, and are currently facing, are signals that transition pressures are building and incumbent regimes are destabilizing. This destabilization accelerates the emergence and diffusion of new economic paradigms and revitalizes interest in alternative practices and structures (Loorbach et al., 2016). The increasing attention in recent years for natural capital approaches is part of this revitalized interest and the broadly shared search for more systemic changes leading towards sustainability. Although action and policy focused on the optimization of the regime is still dominant in many sectors, there are more and more examples suggesting we are close to a period of destabilization, disruption, and shock-wise change. This is not only illustrated by the rapid, and sometimes exponential, growth and diffusion of alternative discourses ('green', 'sharing', 'circular'- economy), technologies (renewable, electric, bio-based) and models (sustainable and regenerative or circular business models, cooperatives, alternative currencies), but is also visible at the level of regime actors.

Further examples of indicators of growing destabilization include the policy interventions,such as the continuing bailouts of financial institutions, after the 2008 economic crisis[2], social innovation such as the growing fossil fuel divestment movement (Franta, 2017), the growth of climate litigation (Burger & Gundlach, 2017), and 'shock' asset value losses foreshadowing stranded assets in the (fossil) energy sector[3] (and beyond). We are thus, in certain sectors, and within specific countries and economies, arriving in the

[2] See for example the recent bank bailouts in Italy and Spain.
[3] See for example the rapid multi-billion euro devaluations of 3 newly built coal thermal power plants in the Netherlands (Wynn, 2016)

destabilization, and even disruption phase. Yet transitions are not straightforward one-dimensional processes. It is possible to identify different types and patterns of change in different dimensions at the same time. Figure 4 below is a visualization of a transition analysis done for the Dutch government mapping different dimensions and visualizing, roughly, where these transitions are on the x-curve[4]. The size of the spheres corresponds to the amount of activities in a specific phase of the transition in that sector/or for that issue.

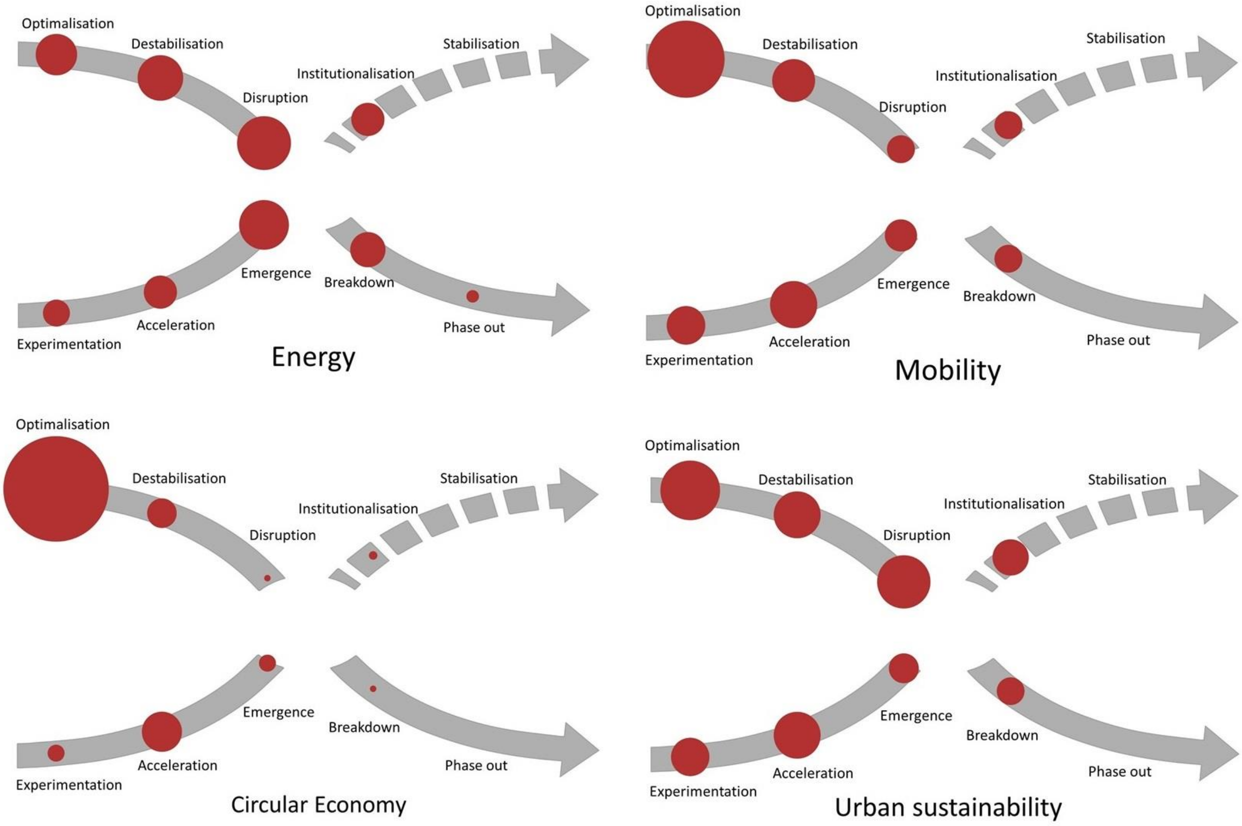

Figure 4 Transition mapping for Dutch transition policy (Lodder, Roorda, Loorbach, & Spork, 2017)

This transition perspective helps to understand how momentum for deep systemic change in societal sectors is developing and thereby provides a basis for governance, policy, and intervention. However, it also points at the inevitability of such changes in the longer term. If something is unsustainable, its future demise is inevitable. When and how incumbent regimes will go through a transition is unpredictable and heavily contested, but that it will happen in the end is certain. Its future course and outcomes are, however, uncertain. Following the perspective on increasing systemic pressures, emerging niches, and a growing willingness of regime actors to help accelerate and guide systemic change, the question arises: towards what type of economy would we like to transition? A transition in itself is not necessarily a desirable process of societal change as it is disruptive, and causes societal instability and damage. Transitions also do not necessarily lead to better future states as they could also imply systemic collapse, breakdown, or sustained periods of disruption, conflict, and inequalities. Although such a desired direction for economic transitions has not yet been clearly formulated, it is certain that our ideal 'landing space' for economic transitions would be an economy that is 'socially just' and stays within 'planetary boundaries'. An example of this would be the United Nation's Sustainable Development Goals[5] or the 'safe and just

[4] Size of the circle indicates extent of activities in that phase
[5] http://www.un.org/sustainabledevelopment/sustainable-development-goals/

space for humanity' (Raworth, 2017; Rockstrom et al., 2009). The challenge now is use the emerging transition dynamics and mobilize the transformative power of maturing alternative discourses, business models, technologies and practices to help guide and accelerate sustainability transitions in this direction. In this context, natural capital approaches can play an important role.

3. Natural capital approaches in the context of the economic transition

Natural capital approaches represent a new set of values and logic (culture), coalitions and agendas (structure), and tools and methods (practices) that challenges the dominant economic (growth oriented) logic. Due to increasing concerns about the state of our natural environment, economists, in the 1970's and 1980's, developed the concept of natural capital to bridge the gap between economics and ecology by describing the natural environment in economic terms (Jansson, 1994). In recent years, the concept has gained renewed attention, albeit in a different form, influenced by the discussion around including ecosystem and biodiversity considerations in policy and business decision-making[6] and the development of the concepts of ecosystem services and payment for ecosystem services[7]. Currently, natural capital is usually defined as the stock of renewable and non-renewable natural resources (plants, animals, air, water, soils, and minerals) that combine to yield a flow of benefits to people (Natural Capital Coalition, 2016).

The neglect of the value of natural capital in traditional ways of measuring economic welfare has facilitated depletion or degeneration of these stocks and related flows. Initiatives aimed at remediating this are referred to as 'natural capital approaches'. These approaches are a collection of means to identify, measure, and valuate natural capital and measure the impacts and dependencies economic actors have on this natural capital. For owners and managers of land it provides insight in the natural capital present in a certain area and allows them to be incorporated in decision making through awareness of their value (Ruijs & van Egmond, 2017).

3.1. Practices of natural capital approaches

Different methods to operationalize the natural capital concept exist suitable for both business and government. *Natural capital assessment* is the process of identifying, measuring, and valuing natural capital impacts and dependencies and *natural capital accounting* is a framework for method of collecting and systemizing information on natural capital and its associated flows. Governments use these two approaches to include natural capital in national accounts to (more) correctly measure national welfare and include resource stocks and flows in decision-making. This can be done using the 'UN System of Environmental-Economic Accounting' (UN-SEEA), 'Wealth Accounting'[8], and the 'Inclusive Wealth Index'. Businesses can use assessment and accounting to include impacts and dependencies on natural capital in their decision-making. Different methods and tools for business are brought together under the Natural Capital Coalition (hereafter 'the Coalition') and the Natural Capital Protocol (hereafter 'the Protocol')[9]. The Protocol provides a means for businesses to improve decision making and increase efficiency through providing benefits on the operational, legal and regulatory, financing, reputational and marketing, and societal level. This includes reducing costs from natural resource risks, reducing compliance costs, reducing financing costs and increasing access to finance, providing product differentiation, identifying new revenue streams, and supporting a social license to operate (Natural Capital Coalition, 2016).

Natural capital approaches can also be used for 'sustainable entrepreneurship', 'entrepreneurial nature management', and 'area development'. In sustainable entrepreneurship, natural capital thinking is used to develop new revenue models based on the sustainable use of natural capital using innovative methods,

[6] E.g. The Economics of Ecosystems and Biodiversity (TEEB) program initiated by the G8+5 in 2007
[7] E.g. The Millennium Ecosystem Assessment called for by the UN and executed between 2000 and 2005
[8] https://data.worldbank.org/data-catalog/wealth-accounting
[9] https://naturalcapitalcoalition.org/

financing mechanisms, and organizational models. This approach could involve using the Protocol. Entrepreneurial nature management can also be used by, for example, national parks, nature reserves, or other owners of nature areas to increase income and to support and enhance biodiversity. This means taking a natural capital approach to assess the suitability of land for various business uses and developing new revenue models on this basis. Integrating natural capital thinking into area development means looking for alternative and joint uses of natural capital, and embedding these in spatial planning, to address issues such as flood risk, or the environmental effects of agriculture (Ruijs & van Egmond, 2017).

3.2. Structures of natural capital approaches

Three international collaborative platforms/organizations that are part of the Coalition are worth highlighting, as they are currently involved in developing and spreading natural capital approaches. The EU Business @ Biodiversity (EU B@B) platform was set up by the European Commission to help business in Europe integrate natural capital and biodiversity considerations into business practices[10]. The Economics of Ecosystems and Biodiversity (TEEB) is a global initiative with as goal to integrate the values of biodiversity and ecosystem services into government decision making[11]. The Natural Capital Finance Alliance (NCFA) is a collaborative platform specifically aimed at finance[12]. It promotes the uptake of natural capital approaches in the financial sector hoping to include natural resource risks in the costs of capital. The NCFA is also involved in, together with the Dutch Association of Investors for Sustainable Development (VBDO), and the Coalition in developing a Finance Sector Supplement to the Protocol.

The current discourse around the development of natural capital seems to be influenced by many different parties. Including, international organizations such as the United Nations and the World Bank, business and sector organizations such as the World Business Council on Sustainable Development (WBCSD), the Investor Responsibility Research Center (IRRC), and ICAEW (Institute of Chartered Accountants in England and Wales), but also front-runner national governments, and conservation organizations such as the International Union of Nature Conservation (IUCN). The SEEA has been set up by the UN in 1993, while the Wealth Accounting and the Valuation of Ecosystem Services (WAVES) partnership, a multilateral stakeholder initiative to implement natural capital approaches, and has been set-up by national governments in cooperation with the World Bank in 2010. The Coalition is a collaboration of over 260 organizations, set-up in 2012 and hosted by ICAEW. WBCSD lead the consortium on the development of the Protocol and IUCN the consortium on sector guides, business engagement, and pilot testing. UNEP-Fi and the Global Canopy Programme (GCP) support the NCFA, which was also founded in 2012. New (international) networks and coalitions of front-runners and willing regime parties are thus emerging, providing and building new supportive structures for practices that take natural capital into account. These structures are shaped by the practices and cultures of natural capital approaches and, in turn, shape them.

3.3. Cultures of natural capital approaches

The prevailing philosophy behind natural capital approaches is that, through making visible the natural resource stocks and related flows involved in business processes or present in a country, and incorporating them in corporate and national account structures, natural capital can be taken up in decision-making processes leading to more sustainable behavior. With as goal to prevent the degeneration and destruction of the natural capital concerned. In this way, natural capital assessment and accounting helps to correct previously flawed measurements of welfare and economic performance (Stiglitz, Sen, & Fitoussi, 2009) and help businesses make better decisions on natural capital impacts and dependencies (Natural Capital Coalition, 2016). In addition to providing an economic rationale, the logic behind these approaches is that, when people become aware of the natural capital involved in their activities, whether as policy maker or

[10] http://ec.europa.eu/environment/biodiversity/business/index_en.htm
[11] http://www.teebweb.org/
[12] http://www.naturalcapitaldeclaration.org/

business manager, they become incentivized to preserve it even if this does not give them direct (financial) benefits (Ruijs & van Egmond, 2017). For example, the Natural Capital Protocol provides a voluntary way for businesses to do this. However, as long as non-financial reporting in business accounts is not legally required and no legal or financial consequences are attached to having a negative natural capital 'balance sheet' the assumption behind natural capital approaches is that making value visible to those who have an impact or dependency is enough to help preserve it.

Natural capital supports all other types of capital – financial, manufactured, intellectual, human, and social and relationship capital – but is fundamentally different (Adams et al., 2013). This has implications for the implementation of natural capital approaches. The crucial difference between, for example, financial capital and natural capital is that, in general, natural capital cannot be easily replaced and is thus, largely, not substitutional. Whereas a company that goes bankrupt can attempt to start operating again through attracting new financial capital, or broken manufactured capital can be replaced by new machinery, it is very complicated for, and would require large amounts of time, a collapsed fisheries or a degenerated peatlands to regenerate and start redelivering its resource flows. Although such large attempts at ecosystem restoration can be successful, this, in practice, makes natural capital largely non-substitutional. This means that striving for a net positive result is not good enough when it comes to a natural capital based approach. Moreover, while a complete destruction of financial assets leads, by law, to the bankruptcy of a company, running an environmental deficit or destroying natural capital currently only has limited consequences for a company. In a context where natural resources are still considered to be without limits this means that natural capital approaches also have their limitations when being applied in a specific business or national economy. This means that, depending on the natural capital involved, certain minimum conditions to ensure at least the preservation of the natural capital involved need to be set when, for example, striving for a net positive natural capital impact. This logic and way of thinking is what we, from a transitions perspective, would identify as the 'culture' underlying natural capital approaches.

Textbox 1 The logic behind natural capital approaches summarized

1. Identify the natural capital used in production processes/or existing in a country
2. Measure natural capital impacts and dependencies (qualitative, quantitative, or monetary)
3. Apply financial accounting logic to natural capital (costs and benefits) and/or create awareness of natural capital dependencies and impacts
4. Develop measurement and assessment tools to capture value (opportunities) and reduce risk
5. Stimulate voluntary reduction of negative impacts through promoting take-up of natural capital considerations in business and government decision making
6. Make natural capital impacts/dependencies 'less bad'

3.4. Natural capital approaches as a concept of environmental sustainability

Natural capital approaches developed within the larger growing discourse on environmental sustainability. And the concept of natural capital has overlaps with other concepts aimed at better managing natural resources and achieving sustainable development. For example, natural capital accounting and assessment can be seen as instruments working towards sustainable development; e.g., the WAVES partnership aims to facilitate sustainable development. Natural capital assessments are a crucial basis for 'ecosystem management', or the ecosystem-based management of land and seascapes (Schultz, Folke, Österblom, & Olsson, 2015). Also, it can be used as a basis to decide on implementing an intervention based on 'nature based solutions' (Nesshöver et al., 2017) or 'nature inclusive solutions (Van Egmond & Ruijs, 2016), as a tool in moving towards a 'green economy', and used in developing a 'bio-based economy' or 'circular economy'(Geissdoerfer, Savaget, Bocken, & Hultink, 2017; Loiseau et al., 2016). These examples illustrate the more instrumental perspective on natural capital approaches that we take in the next chapters. If, in the end, the goal is to transition to a sustainable economy that takes nature into account, meaning moving economic activity towards a state in which natural resources are no longer depleted and perhaps even regenerated, the question is to what extent natural capital approaches can contribute to such a fundamental transition and how to increase this potential contribution.

We thus see natural capital approaches as part of a larger development of initiatives to 'green' the economy, but also as part of a broader struggle to move beyond a dominant economic discourse of greening growth, voluntary action, and complete monetarization. In this context, natural capital approaches themselves are also subject of debate. Strong criticism is voiced from some environmental and sustainability advocates saying that natural capital approaches in the end only help to put a price on nature making it even more interesting to profit from it economically[13] . The context and discourse around natural capital approaches is highly dynamic, new terms and concepts are still emerging, and the future contribution of natural capital approaches to economic sustainability transitions is still open. So far they are generally used to map, account for, and assess the environmental impacts of economic activity and dependencies on natural capital, to be able to manage risk, reduce negative impacts, create transparency and identify new business opportunities. This has been shown to stimulate frontrunner companies to develop proactive and ambitious sustainability policies, reduce their environmental footprints, and give policy more control over the environmental impacts of economic activities and their reduction. However, in this way, natural capital approaches also contribute to further regime optimization and predominantly helps to make the existing system 'less bad' and not necessarily challenges the foundations of our economic regimes. Mainly, it sits within the dominant economic discourse of risk reduction, financial accounting and quantification, and voluntary action.

Taking a transition perspective, this underlines the importance of making explicit the longer term goals of introducing natural capital approaches and the type of (social and economic) innovation it wants to support. Will it be used to support the use of the Natural Capital Protocol by multinational businesses to inform decisions on investment, operations and strategy and reduce negative impact, or to empower and scale business models that are 'regenerative' (adding to natural capital) or 'circular', or both? And, what does this mean for creating an 'enabling governance environment' for natural capital approaches? It is not unimaginable that natural capital approaches indeed support the dominant economic logic and might end up only helping to optimize existing markets and businesses by making them less unsustainable. Equally imaginable is a process in which natural capital approaches help to facilitate and guide sustainability transitions by simultaneously increasing pressure on unsustainable economic models and supporting alternatives that are in balance with nature or even generating natural capital positive effects.

[13] See for example: https://www.cusp.ac.uk/essay/m1-6/ ; and https://theconversation.com/nature-is-priceless-which-is-why-turning-it-into-natural-capital-is-wrong-65189

4. Transition Governance and Toolbox

In this chapter, we introduce the transition governance logic within which natural capital approaches can be used as an instrument in achieving the transition to an economy that takes natural capital into account.

4.1. Transition Governance

Transitions are by definition contested, unpredictable, and chaotic processes in which there is no central authority or form of agency that can control its pace and direction. All actor steer the transition but no one decides. Transitions do however result from a combination of individual actions and strategies of actors pursuing specific goals and interests. Actors embedded within a regime, for example, are most likely to pursue incremental improvements as pressures for change increase. Inherent to their position within well-established regime structures and cultures they, often, do not see disruptive changes as desirable or feasible. Governmental actors and their policies are by definition part of regimes, which makes it difficult for them to fully embrace transitions. For example, it is not possible for a government to suddenly shift to a completely natural capital based national budget. Such a transition requires time for actors and organizations to adapt, for new ideas to become mainstream, and for institutional change to take place. In addition to being long-term and seemingly chaotic, non-linear processes, transitions are also shifts in power. A dominant regime is challenged to change and there is competition with alternative solutions (Frantzeskaki, Koppenjan, Loorbach, & Ryan, 2012).

Natural capital approaches are part of a broader set of attempts to change the rules of the game and, thereby, potentially threaten incumbent business models, practices, and interests. This includes those of governments, making the implementation of natural capital approaches even more challenging within government or policy contexts. It will therefore require the right context and transition strategies to push forward the broader process of transition in our economy. Natural capital approaches can be used in this context of broader transition governance efforts to give direction to and accelerate desired transitions, support developing alternatives, and new economic discourse.

Following this transition perspective, transition governance provides a governance logic and framework to start influencing the speed and direction of desired transitions through a range of tools and instruments (Kemp, R., Loorbach, D., Rotmans,R., 2007). Targeting unsustainable lock-ins, transition governance seeks to disempower cultures, structures, and practices that have a negative effect on natural capital while simultaneously empowering alternatives with a positive effect. In practice, the focus has mainly been on empowering, but attention for processes of destabilization and disempowerment is rapidly increasing. Natural capital approaches fit within this wider context of pushing unsustainable regimes towards transformation by creating awareness, transparency, accountability, and ultimately inevitability. To effectively influence transitions, a number of principles for transition governance have been formulated:

1. A transition analysis is the basis for a transition governance mix (**content based facilitation**)
2. Simultaneous focus on changing cultures (strategic), structures (tactical) and practices (operational) (**multi-level approach**)
3. Participation in transition processes based on capacities, backgrounds, and willingness rather than position, affiliation, or power (**selective participation**)
4. Long-term systemic change as starting point to guide and shape short-term actions (**back casting scenarios**).

5. Multiple goals, objectives, and pathways to deal with complexities in the transition and to allow for a diversity of solutions (**adaptive strategy**)
6. Strategic experimentation as implementation philosophy (**learning-by-doing and doing-by-learning**)
7. Evaluation and learning intrinsically part of transition processes (**reflexivity**)

This transition governance logic is fundamentally different to regular policy or governance approaches that usually focus on problem-solving, efficient implementation, and incremental improvements of incumbent regimes. More specifically the aim of transition governance is to influence, accelerate, and help guide emerging transition dynamics. Specifically appointed 'Transition Teams' (involving experts on the specific domain, institutional representatives, and transition experts) do this in practice by supporting actors in transition contexts to collaboratively:

1. Identify, synthesize, and articulate emerging persistent problems in society to make these tangible and challenge incumbent discourses and assumptions
2. Formulate positive expectations, guiding principles, visions, and strategies that help guide and mobilize transformative alternatives
3. Strengthen transformative social innovations and networks to stimulate creative competition and societal problem-solving
4. Increase societal acceptance of transitions
5. Identify and remove regime barriers against desired transitions (including dogmas, power-relations, economic interests, routines)
6. Change the social, institutional, and economic conditions within which sectors operate

4.2. Transition governance and policy

Over the past fifteen years, transition processes have been organized by governments at both the local and national levels as well as by business. Initiated by actors that sought to develop a better understanding of, and a strategy to anticipate, future transitions and develop alternative solutions with new networks. These experimental processes and interventions have led to a broad practical and academic basis and diverse toolkit (Loorbach & Rotmans, 2010; Loorbach, Frantzeskaki, & Avelino, 2017). This practical experience has shown that the value of transition governance lies in its ability to open up space for transformative experiments, new discourses and agendas, social learning processes, and institutional changes. One of the central instruments for transition governance is the 'transition arena': a selective participatory process used to develop a new, shared transition narrative and agenda with a network of change agents that form the basis for new initiatives and actions and inform policy. This approach, is, for example, currently being used by the Dutch government at the level of the energy transition (Verbong & Loorbach, 2012), the circular economy, and mobility. Many cities have also adopted the transition arena as a model for mobilizing transition oriented actors in urban transition processes across the globe (Frantzeskaki, Broto, Loorbach, & Coenen, 2017).

Transition governance is increasingly seen as being complementary to regular policy, which is often focused on implementing solutions and incremental by design. Transition governance helps to uncover new ideas and narratives that help build societal support for innovative policies. In general, it provides a way to deal with a number of basic challenges inherent to regular policy-making, such as inclusivity, democracy, diversity and openness, the speed of change, social learning and capacity building, the resilience of the regime, context specificity, and the empowerment of frontrunners (Loorbach et al., 2015). It is used to influence transition processes and policy making at the national, regional, and local levels of government, as well as for specific businesses, industries, and sectors. In practice, transition governance is often adopted by policy makers, in cooperation with transition researchers and sector experts, to develop transition processes. However, also business and civil society organisations are taking it up with the explicit goal to explore strategies and transformations going beyond business as usual- and optimisation pathways. The inherently political nature of such a process necessitates strategic process management and a coalition of actors to develop and facilitate the process.

The transition governance process develops several elements to create the conditions necessary to seize the momentum for transitions - such as disruptions, crises, and policy windows - and tip systems towards desired transitions. These are:

- A strong and shared narrative that includes a framing of persistent unsustainability and revolutionary long-term direction
- A diverse frontrunner network of individuals from both niche and regime that are able to diffuse, translate, and operationalize the narrative within their own contexts
- A diverse set of alternative practices, technologies, business models, and initiatives that can be presented as building blocks for the transition
- An open end reflexive process of engagement, knowledge development, and learning in which adaptation, exchange, and selection takes place

4.3. Transition management toolkit

Transition governance is implemented in many different ways and always needs to be adapted to the context in which it is used. The initial transition analysis and the subsequent identification of relevant change agents largely defines how the transition teams design the interventions. The transition arena is thus only one way to operationalize the governance principles and one of the instruments of a broader portfolio including transition agenda, scenario's, experiments and monitoring operating at the strategic, tactical, operational, and reflexive level (Loorbach, 2010) (see Figure 5).

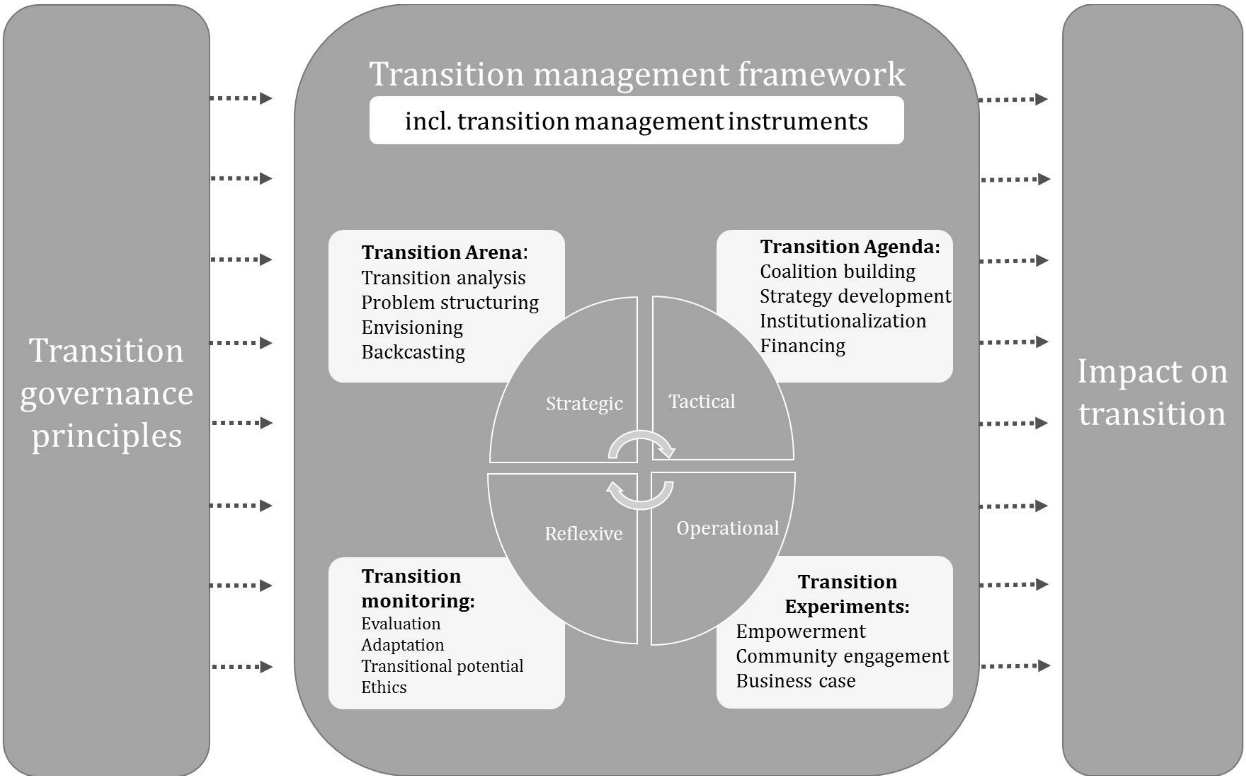

Figure 5 Transition Management Framework (adapted from (Wittmayer & Loorbach, 2016))

So far, the most used and best described instruments for transition management include:

1. **Transition Arenas (strategic)**: instrument for selective participation involving transformative actors that go through a facilitated process of problem structuring, envisioning, and back casting. Facilitation is based on the initial transition analysis and steers the process to achieve a shared discourse capturing the transitional challenge and desired direction. This includes creating visions of the future and long-term goal formulation, including collective goal setting and norm setting. The transition arena is an instrument to empower participants to use the new discourse and shared agenda to bring transformation to their own organizations, networks, and daily contexts.
2. **Transition Scenario's and a Transition Agenda (tactical)**: with the representative actors now engaged in the transition, and the long-term visions having been developed, transition scenarios, pathways, and agendas can be created. In these processes, the government engages with representatives from organizations that are active in a transition and seeks to align and realign ambitions, goals, and actions. In the resulting transition agenda's attention is also drawn to phase-out strategies and the required policy change. The Natural Capital Coalition is an example of such a coalition at the international level. Activities at the tactical level are aimed at the mid- and long-term, targeting changes in established structures, institutions, regulations, and physical or financial infrastructures.
3. **Transition Experiments (operational)**: the actors in the coalitions are mobilized to start implementing first projects and experiment with alternative practices. For example, to start experimenting with natural capital accounting or implementing the Protocol. Activities at the operational level are aimed at the short-term focusing on experimenting with alternative ideas and practices, and to practice and showcase new social relations.
4. **Transition Monitoring (reflexive):** the implementation of tools 1-3 is monitored and evaluated facilitating collective learning. The insights gained here are fed back into the transition arena, scenarios, agenda, and experiments. Activities at the reflexive level are aimed at learning about the present state of the system and the dynamics in the system, and possible future states and how to get there.

Textbox 2 Example of transition management application - Mobility transition in the city of Rotterdam (Netherlands)

The municipality of Rotterdam, he Netherlands, used a 'mobility transition arena' to complement the regular mobility plan. In the institutional planning process the emphasis was on measures addressing tangible problems in the current mobility system such as congestion, pollution, and safety. It did not leave space for exploring alternative ways of doing, for example, to shift towards completely different mobility systems. The transition arena composed of selected change agents from the city helped to shift focus in the mobility planning from 'solving the problems cars create' to 'solving problems cycling and public transport face', including using cycling to 'emancipate and include marginalized groups'. This provided a new narrative for urban mobility and became the frame for the formal policy plan.

The project ran for a year, managed by a newly set up 'transition team', involving civil servants and transition researchers. A transition analysis was carried out, identifying possible transitions, regime actors, and potential agents of change. It found signs of a possible transition Traditionally a car city, Rotterdam's car use was stagnating, its newly build indoor parking facilities staying empty for 50 percent of the time, congestion and pollution on the rise, and at the same time a significant increase in cycling occurred. Around 15 selected agents of change participated in the arena process of collectively reframing complex problems to formulate new perspectives, pathways, and transition experiments.

Collectively, the new shared-agenda of focusing on mobility poverty – a lack of access to diverse modes of transport due to income or cultural background - led to a new frame used by the policy makers. They realized that their current frame of treating all modes of transport equally had only aggravated the problems related to car use, and that they needed to focus policy efforts on providing solutions for sustainable modes of mobility instead. The arena process resulted in a shared *social mobility vision* and a set of guiding principles for future mobility policy were developed (inclusivity, sustainability, and diversity). On this basis, five transition pathways were created: 'clean mobility'; 'sharing'; 'mobility happiness'; 'living public spaces'; and 'new mobility services'.

For each pathway, several transition experiments were formulated on, for example, cycling, electric mobility, car-sharing, clean waterway transport, mobility poverty, and alternative uses of public space. Several of these experiments ended up being embraced by the administration and were continued by other participants of the arena. In this way, the transition arena approaches have helped to change the indicators and targets of regular policy and thereby support alternative practices and technologies.

4.4. Transitions and the role of business

Transition governance is used to develop processes of social transformation addressing grand societal challenges, developing shared goals and agendas, and initiate or empower new actions. It is increasingly seen as a way to complement regular ways of policy making and create space for social entrepreneurship. For businesses, the challenge of transitions is often directly related to their own internal regime and business model. Historically, businesses developed within a specific market, have grown interdependencies with other actors, and optimized existing business models and organizational structures. If their market and societal contexts start to change beyond what is possible to adapt to with incremental improvements (efficiency gains and innovation) pressure builds. Similar to transitions at a sector or country level this means changing structures, cultures, and practices. However, anticipating market transformations in itself is a strategic game, moving too fast is risky but perhaps moving too late is even riskier. The challenge is therefore to develop this dual or complementary governance strategy: adapting and improving the existing while simultaneously exploring transformation and challenging the incumbent regime. From a transition governance perspective, businesses can take four different positions: reactive, active, proactive, and transformative. Table 3 provides an example of how companies taking these four positions can use natural capital approaches in their business processes.

Table 3 Typology of business profiles from a transitions perspective

Company Profile	Description	Company properties	Business Case
1. Reactive	- High lock-in costs (e.g. waste disposal, value chain disruptions) - Future perspective based on business-as-asual - Modeled after traditional hierarchy - Traditional production of capital means	- Focus on process optimization and cost reduction - High degree of inertia - Risk management aimed at 'known unknowns' - Sustainability part of communications department	- Limited - Risk averse
2. Active	- Strategy running behind market developments - 5-10 year future perspective (e.g. sustainability is becoming important, need to incorporate this in our strategy) - Regularly repositions and restructures	- Focus on process optimization and cost reduction - Sustainability part of marketing department - Risk management focused on reputation management (e.g. uses Natural capital approaches to prevent scandals that impact image)	- Risk averse - Cost savings
3. Proactive	- Eco-efficiency - PR crisis - Profit by being ahead of regulatory changes (e.g. has E P&L already in place when it becomes mandatory)	- Sustainable (environmentally & socially) - Triple Bottom Line (e.g. uses natural capital approaches to manage natural capital impacts and dependencies) - Internal policy directed at 'middle term'	- Risk loving - Profit making - Strategic decisions
4. Transformative	- Company with added value to natural capital - Internally driven innovation and dedication to positive natural capital impact - Future perspective based on motivating vision (e.g. wish to become net natural capital positive) - Profit potential through long term expectations and adaptive capacities (e.g. can adapt to natural capital and climate risks and disruptions, benefits from stimulative measures, realizes opportunities with new product and service offerings)	- Innovation driven (e.g. evolving business model) - Triple Top Line oriented (e.g. uses natural capital approaches to develop net natural capital positive business practices) - Long-term recursive policy (e.g. reflects and evaluates natural capital approaches use and results)	- Risk loving - Profit making - Unique strategic advantage (e.g. benefits from government rewards on being net natural capital positive)

As shown in chapter 3 businesses use natural capital approaches differently from governments. The policy implementation of natural capital approaches then also needs to be context and actor specific to account for these differences. A targeted government strategy should thus not only specify the overall goal and objectives of implementing natural capital approaches but also differentiate between types of businesses, and if and how they are moving along the transition pathway. The four typologies presented in this section can be used as a guide in doing this.

5. Natural capital approaches as a catalyst for economic transitions

In this chapter, we take the position that implementing natural capital approaches *should always be considered within the context of supporting economic transitions to future stable states that are socially just and within ecological limits*. Yet their potential is also inherent to the fact that the instruments used in natural capital approaches are relatively similar to the currently dominant logics and practices of regime actors. Both governments and business can therefore more easily be convinced to take up natural capital approaches and profit from it on the short term, but in doing so also start moving away from an unsustainable situation and open up towards more profound changes in the future. We thus explore the transformative potential of natural capital approaches in destabilizing and challenging regime cultures, structures, and practices and support the build-up of alternatives. In this way, natural capital approaches can become a crucial piece in the puzzle to adopt nature-based solutions in decision-making, and establish regenerative business models and industries. Through identifying, measuring, and valuating natural capital and incorporating it in decision-making, it prepares the way for further, more drastic, measures that address the unsustainable practices at a systemic level and support fundamental transformations.

To bring natural capital approaches into a wider (governance) context influencing sustainability transitions, it is necessary to go through a series of steps that create an enabling environment for their implementation. Without being able to give a blueprint of how to work towards such goals in specific transition contexts, we can identify the following transition governance actions:

1. Mapping transition dynamics in specific regimes (in sectors, industries, geographical areas)
2. Specifying goals of natural capital approaches (across processes of build-up and break-down)
3. Developing a strategic governance mix (to influence, guide, embed and institutionalize)

5.1. Mapping societal transitions

To develop a strategic intervention approach in which natural capital approaches become part of broader transition governance efforts, it is necessary to focus on specific transitions in society. These could be sectors of the economy as well as geographic entities such as regions or cities. At this level, we can identify the societal regimes that provide services such as mobility, energy, health care, education, and raw materials as well as the dynamics and mechanisms driving transitions. In developed economies, such societal regimes have largely developed along the shared economic principles identified in chapter 2. In developing economies, similar patterns and mechanisms are visible but the societal regimes are very different. Both lacking the broader societal embedding -regimes often overlap more directly with specific actors in power- and with much lower levels of social innovation and diversity of niches. Yet in both contexts, economic development is pursued at the expense of natural capital with growth financed by depleting natural resources and freely producing emissions with a negative effect on natural capital.

This includes not accounting for externalities, focusing on growth through specialization, efficiency, and economies of scale. The specific regimes that developed in different countries took different shapes and forms according to national cultural, political, geographical, and/or demographic conditions. However, they now generally face similar transition challenges and pressures as sustainability concerns mount, populations start ageing, efficiency increases become harder and harder to achieve, and radical innovations start to grow exponentially (see also Figure 4). Such dynamics are, for example, very visible in the electricity and mobility sectors. Here, the old model of a centralized, fossil based, market led energy production is rapidly shifting to distributed production, renewable based, and involving a broad range of new actors. Similarly, the automobility sector is facing disruption from e-mobility, car-sharing schemes, and mobility as a service. In both these examples, the dominant actors and ruling assumptions greatly delayed acceleration, but now, , disruptive and sometimes chaotic changes are unfolding. For national governments, a first step in creating an enabling environment for natural capital approaches is to focus on understanding the transition dynamics in different domains and contexts. This requires a deeper understanding, and analysis, of historical developments, cultural, and institutional specificities, and emerging alternatives.

Mapping transition dynamics means looking at signs of niche development, emergence, acceleration, and institutionalization, as well as at signs of regime optimization, destabilization, disruption, and breakdown. Table 4 presents some of the indicators that provide the starting point for mapping transition dynamics and provides some illustrative examples of how the current (hypothetical) use of natural capital approaches in an economy can be seen as indicators of transition. Based on the created snapshot of transition dynamics we can start to specify the ways in which natural capital approaches could support influencing processes and actors to help guide and accelerate transitions in a desired direction. The table is a rough guide to analyzing in what phase or phases the transition in a specific region or sector is. After having done this the appropriate way of using natural capital approaches can be selected, using the functions as set out in Textbox 3 below.

Table 4 Indicators of transition phases

Build-up of emerging practices with positive natural capital impacts ('bottom up')	Transforming and phasing-out practices with negative natural capital impacts ('top down')
Experimentation	**Optimization**
- *Radically new ways of doing* - *Radically new ways of thinking* Example: start-ups/companies are developing business models based on circularity, thinking about how to design products that add to natural capital.	- *Improving the existing* - *"no doubt, we're on the right track"* Example: companies are interested in using natural capital assessment to manage production risks and dependencies on natural capital. Further optimizing the existing business model.
Acceleration	**Destabilization**
- *Alternatives are connecting* - *Alternatives become visible and accessible* Example: circular (start-up) hubs develop; first products appear on the market (e.g. modular/bio-based/re-usable etc.)	- *Incidents are fueling a feeling of urgency* - *Start of a fundamental discussion about the future/direction* Example: supply chains are threatened/disrupted by degenerating natural capital and increasing concerns about climate risks. Market share of companies with high natural capital impacts/dependencies is declining due to consumer preferences, and regulatory compliance costs are increasing. This leads to thinking about alternative ways of operating to deal with these natural capital related impacts and dependencies.
Emergence	**Disruption**
- *New structures become visible* - *Transition no longer controversial* Example: society has embraced the need for a transition towards a natural capital positive economy; new economic structures centered on circular, carbon-neutral, etc. start to become visible.	- *Contradictions and uncertainties* - *Conflicting interests and conflict* Example: businesses have created insight in natural capital impacts and dependencies, and started a process of culture, structure, and practice change. But struggle with how the 'true price' can be paid, and are uncertain about whether society

	will support this and how competitors will act; some parties cannot adapt and foresee this, their resistance to using natural capital approaches and acting upon it leads to conflict.
Institutionalization	**Break-down**
- *The 'new normal' in thinking and doing* - *New structures solidify* Example: natural capital based thinking has become central to the economic system. Natural capital positive structures, cultures, and practices become codified in regulations and institutions.	- *Pushing away, letting go, and fall out of existing order* - *The losers of the transition become visible* Example: parties that did not manage to adopt natural capital positive business practices are being pushed out by the new 'regime': their market share is going down, their supply chains are being disrupted, and they face regulatory and tax burdens. Their business models no longer function within the new structures.
Stabilization	**Phase-out**
- *Detailing the new system* - *Optimization of the new system* Example: natural capital positive has become the norm, optimization now occurs in the form of further enhancing positive effects (e.g. moving from net positive to gross positive).	- *Letting go* - *Dealing with the loss* Example: companies with net negative impacts go bankrupt or have to cease operations.

5.2. Goal setting for and by natural capital approaches in economic transitions

In transition governance, achieving structural systemic change on the long run is a starting point for short-term experimentation. Unlike 'regular' policy making, the aim is not to improve the existing but to use long-term transformative visions to help guide, empower, and diffuse (social) innovation. Starting from the ambition to achieve a transition to a natural capital positive economy a central role of natural capital approaches could be to help support, strengthen, and translate such a longer-term vision more broadly in policy, business and society. More specifically this implies engaging with transition dynamics in various sectors and using natural capital approaches to help articulate, identify, connect, empower, and scale innovations towards a natural capital positive future for the specific sector. Clearly, this over-all vision will have to be translated in different ways in different sectors and can only mature and develop over time as transitions progress and knowledge and experience grows.

Natural capital approaches have the potential to work towards changing the framework conditions of incumbent regimes via the inclusion of natural capital in decision-making and business models. The increased awareness of natural capital impacts and related dependencies is a good first step but does not automatically change the economic framework. This will only happen if consequences are attached to not acting in accordance with the results of, for example, a natural capital assessment or account. By itself, natural capital approaches are not enough to lead to changes at the systemic level but they can become a stepping-stone on the way towards fully 'internalized' or even 'regenerative' business models. Given that most businesses will currently have a negative natural capital account, using natural capital assessment/accounting will lead them to realize that their business has inherent sustainability problems. A similar argument could be made for governments using natural capital accounting. If enough front-runner businesses and governments adopt natural capital approaches this changes the context, leading parties that are more reactive to also join. Natural capital approaches are thus transformative by providing the basis for further greening of the system and preparing the way for the larger economic transitions.

This is because natural capital approaches offer a qualitative basis for the development of strategic policy goals that go beyond the simple implementation of these approaches. Whereas businesses using natural capital approaches most often translate these in reduction and efficiency goals, policy makers could use natural capital assessment to help formulate more qualitative economic goals such as equal distribution, a level playing field, the internalization of external environmental costs, or moving towards a circular, bio based, and renewable economy. The mapping of transition dynamics in specific domains of the economy can then be used to locate specific intervention points in the transition under analysis with as goal to influence its speed and direction. Pushing emerging transitions forward based on the deeper insight into the persistent *unsustainabilities* occurring in the regime and a sense of long-term direction (see the policy menu for specific actions to do this). This involves engaging change inclined actors from both the niche and the regime to, supported by natural capital approaches, build-up coalitions and networks to develop the desired new regime. Such 'shadow governance' – creating a policy process running in parallel to governments policy processes already in place - takes actors out of their regular (mental, organizational, behavioral) contexts to develop new discourse, structures, and practices to help build, transform, and phase out. Because of the inherently complex, and contested, nature of this process it not only requires conscious facilitation through transition policy but also needs to draw from a range of governance instruments and strategies that in combination can achieve the desired long-term systemic changes.

5.3. Developing a mixed governance strategy

Changing framework conditions elicits resistance from regime players, and the introduction of consequence bearing measures will thus face protest from incumbents. However, natural capital approaches as an intermediary approach, providing insight, but not attaching (strong) consequences to its implementation, will probably not face strong resistance from regime actors since it can fit within the existing economic framework. In this way, it can act as a catalyst for governments and businesses to start engaging with ongoing economic transitions. It can be taken up without too much resistance of businesses and governments, since, initially, no costs are attached apart from executing the analysis, but it does provide a basis on which a (net) natural capital positive economy can develop. Moreover, it can be a precursor to the introduction of stimulating and corrective measures. The goal of natural capital approaches as an instrument for achieving economic transitions is thus to provide a, by the regime acceptable, basis on which the new economic frameworks can be build. Natural capital approaches thus offer tools and instruments to support regime destabilization and transformation but can also be used to support the development and diffusion of alternative practices with a positive or neutral effect on natural capital. The message here being that implementing natural capital approaches to influence incumbent business also has a flip-side effect of supporting new entrants and vice versa.

Following this perspective of build-up and transformation, we argue that natural capital approaches serve different functions throughout the process of transitions. These are presented in Textbox 3. The left side refers to the practical uses of natural capital approaches within business or government organizations while the right side refers to how natural capital approaches can be used at a country, region, or economic sector level to drive the transition towards natural capital inclusive economies.

Textbox 3 Functions of natural capital approaches

Functions of natural capital approaches at the organizational level	**Functions of natural capital approaches in the economic transition**
• Identifying, measuring, and valuing natural capital • Including natural capital impacts and dependencies in decision making by governments and business	• Raising awareness of the natural capital impacts and dependencies of business processes • Creating transparency around natural capital use • Providing a basis for rewarding impact reduction

• Providing benefits for business on operational, legal and regulatory, financing, reputational and marketing, and societal level • Including natural capital considerations in nature management and spatial planning	• Supporting the development of regenerative (gross natural capital positive) business models • An instrument in supporting transitions in the economy towards internalized environmental impact and regenerative business models

In guiding and accelerating sustainability transitions, it is necessary to focus on both building-up alternative regimes, and on transforming incumbent structures and routines and phasing out undesirable technologies and practices. While the mapping of transition dynamics and performing a natural capital assessment can provide the basis for implementing specific natural capital approaches, they also need to be seen as part of the wider portfolio of policy and governance interventions in transitions. In addition to changing regime structures through the adoption of natural capital approaches innovation policies, subsidies, experimentation, and pilot projects are needed to support niche developments. Moreover, there are other instruments operating at the regime level, such as permits, laws, infrastructure and industry policies, and economic market policies that need to be taken into account when setting policy for the adoption and use of natural capital approaches. Policy for an enabling environment should work towards an integrated and coherent governance mix, which involves building alliances across policy departments and levels with as goal to link natural capital approaches to other policy domains and instruments. In this context specific attention should be paid to anticipating or facilitating the phase out of undesirable elements, for example by creating phase-out pathways, developing retraining programs ,and constructing financial mechanisms for dealing with stranded assets and economic losers in transitions. Such an integrated approach taking into account different policy domains and anticipating possible phase-outs smoothens the transition process. Table 5 below outlines some of the policies to which natural capital approaches can be linked or related to in creating a governance mix.

Table 5 related policy and governance instruments for sustainability transitions

Transform ('top down')	Envision and adapt
Legal and regulatory instruments Market and pricing instruments Industry policies Agreements and accords Institutional and organizational labelling	Societal dialogues and transition arenas Future visioning and imaging Scenarios, roadmaps Reflexive monitoring Social learning and evaluation
Innovation instruments Subsidies and niche management Network instruments Experimentation areas and urban labs Impact investment funds Incubators and right to challenge	Phase out pathways Divestment strategies Training and retraining Financial support stranded assets Prohibitions and penalties Removal and decommissioning
Build ('bottom up')	**Phase out**

5.4. Building the natural capital regime to enable sustainability transitions

The strategic long-term agenda behind natural capital approaches, from our transitions perspective, can be interpreted as the strategy to establish economic and governance conditions for transitions to an economy in balance with its ecological context. In transition terminology: natural capital approaches have to become part of the regime. This process is already well on its way. In the Netherlands ecosystem service like approaches were already included in planning processes since the 90's (Verburg, Selnes, & Verweij, 2016) and the SEEA originates from that period. The underlying philosophy or aim of natural capital approaches thus already has a longer policy history. Since the launch of the TEEB in 2007 natural capital initiatives, programs, and research has expanded. Two years ago, following the publication of the U.K's Natural Capital Committee's third report, natural capital budget making, especially for business, was described as having research momentum but found to be still lacking strong policy or financial momentum. This appears to be changing and uptake and support (by business) is increasing, as the first case studies of the natural capital protocol show. A new discourse around natural capital has started to develop which needs to consolidate terminologies and penetrate into business and policy language. For example, as Jaguar/Landrover notes in their protocol case study: natural capital terminology needs to be introduced into 'business conversations' to ensure delivery[14].

This signals that natural capital approaches are currently emerging as a structural part of future regimes There is, however, still is a lot of variety, diversity, and innovation in natural capital approaches and its institutional embedding is so far at best voluntary, aimed at raising awareness, and additional to established structures. Some countries, for example, have identified vital ecosystem services as part of the TEEB initiative, but with very different scopes and points of focus and using a variety of approaches and methodologies (Hedden-Dunkhorst, Braat, & Wittmer, 2015). There are also still different ideas about how natural capital and ecosystem services should be managed (Schultz et al., 2015), and inconsistencies in the metrics used by businesses to quantify their natural capital impacts and dependencies can still be found (Hime & Cranston, 2017). Increased standardization between methods, instruments, and initiatives is thus needed. The recent launch of the Protocol, providing a standardized way for businesses to implement natural capital approaches shows this problem has been recognized and is being addressed.

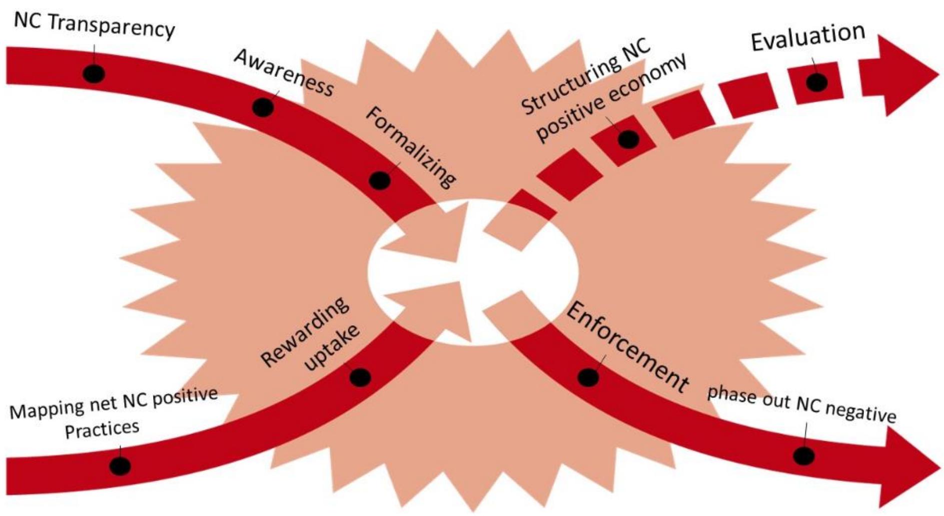

Figure 6 functions of natural capital approaches in the pathway to a natural capital positive economy

The stocktaking study undertaken by CISL[15] shows that most of the 30 countries reviewed have made international commitments in relation to natural capital and that around 15 countries currently publish some form of natural capital account, mainly on water, forest and, GHGs. However, engagement with business in most countries was still low and less than half of the countries reviewed had collaborative

[14] https://naturalcapitalcoalition.org/natural-capital-protocol-case-study-for-jaguar-land-rover/
[15] University of Cambridge Institute of Sustainability Leadership (CISL), *Snapshot of Government Engagement with Natural Capital Approaches*, prepared to support the *Government Dialogue on Enabling Natural Capital Approaches,* World Forum on Natural Capital, Edinburgh 2017

platforms for sharing information and data available. Although some good initial steps have thus been made, we are only in the early stages of a possible transition. All of the above actions undertaken by government still relate to optimizing the existing regime.

The perspective formulated in this report provides the broader context and longer-term orientation that is needed to start using natural capital approaches to build awareness of natural capital and seeing its take-up as a first step towards shifting regimes instead of further optimizing the existing regime. Ultimately, making natural capital approaches an integral part of new economic regimes and thereby the default option for businesses and government. For now, natural capital approaches are still far from being mainstream and business as usual. A critical perspective is that, so far, the implementation of natural capital approaches focusses mainly on contributing to less unsustainability and, through emphasizing risk reduction, financial-economic control, and green growth, primarily serves to improve existing regimes. Although doing this is important, it is questionable whether this will lead to relatively smooth and manageable economic transitions, since it does not focus on the other side of the transition: the development of business practices that have a positive impact on natural capital. To take further steps in building a natural capital based regime, it is necessary to strategically develop and expand the emerging cultures, structures, and practices as described in chapter3. With as aim to interact with, and transform, incumbent cultures, structures, and practices. The policy menu we formulate in the next chapter follows this transition governance logic of using natural capital approaches in an indirect way: their implementation will help to transform existing cultures, structures and practices that are unsustainable and help move these in the direction of sustainability.

6. A Policy menu for natural capital approaches

This chapter presents a 'menu' of policy options for governments in using natural capital approaches to transform current unsustainable cultures, structures, and practices, building upon the transition governance logic formulated in the previous chapters. As argued throughout this paper, governments need to help guide and accelerate the transitions to sustainable economies and can use natural capital approaches to do so. This implies embedding natural capital approaches in economic activities and economic thinking to develop an economy that creates positive ecological value. The potential contribution of natural capital approaches to this goal can be in pushing and empowering economic actors away from unsustainable economic models and creating an enabling environment for the acceleration of desired transitions through *mapping, goal setting* and *a mixed governance strategy*. Table 3 below illustrates the process of transition governance to create a receptive environment for the implementation of natural capital approaches using a hypothetical and illustrative example based around the agricultural sector for a developed country, and a more general example for a developing country.

Table 6 Example of a transition governance approach to creating an enabling environment

Example of transitions governance approach to creating an enabling environment		
Policy task	*Developed Country*	*Developing Country*
Mapping Transition Dynamics	The government has undertaken a mapping of the transition dynamics in the agricultural sector which shows that (1) there is increasing societal pressure on the government and companies to reduce negative effects of large-scale agriculture (regime disruption); (2) markets for organic and other sustainable products are growing (regime disruption); (3) plant-based protein products are disrupting traditional animal based protein product markets (niche emergence); (4) environmental litigation has forced the government to suddenly implement stricter pollution standards to protect public health (regime disruption)	A mapping would include understanding the historical lock-in in, for example, fossil based individual mobility, and if/how, if this regime is experiencing internal tensions, and whether external pressures gradually increase. It would identify transformative alternatives and agency, from alternative technologies to new practices, platforms and ,for example, urban sustainable mobility strategies
Goal setting	- *Overall policy goals:* These dynamics at different phases in the transition show the necessity of a directed change towards an agricultural sector that takes natural capital impacts and dependencies into account; the goal is formulated that in 2030: 25 percent of the market is organic or otherwise certified; animal based protein consumption has dropped by 50 percent; large-scale animal farming and other harmful agricultural practices are abandoned and nature inclusive models of farming are in place - *Natural capital specific goals:* The sector coalition that has been set up has decided that natural capital approaches are a crucial tool in reaching (some of) these goals. They set the goal of: sector wide use of natural capital assessment to identify, measure, and value impacts and dependencies; natural capital assessment and accounting based monitoring of the new pollution standards and their effect on natural capital and	- *Overall policy goals* Taking such an understanding and exploring a desired transition with change agents could lead to both deeper shared understanding of inevitable disruptions and a mobilizing vision for fossil free collective mobility systems. - *Natural capital specific goals* Natural capital approaches could be used to both assess the persistent unsustainability in incumbent practices as well as critically understand the potential positive effects of alternatives. For example weighing pros and cons between a shift to individual electric mobility versus a shift to shared collective systems with a much lower resource imprint on a system level.

	ecosystem services aimed at closing cycles (e.g. for manure).	
Governance Mix	*Transformation governance mix:* - Optimization and destabilization phases: natural capital approaches used to create more awareness and transparency of impacts and dependencies in the agricultural sector; coalitions of the willing are started (e.g. to promote plant-based protein). - Disruption phase: on the basis of the developed natural capital accounts and E P&L good practices are rewarded (changing the rules) - Phase-out: *Build-up governance mix:* - Experimentation phase: Mapping businesses (and related practices) that already use farming methods with a net positive natural capital impact - Acceleration phase: Set-up an incubator/network to aid collective learning on new agricultural practices - Emergence phase: Provide incentives for businesses adopting these practices - Institutionalization: adapt regulations to new agricultural practices, incorporate new practices into education systems etc.	The governance mix would then more systematically explore a variety of experiments to assess their potential for positive impact on natural capital and how they might fit within a desired future regime (bottom-up), actions aimed at problematizing negative externalities in the incumbent regime to increase pressures and change regulatory contexts (top-down) and support actors such as cities and sectors to quantify and support phase-out strategies

6.1. The transition policy menu

The enabling environment for economic transitions and natural capital approaches is not composed of a set of policies, instead it is an ‘opening up’ of the regime – the structures, cultures, and practices around natural capital use - allowing new ways of thinking and doing to emerge and develop. This opening of the regime can be kick-started by directed government intervention. The policy menu (see Table 7) is build up around the two pathways of buildup and breakdown found in the x-curve. On the one hand, the development and take-up of new practices and business models with a positive effect on natural capital. On the other, the transformation of the existing regime and the phase-out of practices and business models that have a negative effect on natural capital. The transition policy menu is based on this logic and provides examples of actions that can be used to accelerate desired transitions and ensure an effective implementation of natural capital approaches. Some of these examples have already been undertaken or implemented in some countries and businesses while others are examples derived from policy interventions that have been used in other transition processes. Given that interventions need to be rooted strongly in local circumstances, this menu should not be seen as providing generic policy interventions needed to accelerate the take up of natural capital approaches, but rather as a framework and way of thinking that can be used to develop these policies.

Table 7 Policy menu for an enabling environment for natural capital approaches

Menu of possible government actions for an enabling environment for natural capital approaches	
Policy goal: **Transform ('top down')**	Policy goal: **Envision and adapt**
▪ Determine the extent to which collaboration occurs across government agencies, and set up mechanisms to facilitate where intra-governmental interaction is found to be lacking. ▪ Support collaborative platforms and data/information hubs that enable interaction and data/information sharing between businesses, between countries, and between business and countries ▪ Raise awareness of natural capital approaches among government agencies, making a stronger societal case for attracting talent, expertise and resources into this area. ▪ Map the natural capital in your country. For example by performing a TEEB Country Study which has been done by several countries since 2011 ▪ Explore collaborative regional approaches between business and government, if appropriate at sector level, and aid businesses in using natural capital approaches such as the Natural Capital Protocol ▪ Explore how natural capital accounting at a national level can be linked to natural capital assessment at a business level in your country ▪ Accommodate natural capital approaches in regulatory frameworks (e.g. France has adopted reporting requirements for 'climate and transition risks')	▪ Facilitate transition arenas in relevant sectors. Look for willing partners (e.g. Businesses, accountants, financial institutions, conservation organizations) with the capacity to act as change agents in their organizations to set-up the arena. ▪ Co-develop a positive natural capital narrative ▪ Develop transition goals and sectoral agenda's to increase uptake of natural capital assessments showing how natural capital approaches work towards realizing the positive narrative ▪ Promote economic production that has a net positive impact on natural capital through innovation oriented procurement policies ▪ Use reflexive monitoring and social learning to iterate and adjust transition interventions ▪ Develop institutional structures for natural capital approaches on a sectoral level as building blocks towards a transformation approach for national economies ▪ Take up natural capital approaches in educational programs (e.g. all accountants follow natural capital accounting courses, business students learn about impacts and dependencies) ▪ Standardize business practices with a positive impact on natural capital and start optimizing the new natural capital positive regime
Policy goal: **Build ('bottom up')**	Policy goal: **Phase out**
▪ Capacity building within the government; create awareness of natural capital approaches among civil servants and support learning by-doing processes. ▪ Map businesses and sectors that are, or should be, carrying out natural capital assessments and/or should be developing net positive approaches ▪ Develop strategic experimentation and learning programs around natural capital approaches and economic conditions ▪ Create networks of front-runner businesses to help accelerate their experiments **and** set up an innovation fund for businesses carrying out natural capital assessments and for businesses developing business models with a positive impact on natural capital (front-runners) ▪ Explore new technologies and engagement platforms for data gathering and assessment ▪ Create space for niche experiments (e.g. 'net-positive natural capital start-up incubator') based on strategic transition agendas	▪ Develop and implement a natural capital alignment 'policy check'; all government policies should be in line with the goals for the natural capital agenda. ▪ Start diffusing natural capital thinking throughout the different departments in governmental organization to help facilitate the 'policy check' ▪ Promote economic production that has less negative impact on natural capital through innovation oriented procurement policies ▪ Instate enforcing regulation and/or taxes on negative impacts on natural capital ▪ Natural Capital Fund fed by tax raised on negative effects on natural capital of production processes. The fund can be used to restore natural capital and reward companies with a positive impact ▪ Phase-out of natural capital 'negative' practices

6.2. Moving forward

The policy menu offers a starting point for entrepreneurial policy-makers and government officials to take a strategic approach to influencing emerging transitions and enhancing the institutional embedment of natural capital approaches. However, the complexity of transitions and the huge variety of options and possibilities can also be overwhelming. It is clear that implementing natural capital approaches is not straightforward or easy. Transitions are inherently political and measures that affect incumbent interests meet resistance. It requires a broader vision, a sophisticated strategy, and an entrepreneurial approach and implementation can only be successful under certain conditions. These include:

- **Institutional space:** political commitment to sustainability transitions is needed to be able to invest the necessary time and, later in the process, institutionalize the developments around natural capital. This includes support for creating operational capacity and institutional legitimacy to work with natural capital approaches.
- **Knowledge:** knowledge about the possibilities, different methods, and previous experiences with implementation and use of natural capital approaches, and (access to) knowledge about the implementation context is required.
- **Organizational structure:** policy officials need to be able to exchange, collaborate, and provide and ask for support in effective ways across departments and government levels. This requires organizational support, communication platforms, institutional embedding and self-organizational capacities.
- **Capacities:** specific skills and capacities are required to identify change and change agents, to work with a diversity of actors, to challenge incumbent ideas and interests, and to creatively adapt methods and tools to different contexts. This suggest recruiting people with different capacities and backgrounds as part of the implementation team.

In the more progressive countries, and through the Coalition, such conditions are already being developed, for example, through creating exchange platforms, information hubs, and providing training. These are ways to push forward the many ways in which natural capital approaches can support desired transitions to ultimately make them part of standard practice. Countries that are now starting to experiment with natural capital approaches can benefit from these and leapfrog, but should also realize that creating institutional space and capacity-building takes time. However, to some extent, taking up natural capital approaches and experimenting with these is, in itself, a way to build capacity and experience. When taking this approach it helps to contextualize such experiments and specific implementations of natural capital approaches as part of a broader agenda to develop more systemic natural capital capacities and institutional embedding. In the end, this constitutes a transition in itself involving changes in education, accounting standards, taxation practices, institutional structures of government, and assessment criteria of policy officials, and so on.

While it is impossible to try to define exactly how these changes should or could take place, it is relevant to envisage such a transition pathway to optimize the spin-off and indirect effects of working with natural capital approaches. In this respect, the transition policy menu is a starting point for experimentation. By entering the debate, bringing natural capital approaches into policy and industry discussions, creating awareness about persistent unsustainability, and the added value of alternative business models, change is already stimulated and set in motion. Simultaneously, this process generates a better understanding of these changes, the capacities to communicate and connect, and new experiences. The challenge is therefore not to do everything at the same time but rather to take a step-by-step approach aiming for revolutionary change on the long-term. In this way, new connections and collaborations develop between markets in transition and governmental actors with a transition agenda, accelerating sustainability transitions and increasing the likelihood of leading us to a sustainable future.

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