Transformational Change Guidance

*Guidance for assessing the transformational impacts of policies and actions*

*May 2018*

What is transformational change?

3. **UNDERSTANDING TRANSFORMATIONAL CHANGE**

This chapter introduces the concept of transformational change in the context of climate change mitigation and sustainable development. It builds on the scientific literature on sustainability transitions and defines transformational change for the purposes of this guidance.

3.1 Transformational change in the literature

Within social science many scholars have sought to understand how technological and societal changes occur and conceptualise how political, social and technical paradigms transform from one state to another. This has led to a number of observations on historical change processes and analysis of their drivers, with an aim to distil common characteristics of how these changes occurred. It has also led to several attempts to define what constitutes transformational change in general. Table 0.1 illustrates some recent definitions of transformational change.

Table 0.1: Examples of definitions of transformational change

<table>
<thead>
<tr>
<th>Definition</th>
<th>Source</th>
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<tr>
<td>A transition is a radical, structural change of a societal (sub)system that is the result of a coevolution of economic, cultural, technological, ecological and institutional developments at different scale levels.</td>
<td>Rotmans &amp; Loorbach, 2009</td>
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<tr>
<td>Transitions are non-linear processes that can result from the interplay of multiple developments at three analytical levels: niches (the locus for radical innovations), socio-technical regimes (the locus of established practices and associated rules), and an exogenous socio-technical landscape.</td>
<td>Geels 2012</td>
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<tr>
<td>The altering of fundamental attributes of a system (including value systems; regulatory, legislative or bureaucratic regimes; financial institutions; and technological or biological systems).</td>
<td>IPCC 2012</td>
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1 The literature tends to use "transition" and "transformation" interchangeably to convey processes that are referred to as "transformational change" in this guidance.
A structural change that alters the interplay of institutional, cultural, technological, economic and ecological dimensions of a given system. It will unlock new development paths, including social practices and worldviews.  

Mersmann et al. 2014

Transformational change through Nationally Appropriate Mitigation Actions (NAMAs) is a change that:

- disrupts established high-carbon pathways, contributes to sustainable development and sustains the impacts of the change (goal criteria),
- is triggered by interventions of actors who innovate low carbon development models and actions, connect the innovation to day-to-day practice of economies and societies, and convince other actors to apply the innovation to actively influence the multi-level system to adopt the innovation process (process criteria),
- overcomes persistent barriers toward the innovated low carbon development model and/or creates new barriers which hinder the transformed system to relapse into the former state (‘low-carbon lock-in’ criteria).

Olsen & Fenhann, 2016

A transformation is a long-term fundamental shift in a system, whether political, economic, social or biological. Transformations are typically viewed as multi-actor, multi-scale processes, where the change is highly non-linear.

Low-carbon energy transformations have three characteristics: large magnitude impact; non-linear change; sustained and long-term.

Westphal & Thwaites 2016

Irreversible, persistent adjustment in societal values, outlooks and behaviours of sufficient width and depth to alter any preceding situation.

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Some general attributes of transformational change processes can be distilled from these definitions:

- Transformational change is a change of systems, not just singular developments, and involves multiple actors at multiple levels
- Transformational change constitutes deep, fundamental change that disrupts the status quo, and sustains that change over a long period of time
- Transformational change by itself has no normative connotation; values are added by defining a transformation goal

Throughout this guidance, the term “system” is used to describe the part of society that is targeted by a particular policy or action. A system generally refers to a set of interconnected elements working together with some degree of harmony to fulfill various functions. These elements can be physical entities, such as humans or machines, as well as legislative, institutional, political or fiscal structures, or financial rules and regulations organised to achieve a set of objectives and functions.

Societal systems are complex, exhibiting dynamic, non-linear as well as linear and sometimes unpredictable change. Therefore, it may not always be possible to identify a complete chain of causal processes, but even a partial understanding of these dynamics of change can help develop policy interventions that are more likely to lead to transformation. Processes that aim at transformational change will most often not be effective if they target issues in isolation. In such a case, everyone involved could act perfectly dutifully and rationally and with good intent and still produce unintended side effects that no one wants. Inhibitors to change may be rooted in the internal structure of complex systems, and thus finding a solution in one part of the system may cause unintended problems in another part of the system.
Therefore, it is essential that the design of a transformative intervention takes its entire systemic context into consideration.

Transformational change as a systemic process affects different parts of society. Because subsystems typically overlap, even small change processes do not have completely isolated impacts. Taking a systemic view means to expect and plan for transformations at many levels, ranging from the local level up to changes at the national or even international levels. Not only do large policy interventions have impacts at lower levels of governance, but local-level activities can also have impacts on higher levels, for example, through learning about successes or when effects of local intervention have bearings on other regions or countries.

Transformational change in this guidance is a conceptual framework to describe the impact of a change process. Transformations can lead to a better as well as a worse state, so the desired direction of change (i.e., to a better state) needs to be defined. Transformational change in relation to climate change is inseparably connected to sustainable development. Therefore, this guidance is problem oriented towards promoting zero-carbon, climate-resilient, resource-efficient and sustainable societies, in line with the goals of the Paris Agreement and the UN Sustainable Development Goals.

3.2 Definition of transformational change in this guidance

As transformational change as a concept is gaining significant traction among climate change and sustainable development decision makers and practitioners, there is a need for a comprehensive definition specific to climate change mitigation grounded in both theory and practice.

With this background, transformational change is defined in this guidance as:

A fundamental, sustained change of a system that disrupts established high-carbon practices and contributes to a zero-carbon society in line with the Paris Agreement goals to limit global warming to 1.5 - 2°C and the UN Sustainable Development Goals.

The terms carbon and CO₂ are used interchangeably in this guidance. Zero carbon refers to zero CO₂ equivalent emissions and takes into account other greenhouse gas emissions. Zero carbon means “net zero carbon emissions”, which implies that some remaining CO₂ can be compensated by the same amount of CO₂ uptake as long as the net emissions to the atmosphere is zero. The vision is to phase out fossil fuel emissions and phase in a 100% renewable energy society.

Further, transformational change as defined above is characterised by:

- Large-scale outcomes or a multitude of smaller-scale changes coherently leading to large-scale system impacts
- Sustained, long-term, irreversible outcomes that reinforce zero-carbon practices

Transformational change as considered in this guidance is not an organic or incremental evolution in line with the self-organising dynamics of a system. Instead, transformational change means the general paradigm and existing standards of how to do things are challenged and old path dependencies are disrupted. The kind of transformational change in focus here is the “planned” transformation, that is, the transformation that is intended through the adoption of purposeful policy and regulation aiming at shifting emission trends towards zero-carbon and sustainable development goals. This requires an intentional, long-term change strategy as to how the system can transform and what the outcome of transformation
should be. The guidance identifies four main drivers (or processes) of change based on the existing literature on transformational change:

- **Technology change**: This refers to processes that drive research and development, adoption and scale-up of clean technologies.

- **Agents of change**: This pertains to governments, entrepreneurs, the private sector and civil society, as well as cross-cutting coalitions and networks as agents of transformational change.

- **Incentives for change**: This refers to economic and non-economic incentives along with disincentives, which play a critical role in shifting technology and societal change.

- **Norms and behavioural change**: This includes processes that influence awareness and behaviour of people to drive a long-lasting change in societal norms and practices.

Although transformational change is context-dependent, in order for it to occur, all four processes listed above are considered important and interdependent as elements of the system targeted for change. Only seldom can development be anticipated with a long-term (e.g., 20 or more years) perspective so a long-term management strategy is equally necessary. Strategies and implementation modalities should be adapted to technology development, changes in norms, and changes in the economy. Effective and adaptive change management strategies as well as continuous learning are critical elements.

Case studies of transformations for low-carbon and sustainable development are available in the literature. To learn from successful examples of transformations ongoing or planned, the studies focus on experience with transformation of the energy system in Germany; the role of wind power in electricity generation in Denmark; the reduction in deforestation in Brazil (75% over a decade from 2005 to 2014); the transition to a sustainable transport system at city level in Bogotá, Columbia; and the role of state-owned companies to lead a transition away from high-carbon lock-in in South Africa. Figure 0.1 illustrates the logic of this guidance. The assessment of transformational impact consists of assessment of processes and outcomes of change, all of which are supported by a number of characteristics and indicators.

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2 Olsen & Fenhann, 2015.

3 Deforestation in Brazil is on the rise since 2014. Monitoring over time will show, whether the gains achieved earlier will be sustained eventually.
The layers of the assessment follow the layers of the definition of transformational change:

- The extent of the overall transformational impact is assessed through the policy or action's contribution to a system change towards zero-carbon and sustainable development goals.

- The outcomes of a transformational policy or action are determined through its contribution to achieving GHG mitigation and sustainable development at a large scale that is sustained over time.

- The processes of a transformational policy or action comprise technologies, change agents, economic incentives, and a change of norms and behaviour, as well as effective change management that is open to continuous learning and integration of changing circumstances.