

Transformative project design



Published by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany

Commissioned by
the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
(BMU), Division IK I 3, Financing International Climate Action and Environmental
Protection, Multilateral Development Banks,

as part of
the global project 'Support BMU for Finance for Climate in International Climate
Action'

with kind assistance of
the global project 'Support of Effective NDC Implementation and Ambition Raising
in IKI Partner Countries'

and the global project Green Economy Transformation in Cooperation with the
Partnership for Action on Green Economy (PAGE) – Synergies between Low-
carbon Pathways and Sustainable Development Goals (SDGs).

Published by
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

As a federally owned enterprise, GIZ supports the German Government
in achieving its objectives in the field of international cooperation for
sustainable development.

Registered offices
Bonn and Eschborn

Dag-Hammarskjöld-Weg 1-5
65726 Eschborn, Germany
T +49 61 96 79-0
F +49 61 96 79-11 15

Friedrich-Ebert-Allee 32 + 36
53113 Bonn
T +49 228 44 60-0
F +49 228 44 60-17 66

E info@giz.de
I www.giz.de

Authors
Daniel Kehrer, GIZ

Review and editing
Sarah Zügel, BMU

Design/layout
DIAMOND media GmbH, Neunkirchen-Seelscheid

Photo credits
Adobe Stock, Shutterstock

URLs
The content of external websites linked in this publication is entirely the re-
sponsibility of their respective publishers. GIZ expressly dissociates itself from
this content.

Responsibility
GIZ is responsible for the content of this publication. The views expressed in
this paper are purely those of the author and may not in any circumstances be
regarded as reflecting an official position of the BMU or GIZ.

Content

Figures.....	4
Abbreviations.....	5
Summary.....	6
1. Definition.....	8
1.1 Different perspectives.....	9
1.1.1 Many definitions.....	9
1.1.2 Types of change.....	9
1.1.3 Which transformations on what levels?.....	10
1.1.4 Scaling and timeframe: Diffusion of disruptive innovations.....	13
1.1.5 Complexity.....	14
1.1.6 Normative dimension, social change and justice.....	15
1.2 Proposed definition.....	18
2. Existing approaches to international cooperation.....	20
2.1 Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), International Climate Initiative (IKI).....	21
2.1.1 Definition.....	21
2.1.2 Criteria/indicators.....	21
2.1.3 Practice.....	23
2.2 NAMA Facility.....	23
2.2.1 Definition.....	23
2.2.2 Criteria/indicators.....	24
2.2.3 Practice.....	25
2.3 Green Climate Fund (GCF).....	25
2.3.1 Definition.....	25
2.3.2 Criteria/indicators.....	25
2.3.3 Practice.....	27
2.4 Climate Investment Funds (CIF).....	28
2.4.1 Definition.....	28
2.4.2 Criteria/indicators.....	29
2.4.3 Practice.....	29
2.5 Global Environment Facility (GEF).....	30
2.5.1 Definition.....	30
2.5.2 Criteria/indicators.....	30
2.5.3 Practice.....	31

3. Synthesis: Transformative quality, portfolios, processes and indicators	32
3.1 Quality criteria	33
3.2 Transformative project types and portfolio development	37
3.3 Process orientation and outcome orientation	40
3.4 Indicators	43

Figures

Figure 1: Types of change, using energy, waste and transport as examples	10
Figure 2: Interaction of different types of transformation on different levels	11
Figure 3: Dimensions or social spheres of transformations	12
Figure 4: The course of transformations over time	13
Figure 5: Coordinates of social change in transformations	16
Figure 6: Increasing complexity and its consequences for process design	17
Figure 7: The impact-complexity trap	41
Figure 8: Escape from the impact-complexity trap	42



Abbreviations

BMU	.....	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
CIF	.....	Climate Investment Funds
CSIRO	.....	Commonwealth Scientific and Industrial Research Organisation
GCF	.....	Green Climate Fund
GEF	.....	Global Environment Facility
GHG	.....	Greenhouse gas
GIZ	.....	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
IKI	.....	International Climate Initiative
IPCC	.....	Intergovernmental Panel on Climate Change
NSP	.....	NAMA Support Project
NDC	.....	Nationally Determined Contribution
ODA	.....	Official Development Assistance
SDG	.....	Sustainable Development Goal
UNEP	.....	United Nations Environment Programme
UNFCCC	.....	United Nations Framework Convention on Climate Change
WBGU	.....	German Advisory Council on Global Change



Summary

There are many definitions of the term ‘transformation’ or ‘transformational change’. The first section of the report develops a basic understanding of transformations or transitions (used synonymously) viewed from various perspectives. In this, transformations are defined as processes that use disruptive innovations to change systems into fundamentally new systems that subsequently form the new mainstream.

Transformations differ from incremental changes to and reforms of existing systems in that they fundamentally question systems and remodel them. This also includes new narratives and paradigms according to which the system functions and defines meaning. Transformations are only fully achieved when the new system and its disruptive innovations have been scaled up to become the mainstream or become the dominant system and are sufficiently resilient to maintain that position (for the time being).

One dilemma for environmental policy is that relevant transformations take place in different social spheres, such as social norms, politics, business and technology, or different sectors, such as energy, transport, agriculture and food, which are the responsibility of other ministries. This is nothing new for a ‘traditional mainstreaming issue’, although here it is not only a matter of regulating other sectors but of reshaping them from the ground up. The sectors or subsystems can define small transformations (new technology, norm...) and medium transformations (such as the energy transition) for themselves, but they also interact with higher system levels and in some cases explicitly complement each other to form large transformations. Higher levels include a climate-neutral society (‘large transformation’), enabled for instance by energy transitions, mobility transformations or agricultural transformations, or at a similar level an economy for the common good. And finally, ‘great transformations’ such as industrialisation and digitalisation change almost every area of life and a society in its entirety. At the higher levels, too, there are dependencies between the economic paradigm and the success of a climate-neutral society, for example. The theory behind the various transformation agendas is that the desired extent of change (such as the 1.5 degree target) cannot be achieved with the existing systems because they are themselves the cause of the problems. The tight timeframe and the great urgency of the need to develop climate-neutral and climate-resilient societies, especially, are plain to see. It is probably not enough, therefore, to support as

many measures as possible to reduce GHG emissions and regulate the sectors accordingly. New (transformative) cross-sectoral processes and ‘intervention portfolios’ are called for, to enable joint influencing of ‘fields of transformation’ in the most ambitious way possible.

Section two describes existing approaches to environmental and climate finance in international cooperation and discusses them in light of the proposed definition. All of the approaches have the potential to be further refined and in that process often to increase the precision of what is understood by each type of transformation. The definitions already state which criteria and indicators are referred to and how relevant they are. There is wide diversity in the type of criteria and indicators used by the various organisations, and how they are classified, but certain common features can be identified and with the aid of the literature on transformations they can be combined to form a comprehensive framework.

With this in mind, the derivation of quality criteria for transformative interventions is explained in section 3.1. The three ‘mandatory’ criteria include 1), as a measure of (transformative) relevance, the question whether the aim is in fact system transformation at all, over and above incremental changes and reforms. The ambition of interventions and project portfolios is also measured by the 2) vertical and horizontal scaling of the disruptive innovation across all levels and spheres of society, up to it becoming mainstream and the dominant paradigm. Without this, the transformation idea would remain in a niche and would not replace, or only partly replace, the prevailing system. In addition 3), the sustainability of the new system over time, closely tying in with the declining resilience of the old system and increasing resilience of the new one, are among the narrower criteria and are a measure of ambition. Without this, there is a danger the new system will return to a niche status. Path dependencies of the old and new system are also included here. A range of ‘essential’ criteria and abilities are then defined which appear to be particularly important for helping develop transformations and if possible accelerate them. These are complexAbility, capacity to facilitate, multi-dimensionAbility (interface between science, society and politics), social-changeAbility, reciprocity and social justice.

The criteria indicate that transformations of medium size or above (energy transition, mobility transformation, agricultural transformation) cannot be mastered by indi-

vidual interventions, projects or programmes. Depending on what ambition is being pursued and what phase the transformation has already reached, major efforts or large project portfolios are required to bring disruptive innovations (further) into the desired mainstream. For development interventions there is the additional major challenge of mediating between global and/or bilateral agendas and the partners' respective national agendas. Transformational change at one and the same time calls for big decisions and innumerable projects in a particular field of transformation; the projects cannot be planned on the drawing board but still should be coordinated with each other. Section 3.2 offers guidance on this.

The magnitude of the questions and multiplicity of interventions generate enormous complexity. Low levels of predictability and controllability, and correspondingly high demands in terms of 'facilitation abilities', flexibility and process design, suggest that the quality of (at least) transformative projects should be judged much more according to their apparent ability to shape and facilitate transformative processes (process orientation). Since the usual promises to produce results (outcome orientation) are subject to extreme uncertainties in this context, an assessment of the quality of projects on the basis of results hypotheses and 'smart' indicators offers little meaningful information. Ironically, the complex nature of transformative interventions has the effect that those that promise a 'good process' and are able to operate flexibly will probably achieve better outcomes than those that focus mainly on prescriptive outcomes. Section 3.3

therefore argues in favour of focusing more closely on the 'process promise' and employing a more iterative and more adaptable commissioning procedure.

Finally, section 3.4 introduces two types of indicators under the various criteria: design indicators, which measure the quality of interventions that are aimed at influencing transformations (process orientation), and outcome indicators, which measure the process and/or progress of a transformation itself. Design indicators show how well and how comprehensively interventions take account of the various transformation criteria and enable an ex-ante assessment to be made of the prospects of success.

At the end of the section, generic and sector-specific examples are presented for both types of indicator. One generic design indicator for scaling, for example, is the 'scope' or system level that is expected to be addressed, from the small transformation to the great transformation. One outcome indicator for a climate-neutral society, for example, is the degree of decarbonisation, measured in terms of the volume of GHG emissions per unit in energy production or the production and use of goods and services. The extent of integration of renewables into the system is an outcome indicator for both energy transitions and mobility transformations. The examples of indicators included here are complemented by a more exhaustive list in an Excel tool in the annex, which can be used for project and portfolio design.





1. Definition

1.1 Different perspectives

The perspectives of transformation outlined in the following are based on an earlier analysis of the relevant literature, set out in GIZ (2020¹). To improve clarity for the reader, this report does not present full citations

in all instances, instead referring to only additional or particularly illuminating sources. The GIZ publication mentioned above may therefore serve to complement this report, adding greater depth.

1.1.1 Many definitions

There are many definitions of the term ‘transformation’ or ‘transformative change’. ‘Transition’ is also increasingly used synonymously in this context². For an overview, refer to UBA (2017, p. 53), Feola (2015³) or Linnér and Wibeck (2019⁴)⁵.

A commonality of most of the definitions is that transformation describes fundamental system transformation. The question of what kind of change would be sufficiently fundamental, or how far the change should go, is interpreted in various ways, as is the matter of whether it is enough to scale up any (social, legal, technical etc.)

innovations to become mainstream. It is not the case, however, that every innovation necessarily contributes to the transformation of a system. On the contrary, one can also conceive of innovations that in fact strengthen a system, such as new technology that improves energy efficiency in coal-fired power plants. In terms of energy supply it would be an investment that is liable to reinforce path dependencies on fossil fuels. In terms of the transformation to a climate-neutral society it would be an incremental improvement that may, or may not, appear expedient as a quicker solution within the context of a larger transformative plan.

1.1.2 Types of change

It therefore make sense to distinguish between different types of change. The term transformation can be differentiated from less radical or disruptive forms of change, such as incremental change (more of the same) or reform (adaptation of a system). Whereas the latter two terms

do not represent a fundamental challenge to the system itself, transformative change leads to a new system, paradigm, identity, narrative, socio-technological regime etc. (see Figure 1).

¹ GIZ, 2020, Transforming our Work: Getting Ready for Transformational Projects

² (See also UBA 2017 Box 5 on overlaps and distinctions between transformation and transition, p. 46).

³ Feola, Giuseppe. 2015. “Societal Transformation in Response to Global Environmental Change: A Review of Emerging Concepts.” *Ambio* 44(5): 376–90.

⁴ Linnér, Björn-Ola, and Victoria Wibeck. 2019. *Sustainability Transformations: Agents and Drivers across Societies*. Cambridge University Press.

⁵ See also UBA 2017 Box 4 on refining the concept of transformation, p. 45.

Figure 1: Types of change, using energy, waste and transport as examples

	Types of Change		
Examples	Incremental	Reform	Transformation
Energy	Increasing energy efficiency (lower carbon regime)	Promoting renewable energies (lower carbon regime)	Abandoning fossil energy, using 100% renewables (carbon neutral regime)
Waste	Less waste (waste regime)	Waste re(down)cycling (waste regime)	Circular economy/cradle to cradle (no waste regime)
Transport	E.g. more energy and resource efficient cars with less emissions (recent transport regime)	E.g. reforming speed limit, fuel tax, tolls... (recent transport regime)	Restructuring traffic towards carbon neutrality, circular economy, multiple shared modes of transport... (new transport regime)

The term ‘transformation’ is rather over-used at present, being attached as a label to almost any intervention, not least in the environment and climate sector. However, using it in this general way turns it into a synonym for development, or indeed all types of change. This may even be detrimental to the debate and to project practice if, for example, incremental changes are interpreted as being ‘transformative’ and (desired) fundamental changes are impeded or delayed as a result.

The definition of the term is important because it is assumed “that the far-reaching and intertwined social, ecological and economic trends and crises of the present day (climate change, resource consumption, biodiversity loss, social injustice) are a manifestation of failure of the

economic, societal and state system. The question here is whether traditional problem-solving logic in industrial and growth-driven society (...) is able to provide adequate answers to this.” (UBA 2019, p. 33).

Despite this, or perhaps precisely because of it, it is not necessarily the case that all interventions or projects have to be transformative, even in the sense of the distinction outlined above. Climate change, resource consumption and biodiversity loss do suggest, however, that projects at least do not hinder the anticipated transformations. It remains a normative decision, also on the part of the BMU, as to which transformations are pursued on what levels (see next sections), and with what degree of vigour.

1.1.3 Which transformations on what levels?

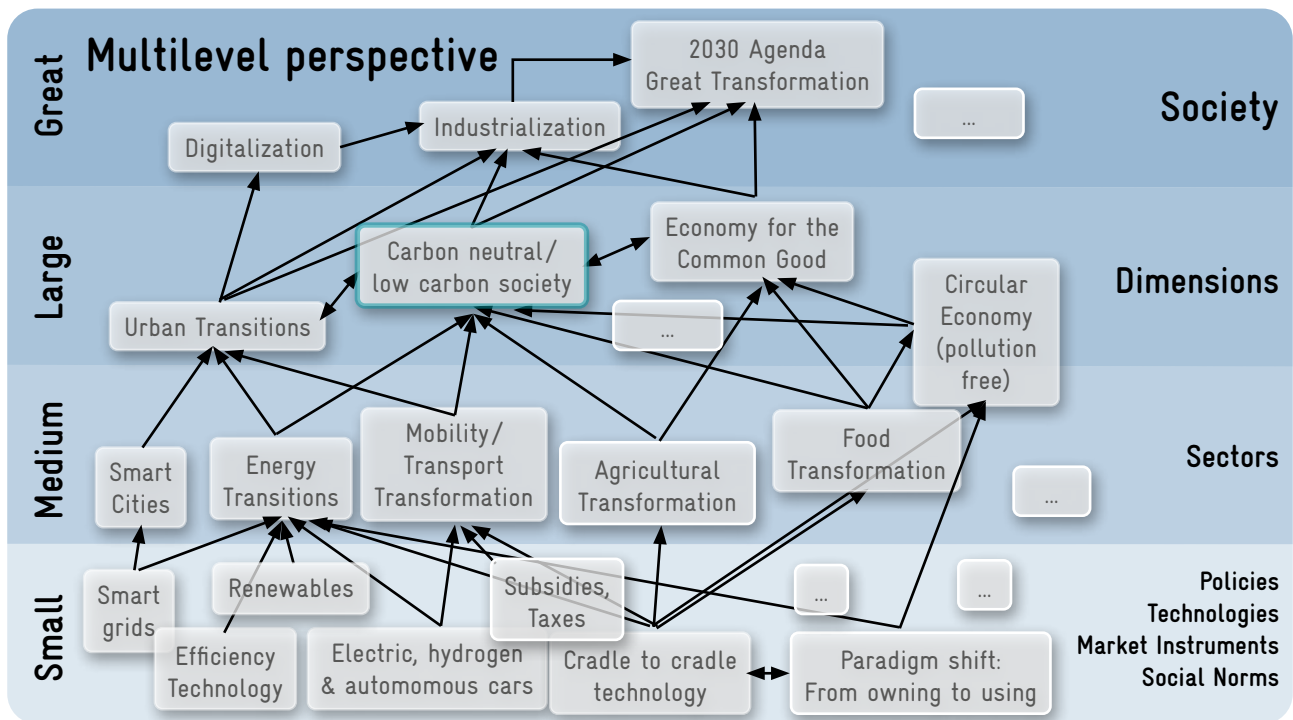
Global development agendas link the term with the guiding principle of sustainable development, in other words transformations for the benefit of sustainable development. Transformative change is called for when existing systems, paradigms, socio-technological regimes etc. appear fundamentally incapable of enabling sustainable development or are the cause of the problems.

Many of the anticipated transformations are motivated by environmental and climate issues, although they also always encompass social and economic matters, as expressed, for example, by the term ‘socio-ecological transformation’.

In the context of the IKI, the focus is on the transformation from carbon-based, greenhouse gas-positive

societies to low-carbon (or carbon-free or post-fossil?) climate-neutral societies. **The EU is among those committed to this goal**, with a timeframe of achieving it by 2050, and based on the IPCC’s assumption that climate neutrality at global level can limit the global rise in temperature to 1.5 degrees by then. Strictly speaking, the shift from ‘greenhouse gas positive’ to ‘climate-neutral’ is better described as a transformation because ‘carbon-based’ to ‘low-carbon’ literally constitutes an incremental change (less of the same). ‘Low-carbon’ can also be used for political reasons as a frame in order to avoid fundamental system transformations. It would be different, for example, if there were consistent talk of carbon-free or post-fossil societies or of decarbonisation in the direction of 100% renewable energy sources.

Figure 2: Interaction of different types of transformation on different levels



On the other hand, a range of more sectoral transformations are anticipated as the prerequisite for transformation to a climate-neutral society (see Figure 2).

These include energy transitions, mobility transformations, agriculture transformations and food transformations, or areas such as infrastructure, raw materials and other resource- and climate-intensive goods and services (see Schneidewind, 2018⁶; *The World in 2050*, 2018⁷). However, at similar system levels of major transformations of entire sectors of society, too ('Large' and 'Dimensions' in Figure 2), there are anticipated and existing transformations that at least correlate with a climate-neutral society, and in some cases are also seen as a prerequisite for one. These include a waste-free circular economy, based on the cradle-to-cradle principle, urban change (urban transition and smart cities) or the economy for the common good⁸. Some actors see a paradigm shift in the economic model in favour of an economy for the common good, with all its consequences, as a 'deeper' prerequisite for other transformations ('deep system' change). Ultimately the design of great transformations that change 'everything', such as existing industrialisation processes in some countries and digitalisation, have a

major influence on whether and how climate-neutral societies will be made possible.

The perception of what is, or is not, a transformation may depend on the ambition or system level in each case. For instance, the conversion of primary energy production to renewables is not in itself an energy transition, an energy transition in itself is not necessarily a climate-neutral society, and a climate-neutral society is not in itself the great transformation in the sense of the 2030 Agenda⁹. Similarly, under the new **EU Circular Economy Action Plan**, products must come with a "right to repair". In various areas this can be described as a paradigm shift vis-à-vis the status quo, for example with regard to the legal norm, consumer behaviour (inasmuch as it changes as a result) and the design of products in a way that always ensures they can be dismantled. At the higher level of a circular economy in the narrower sense, however, the material cycles are not necessarily closed because the change merely extends the lifespans of the products. The 'waste regime' therefore remains in place, and there is no transformation at that level. That said, it can be hoped that, at the end of the extended lifespan, there will be better opportunities for recycling the

⁶ Schneidewind, Uwe. 2018. Die Große Transformation. Eine Einführung in Die Kunst Gesellschaftlichen Wandels. 1st ed. S. Fischer Verlag.

⁷ TWI2050 – The World in 2050 (2018). Transformations to Achieve the Sustainable Development Goals. Report prepared by The World in 2050 initiative. International Institute for Applied Systems Analysis (IIASA). Laxenburg, Austria. www.twi2050.org

⁸ See (for example) www.ecogood.org

⁹ Exactly what the transformation(s) may comprise has not been definitively elucidated. Examples include sectoral transformations and/or a great transformation to 'no poverty' and a 'sustainable environment' or from 'not sustainable' to 'sustainable', etc.

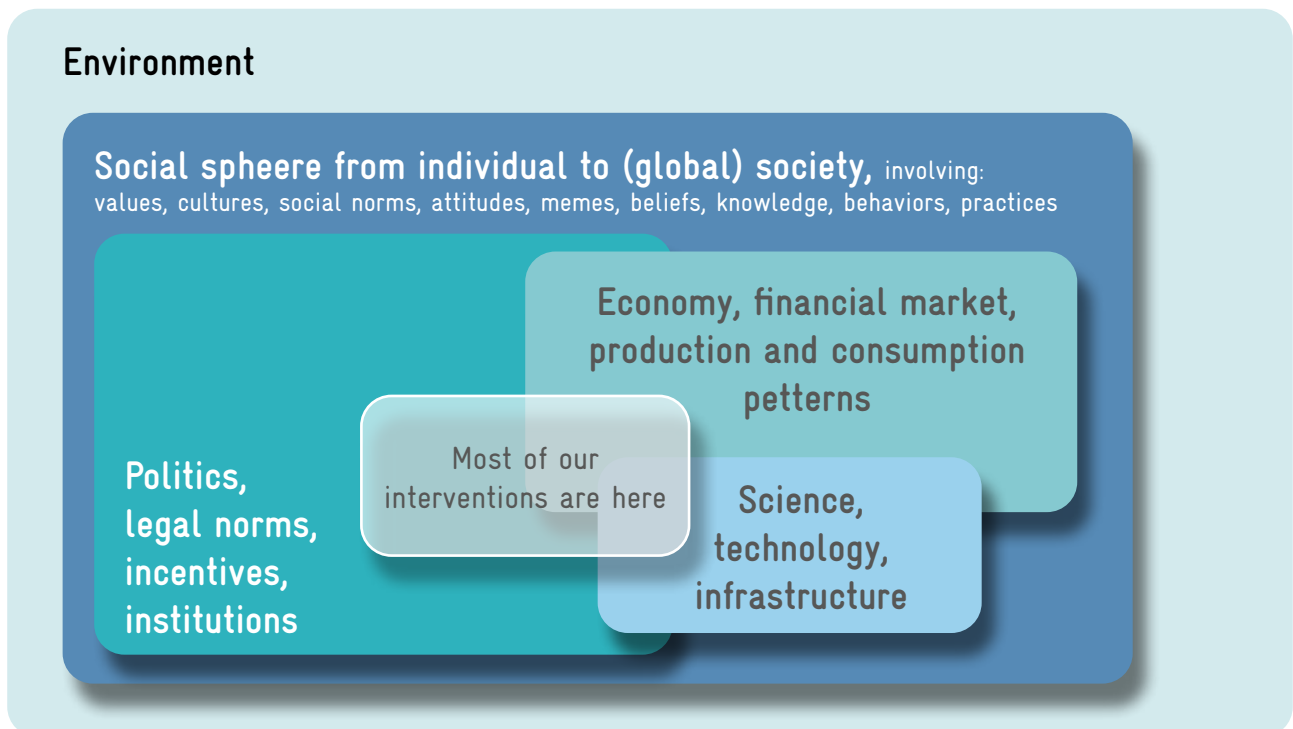
materials, which then become easier to access. From the standpoint of the higher level, the step currently being taken can thus be seen as a reform in the direction of, or at least not contrary to, a future transformation towards closed material cycles.

The transformation to climate-neutral societies is caught in the dilemma that at this high system level it is difficult to identify, recognise or implement fundamental system transformations. Much depends on other subsystems such as energy, transport, agriculture, economic methods etc. As a result, the narrow perception often arises that all types of GHG reduction measures contribute to this transformation, on the assumption that sufficient savings will be made overall. In the worst case, though, saving measures may even run contrary to transformations, as suggested above in the context of energy efficiency scenarios. There is widespread doubt that the climate targets can be met without fundamental system transformation. As part of the discourse, therefore, and in the case of specific interventions, it is helpful to establish as accurate a position as possible on the ‘transformations map’ (see Figure 2) and to explain which higher levels are being aimed for.

The transformation debate also illustrates (perhaps especially so) that the underlying challenges can only be resolved through interaction between the various ministries or between sectors and social spheres. In most cases multiple sectors, multiple system levels and all social spheres are involved (see Figure 3).

Definitions of transformation usually quote the ‘dimensions’ indicated in Figure 3 (based on the concept of sustainable development) or social spheres, including their subsystems. In the case of existing ‘great transformations’, at least, such as industrialisation, all dimensions are affected. In the case of transformations that we deliberately aim to bring about and/or design, it (almost) follows by implication that if possible all dimensions (insofar as they are relevant) should be addressed. A climate-neutral society, for example, is reliant on technology and infrastructure for renewable energy sources, economic and political norms and incentive mechanisms for scaling these innovations, as well as on social prerequisites and the willingness to make use of these on a sustainable basis.

Figure 3: Dimensions or social spheres of transformations



Own graphic

1.1.4 Scaling and timeframe: Diffusion of disruptive innovations

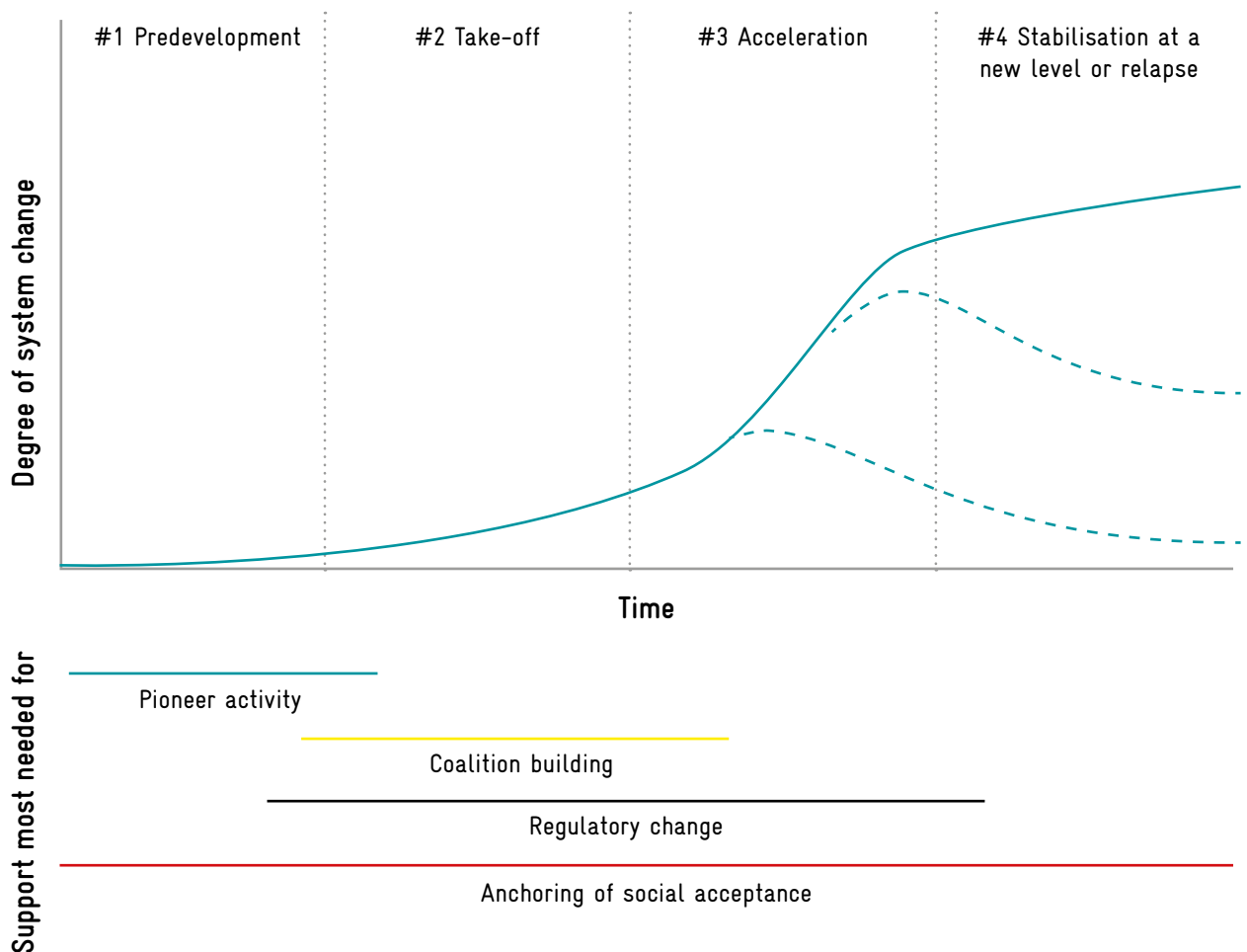
The previous sections deal primarily with the quality of transformations. Without (quantitative) scaling of transformative, disruptive innovations to become mainstream, there could likewise be no talk of fundamental system transformation or paradigm shift etc. (Figure 4).

Besides, new systems – especially at the outset – generally have little resilience and are thus more susceptible to being ousted by the old system or a different system. Efforts should therefore also be made to ensure that a transformative innovation can maintain its position in the mainstream over time. Above all, this means that the resilience of the old system, which initially exists in

parallel, is weakened and the new system is strengthened. In the various dimensions these may be different mechanisms that are interlinked with each other. Examples include subsidies and taxes in the political and economic dimension, new technological and infrastructural path dependencies and the active shaping of a change in values in favour of a new paradigm.

Different social levels may be in different phases of transformation at any one time (Figure 4). This may also contribute to a lack of resilience, as in the case of Germany's energy transition, for instance. Many technologies are actually in the acceleration phase, and the political level

Figure 4: The course of transformations over time¹⁰



From Mersmann, Olsen, Wehnert, & Boodoo, 2014, own illustration

¹⁰ Chart by DIAMOND media, from: Mersmann, Florian, Karen Holm Olsen, Timon Wehnert, and Zyaad Boodoo. 2014. *From Theory to Practice: Understanding Transformational Change in NAMAs*.

hovers roughly between take-off and acceleration, with stagnation or regression in some areas (see also debates surrounding coal imports and wind power), while social acceptance varies widely or is polarised (see debates relating to routing of power lines, wind power, heating technologies, transport and mobility, Fridays for Future etc.).

Transformative interventions should therefore be positioned as accurately as possible in their area of action (activities, outputs), results area (outcomes, impacts) and target level (ultimate objective, impacts). This system of coordinates consists of

- # **The scope or system level:** single technology, social norm etc. across whole sectors, social spheres up to and including global society (Figure 2). This also includes the relevant dimensions and social spheres: environment, the social dimension, politics, business, science, technology and infrastructure (Figure 3).

1.1.5 Complexity

The curve in Figure 4 represents an idealised case of the progression of the diffusion of innovations into society. It is not intended to disguise the fact that transformations generally proceed only *roughly* in that way and above all that as a rule it is very difficult to determine or influence when tipping points and acceleration in favour of the new system take place. In all observed cases of transformations the trend is non-linear; in fact it involves emergent, hard-to-predict, in some cases abrupt changes, culminating in tipping points (see Chernobyl, Fukushima, the phase-out of coal, Greta Thunberg etc.) that lead to a new system.

These characteristics describe complex systems, differentiating them from simple, complicated and chaotic systems. As transformations are processes that reach into the highest and most fundamental levels of society, the complexity is also huge.

‘Conventional’ steering and management approaches based on clear and differentiated rules, hierarchies and linear processes are suitable for simple or complicated questions. Transformations are extremely complex processes, with high uncertainties of knowledge and many diverse values, some of them conflicting (‘wicked problems’).

- # **Vertical scaling:** from transformative innovation in a niche to the mainstream, right up to global society (Figure 4). Here, in turn, there are three axes:

- **Transformation phase:** pre-development, take-off, acceleration, stabilisation (Figure 4)
- **Vertical social level:** individual, families/groups, organisations, social milieus, institutions/networks, society (Figure 5)
- **Vertical geographical levels:** local/neighbourhood, municipality, region, country, region of several countries, continent, global

Positioning within this system of coordinates also defines the ambition of the intervention and/or can help to combine different interventions in a transformative programme, cluster, portfolio etc. in a useful and meaningful way.

New structures, methods and processes that are better able to take account of a high degree of complexity are appearing only slowly in and between many organisations. This is why there are still widely differing views on the extent to which transformations can be controlled or steered. These views range from the (rather rare) idea that such processes can be largely controlled to the assumption that transformations can only ever be identified retrospectively and it is only possible to assess the transformative potential of interventions¹¹. We shall return to this point in section 3, Synthesis: Transformative quality, portfolios, processes and indicators, in the form of suggestions for project design.



¹¹ E.g. in UBA, 2019, *Kriterien zur Bewertung des Transformationspotentials von Nachhaltigkeitsinitiativen*, p. 33.

1.1.6 Normative dimension, social change and justice

Transformations are the most radical form of change, and consequently also generate the greatest upheaval and resistance. Although the term does not imply any value judgement in itself, designing unavoidable transformations and the decision in favour of anticipated transformations is highly normatively charged.

Despite the fact that the ‘burden of proof’ that climate change is real is overwhelming and the pressure to act is enormous, for various reasons evidence is not enough to legitimise transformations and shape them successfully. Increasingly, for example, public debate in Germany includes talk of an ‘eco-dictatorship’. In the face of complex problems, merely referring to facts when it comes to formulating policies tends to provoke further polarisation and weakens the social resilience of evolving systems, paradigms or narratives.

Science attempts to get closer to an objective description and explanation of systems, for example, as far as it can. In contrast, politics has the aim of negotiating majorities for social values (what is important?), norms (what is normal?) and development paths that intersubjectively appear correct. Entirely different worlds thus collide with each other at the interfaces between science and politics. The credibility of experts and of knowledge is liable to suffer if they are perceived to be interfering too deeply in concrete policy proposals. The ‘aura’ of objectivity disappears (especially in a post-factual, politicised environment) and scientists or experts tend to be seen as one interest group among many. At the same time there is a negative impact on perceptions of the relevance and legitimacy of predominantly ‘fact-driven’ processes, which

appear to be guided less by democratic principles and the diversity of values. There are even numerous examples of how – where interests differ widely – an increase in facts can itself increase the uncertainty of knowledge, depending on who produces (further) studies, on whose behalf¹².

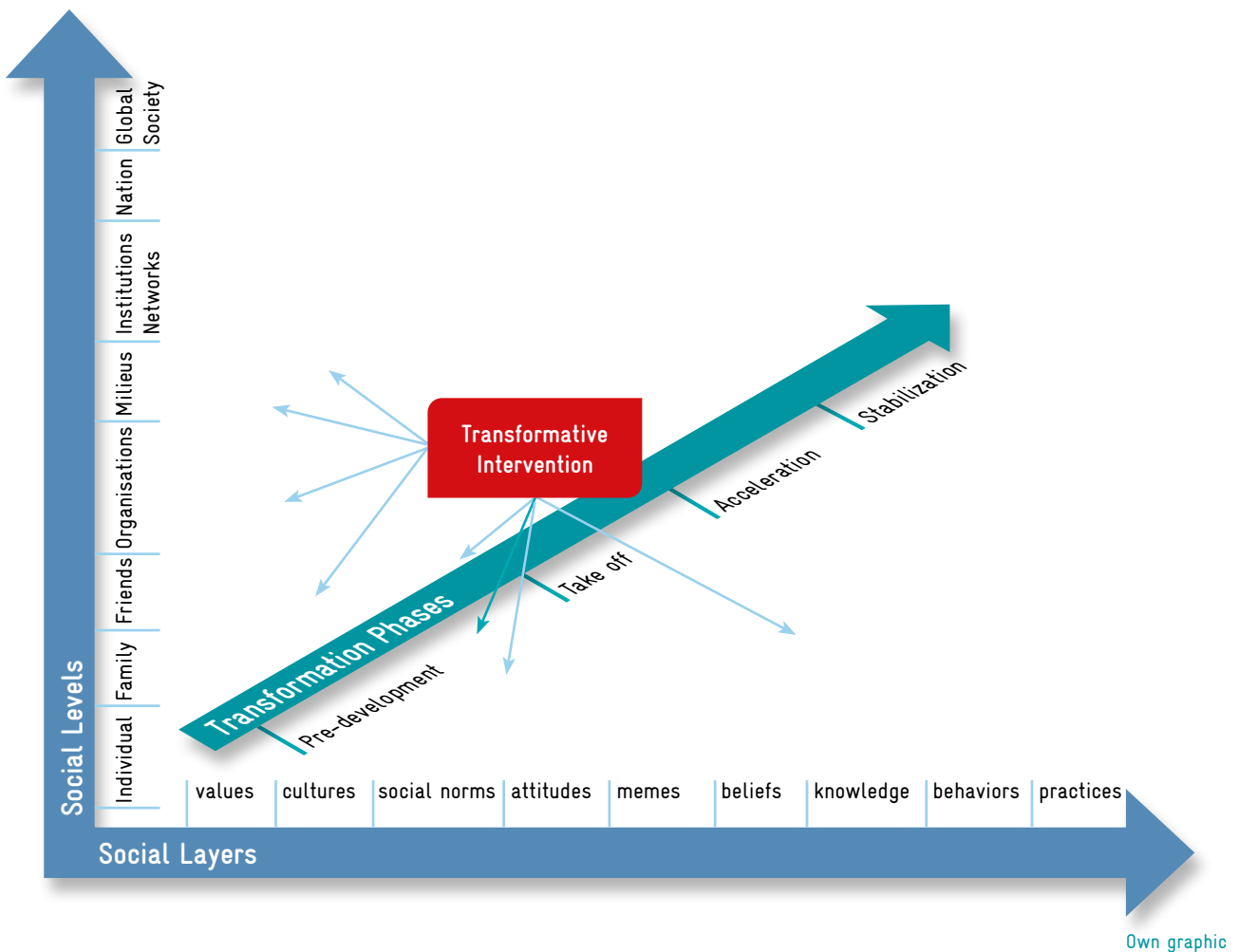
Acceptance is more likely to be engendered through political negotiation, deliberation, coproduction of knowledge and social change, and in democracies at least it is essential to win the approval of majorities for transformative change. There is some evidence to indicate that ultimately more resilient systems are produced in this way than by adopting authoritarian approaches, let alone autocratic ones. The imposition of environmental taxes, for example, can quickly implode, as the experience with the gilets jaunes in France or the protests in Ecuador suggests. On the other hand, under the right conditions social change can take place comparatively quickly and sustainably. Smoking, for instance, changed from being the social norm to the exception in Germany within a relatively short space of time. Something similar happened regarding the avoidance of CFCs in hair sprays once the debate had reached the heart of society. Behaviour in relation to climate action may be significantly more complex, but much would be achieved if even the first signs of momentum similar to that seen in the above examples could be generated.

As an initial guide, and to facilitate further coordination, transformative interventions can be positioned within the system of coordinates of social change (Figure 5) as a function of the general phases of transformations.



¹² See Sarewitz, Daniel. 2004. “How Science Makes Environmental Controversies Worse.” *Environmental Science & Policy* 7(5): 385–403.

Figure 5: Coordinates of social change in transformations



The effort and resources required to do so are regularly underestimated and positioning in this way can facilitate a realistic assessment of needs and possibilities. However, this presupposes professional expertise in the field of social change and accompanying support from formative surveys on the desired results and the relevant target groups. If there are high ambitions regarding social change at multiple levels of the system of coordinates, various interventions may complement each other accordingly. Unfortunately (or luckily) there will never be just one campaign, knowledge platform or training course.

Increasingly there are also doubts as to whether the pedagogical paradigm ‘from knowledge to action’ (or ‘knowledge transfer’) works *at all* for these kinds of problems, for epistemological and psychosocial reasons. In some disciplines and fields of practice¹³ there is even

an emerging assumption that in reality this paradigm tends actually to work the other way round, i.e. **from action to knowledge**¹⁴. According to this, through trial and error, deliberative processes and loops, individuals and groups act their way into new ways of thinking. Findings from the social sciences suggest that, to pave the way for behavioural changes, various structural conditions and social resources also have to be in place, and that affective (rather than cognitive, knowledge-based) approaches are more likely to gain traction among reluctant target groups. These conditions can also be actively shaped through (behavioural) policy, provided that they are also part of the democratic negotiation processes and are capable of commanding a majority. Examples such as smoking and CFCs remind us of the central role of political and legal norms, without which communication and behavioural approaches tend to come to nothing.

¹³ Participation research, innovation research, science, technology and society studies, positive deviance, transdisciplinary research, coproduction of knowledge etc.

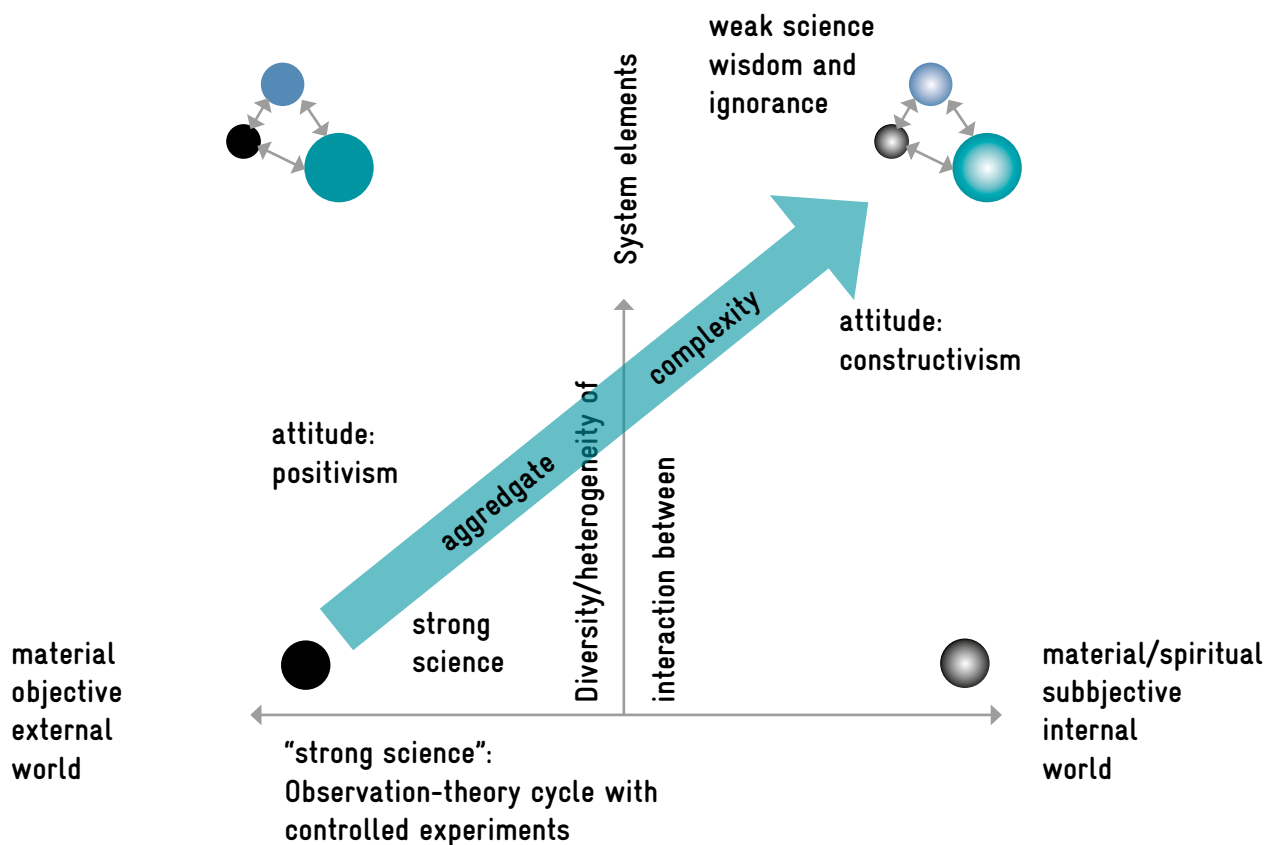
¹⁴ WBGU, 2011, *World in Transition-A Social Contract for Sustainability [Welt im Wandel – Gesellschaftsvertrag für eine große Transformation]*, section 6.1

Another reason behind the limited impact of facts may be that in most cases what is meant by facts is **hard facts** in the scientific sense. By their very nature these have to be generalisable and thus have great advantages, but also the major disadvantage that in connection with complex problems they do not work well in specific contexts without further input. To be more precise, where issues and the insights from those issues are more complex there is frequently a problem with external validity. For example, in the course of more quantitatively oriented randomised controlled studies, analysts attempt to isolate dependent and independent variables in order to determine causalities more reliably. This mainly produces internal validity for this precise experimental setup. Without robust qualitative studies, such results often reveal little about their validity in the broader context and very little at all about other contexts. The hard facts within such narrow boundaries are easily interpreted as robust facts of universal scope (external validity). Among other things this may be down to the still widespread positivist (or reductionist) social conditioning that has been called into

question for many decades now by complexity research, sustainability science, some social sciences and increasingly by development practice. This conditioning is slowly being replaced or supplemented by what is a more constructivist world view. According to this, complex systems and behaviours cannot be reduced to their constituent parts (emergence), and facts, with their meaning, remain socially constructed and (inter)subjective. As the complexity of social processes increases, the reductionist approach of controlled experiments reaches its limits, to the extent that knowledge and meaning both have to be (re)constructed together time and again (see Figure 6). Solutions found in this way are at least better accepted by those involved, and as a rule they are also easier to implement because they have been complemented by other forms of knowledge (local, implicit, historical, cultural, traditional, regulatory knowledge etc.).

The deliberations set out above also tend to have a positive influence on the **issue of justice**. Here, at the latest, there is a dominance of various norms and values that

Figure 6: Increasing complexity and its consequences for process design¹⁵



... as an increase of interaction between system elements and an increase of the importance of subjective mental worlds (taken from de Vries and Petersen, 2009, own illustration). In a 'super complex' system, of uncounted interactions and uncounted subjective mental models the science and the evidence base gets weak and adaptive, co-creative management a way to navigate.

¹⁵ Chart by Diamond Media, from: de Vries, Bert J.M., and Arthur C. Petersen. 2009. "Conceptualizing Sustainable Development." *Ecological Economics* 68(4): 1006–19. <http://dx.doi.org/10.1016/j.ecolecon.2008.11.015>.

cannot be satisfied either with pure facts or, for example, with lump-sum financial packages. Under the banner of 'just transition' a struggle is taking place above all in the climate debate and the associated transformations as to how social justice can be improved and social upheavals mitigated.

Perceptions of what is understood by justice in this context diverge widely, further increasing the complexity of the problems. For one thing, various stakeholders and groups emphasise different objects and subjects of justice, such as different generations (intergenerational justice), different countries in terms of their development history (historical justice) and different social groups, sectors, levels, urban and rural population, milieus, groups of

workers etc. within a country (social justice). Added to this, the more or less conscious assumptions regarding what would be fair in each case, according to which principle of justice, are highly divergent. Examples of such principles may be a common social understanding (social contract), the benefit to society as a whole (utilitarianism), the performance principle (reflection of performance), egalitarian justice, according to which all people have similar needs and aspirations regardless of their performance, and numerous others. This diversity suggests that here, too, there are no simple, replicable solutions and that the success of transformative interventions in particular is more likely to be dependent on the quality of the processes than on prescriptive best practices, master plans, pledged results or the like.

1.2 Proposed definition

General:

Transformations/transitions (synonyms) use disruptive innovations to change systems into fundamentally new systems that are subsequently dominant and form the new mainstream. The new systems may consist of (some of the) original elements but have a new identity and perform different functions that are better suited to their environment and/or certain objectives.

Transformations differ from incremental changes to and reforms of existing systems in that they fundamentally question systems and remodel them. This also includes new narratives and paradigms according to which systems function and define meaning. The terms system transformation, paradigm shift or regime shift can be used synonymously, even if they each emphasise different aspects.

Disruptive innovations may arise in different social spheres, such as social norms, politics, business and technology, or different (sub)sectors, such as energy, transport, agriculture and food. The sectors or subsystems can define small transformations (new technology, norm...) and medium transformations (such as the energy transition) for themselves, but they also interact with higher system levels and in some cases explicitly complement each other to form large transformations. Higher levels include a climate-neutral society ('large transformation'), enabled for instance by energy transitions, mobility transformations or agricultural transformations, or at a similar level by an economy for the common good. And finally, 'great transformations' such as industrialisation and digitalisation change almost every area of life and a society in its entirety.

Transformations are only fully achieved when the new system and its disruptive innovations have been scaled up to become the mainstream or become the dominant system and are sufficiently resilient to maintain that position (for the time being).

BMU level:

At the level of the BMU all transformations are relevant that appear to be important above all or *at least in part* for environmental reasons. At a more abstract level it is possible to construe something like a social-ecological transformation, which redefines the interactions between humankind and nature, solves major environmental problems, stays within the planetary boundaries and at the same time advances social development. The aim is that paradigms should shift from high-consumption use of resources to circular economy, from polluting production and consumption to a pollution-free and zero-waste planet, and from the degradation of ecosystem services to the preservation of such services. For many landscapes and ecosystems (and for the planetary system, too) this also means a regime shift to more sustainable systems (for example from intensive to organic farming, from monoculture to near-natural forests etc.).

That said, intact ecosystems, biological diversity, sustainable resource use and a clean and climate-friendly planet are above all dependent on transformations in other sectors, ministries and social spheres, including energy transitions, mobility transformations, agricultural transformations, food transformations, consumption and production transformations, and at a higher level an economy for the common good.

IKI level:

At the level of the IKI, the focus is on the transformation from carbon-based, greenhouse gas-positive societies to low-carbon or carbon-free climate-neutral societies. The set timeframe for meeting this target is 2050, on the assumption that climate neutrality at global level can limit the global rise in temperature to 1.5 degrees by then.

This transformation can be seen as being part of the social-ecological transformation outlined above. Nevertheless, a climate-neutral society is almost equally dependent on other sectors and social spheres.





2. Existing approaches to international cooperation

Chapter 2 is based on a desktop analysis carried out in March 2020. It is a stock-taking of information available on the internet at that point in time. Some of the approaches have been further developed between the analysis and the

date of publication. Nonetheless, the chapter offers insight into the diversity of concepts and criteria, which have enriched the synthesis in chapter 3.

2.1 Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), International Climate Initiative (IKI)

2.1.1 Definition

The **BMU Integrated Environmental Programme 2030** advocates for a “transformation towards a social-ecological market economy and a sustainable society” (ibid, p. 5). On this general level it refers to the UNFCCC Paris Agreement and the UN 2030 Agenda.

2.1.2 Criteria/indicators

In the **IKI selection process from late 2019** the transformative nature of programmes is determined on the basis of four criteria:

1. “The programme achieves a substantial and measurable improvement compared to a business-as-usual scenario (programme **ambition**).
2. The programme brings about **system changes** and/or **behavioural changes** of decision-makers or a significant number of individuals or institutions.
3. The programme initiates steps towards **climate-friendly development** that are either irreversible or very difficult to reverse (creation of ‘positive path dependencies’, e.g. by building climate-friendly infrastructure at scale).

4. The programme **can be replicated** in other countries/regions and/or other sectors, enabling successful effects to be achieved beyond the framework of the programme.”¹⁶

In light of the – a priori – major questions of transformative change, the first criterion, **ambition**, can help to position an intervention in the system of coordinates of the levels and phases of transformation (see end of section 1.1.4). In the interests of effectiveness and efficiency the aim here should be to position an intervention as realistically as possible in the complex, hard-to-plan environment, depending on the intervention’s resources (financial, time, human, expert/design capacities, influence/legitimation, etc.). If ambition were ranked first in the design of individual interventions/projects (as ambitious as possible), the programme would be in danger of becoming ineffective or failing due to its complexity. Great ambitions tend to arise from the variety and composition of the various interventions, from the evolving political discourse and/or unexpectedly through other emergent

¹⁶ Funding information, IKI Thematic Selection Procedure 2019 (2.0), 11 November 2019 ([Weblink](#))

developments, whether within or beyond the scope of the intervention. The first criterion could therefore be further developed for the sake of positioning in the above-mentioned system of coordinates and explaining the intention behind ‘ambition’ (see section 3.2).

The second criterion, **system changes** and/or behavioural changes, essentially tallies with the suggestions regarding system transformation in sections 1.2 (Definition) and 3.1 (Quality criteria). It is notable here that the term ‘system change’ can also be interpreted as ‘reform’, and if interpreted in this way would not necessarily be defined as a transformation – always bearing in mind the fact that incremental changes and reforms are capable of *contributing* to transformations. That said, it does appear important to demand this terminological precision, not least in order to prevent interventions from consolidating existing systems rather than advancing desired transformations. System transformation, paradigm shift, regime shift etc. come somewhat closer to the idea of ‘transforming’ or ‘converting’ a system, and are thus supportive of the conclusion and challenge that some existing systems cannot enable the desired solutions.

The question may therefore be, for example, which system and/or paradigm should be transformed into what fundamentally different system (system transformation)? Conversely, this also means that not all projects necessarily have to be transformative, because there will always be worthwhile incremental change projects or reforms that do not ultimately lead to system transformation. Besides, there will still be many societies and governments that are very reluctant to tackle transformative change. From the standpoint of the transformation agenda, one possibility of designing worthwhile projects despite this is to ensure that they are at least not detrimental to potential future system transformations (for instance no investment in institutions, laws, training and qualifications, technologies or infrastructure that ultimately reinforce path dependencies on the carbon-based society).

The importance of **behavioural changes** and general social change in the direction of a new system, as addressed under this criterion, cannot be stressed too much, because all other dimensions and social levels are heavily dependent on this (see Figure 3). This is why social change in section 3.1 (Quality criteria) is a separate criterion that can also be interpreted as an essential part of system transformations. Of course, it may make a lot of sense for an intervention to focus on social change and specific behavioural changes among influential target groups (not only in the sense of having power), especially as the effort and resources required to do so are generally underestimated. Nonetheless, all transformative interventions under the criterion of system transformation should above all show what transformation they are contributing to, and at what level.

The third criterion, **climate-friendly development**, relates to the overarching transformation that is the aim in the context of the IKI, for example (see Figure 2). In this case there is the possibility of giving interventions a plausible assessment of their effectiveness in moving in the direction of that transformation. The current formulation could possibly also be interpreted along the lines that investment in energy-efficient technology and infrastructure is made in the field of energy generation from fossil sources, for example, potentially increasing path dependencies to the detriment of decarbonisation. The formulation of the desired transformation can be further developed in order to avoid misunderstandings. It could therefore be worded: from a carbon-based climate-positive society to a carbon-free climate-neutral society. The concept of path dependencies could then also be split as follows: weakening path dependencies of the old system and/or strengthening those of the new system.

The fourth criterion, **replicability**, can be interpreted as a form of scaling and can also be presented as an expression of ambition. Interventions can be positioned on the axes of vertical scaling, for example, in accordance with their ambitions (see also the suggestions in sections 3.1 and 3.2). The term ‘replicability’ appears to cover a general desire that the results of interventions should extend as far as possible beyond the projects’ narrower system boundaries or areas of action (possibly ‘depth’ in the context of the NAMA Facility). There are different potential starting points in this connection. For instance, as mentioned under ‘ambition’, the diversity and composition of the various interventions in the field of transformation/sector/cluster/global programme etc. determine the extent to which these are intertwined with each other, such that something like systemic results, cascade effects, catalytic effects and so on are obtained beyond the scope of the project and in the interests of overarching transformation. It is also feasible to try to bring about such effects with approaches such as communications strategies, co-creative/participatory encouragement of system-changing decisions, creation of institutions, change agents, ‘critical masses/majorities’ or cross-sectoral and transboundary path dependencies (e.g. cross-sectoral/regional investments, global trading conditions etc.). Adaptability makes it possible to pick up on emergent developments (such as Fridays for Future) and where applicable to reinforce them (such as Parents, Grandparents, Scientists for Future).

The idea could be worded thus: The programme has a systemic effect beyond the narrower system boundaries, areas of application and action (and in this case perhaps also the programme term) by – possibly in combination with other interventions – creating or reinforcing cascade effects or catalytic effects, which make (social, political, economic, technological...) tipping points in favour of the transformation more probable. There is a suggestion on catalytic effects, too, in sections 3.1 and 3.2.

Taken literally, replicability is also viewed critically when applied to contexts such as these (e.g. transformation), for instance in complexity research, sustainability research, science, technology and society studies and in transdisciplinary research. In fact replicability in a narrow sense is actually contradictory to the behaviours of complex systems, which cannot be reduced to their component parts and put back together or repeated elsewhere (see sections 1.1.5, 3.1). What may be repeated to some degree are the fundamental approach and procedure of interventions. This is why section 3.3 argues in favour of greater process orientation, under which the quality of

projects is primarily assessed according to their ‘process promise’ and less according to their ‘results promise’. In the end, procedures cannot be replicated 1:1 in different contexts if they are expected to be successful. One of the expectations of successful interventions in complex systems is precisely the fact that they remain open and adaptable. However, as in this report, it is possible to identify and further refine certain principles, capabilities (such as adaptability) and methodologies that appear promising and act as a compass so that interventions do not always have to reinvent *everything*.

2.1.3 Practice

As in other organisations, in the IKI the deliberate design of transformative projects in a narrower sense is under development. The aspiration to advance transformations at the medium and higher levels is ambitious and there are already a considerable number of projects moving in that direction.

These might include such IKI projects as:

- # Green Economy Transformation in Cooperation with the Partnership for Action on Green Economy (PAGE)
- # Support of Transformative Strategies for Renewable Energy for Climate Protection in Developing Countries
- # Support of Green Economy in Kazakhstan and Central Asia for Low-carbon Economic Development
- # Enabling an Energy Transition in Southeast Asia (SEA)

- # Supporting the Climate Neutrality Strategy in Costa Rica as a Model for Low-Carbon Development (Phase II)
- # Climate Smart Cities
- # Climate-Neutral Alternative Fuels
- # Water and Wastewater Companies for Climate Mitigation (WaCCliM)

Opportunities for further evolution of these practical applications arise in various fields, such as design principles in project development, process design, resources and methods for implementation, and systemic conditions such as the (transformative) commissioning procedure (see e.g. section 3.3) or the design of the project landscape in collaboration with the partners.

2.2 NAMA Facility

2.2.1 Definition

The NAMA Facility uses the following definition: “Transformational change is a catalytic change in systems and behaviours resulting from disruptive climate actions that enable actors to shift to carbon-neutral pathways.” ([Weblink](#)).

Elsewhere a “low-carbon development path” is defined as a target or as “low-carbon and climate-resilient sustainable development” (e.g. NAMA Facility [Monitoring and Evaluation Framework](#)). There is, however, a significant focus on reducing GHGs in the interests of achieving the 1.5 or 2 degree targets.

2.2.2 Criteria/indicators

Project design is based on a series of criteria and/or elements that are considered conducive to transformative projects; they are evaluated in the course of project development, and in turn form part of the ambition assessment. The criteria and design elements include allocation to specific transformations by way of a ‘theory of change’, systemic financing of entire portfolios (departing from the project focus), flexibility of implementation etc. (Wuppertal Institut paper on design criteria).

The NAMA Facility **Monitoring und Evaluation Framework** (2018) defines indicators for transformational change and is seen as being a tool for carrying out a primarily qualitative assessment of the transformational potential of project outlines.

The indicators can be divided into those relating directly to the desired GHG reduction target at a higher system level and those relating to systemic aspects of that transformation:

“Impact Indicator 1: Increased country-level actions to implement successful low carbon projects that reduces emissions in line with a 1.5 – 2°C target

Impact Indicator 2: Number of countries with NAMA Support Projects (NSPs) that specify their nationally determined contribution (NDCs) with regard to mitigation in the supported sector or increase respective mitigation targets in the sector

Mandatory **Outcome Indicator 1:** Tonnes of CO₂e reduced or avoided in NSP project areas

Mandatory **Outcome Indicator 2:** Number of people directly benefitting from NAMA Support Projects (dis-aggregated by gender)

Mandatory **Outcome Indicator 3:** Degree to which supported projects are likely to catalyse impacts beyond NAMA Supported Projects (e.g., potential for scaling up, replication and transformation)” (ibid.)

The latter is broken down into three dimensions:

1. **Direction:** All supported changes must lead towards a low-carbon and climate-resilient development path.
2. **Process** relates to the way in which the targets are achieved, i.e. the methods and approaches used, taking account of criteria such as ethical standards, participatory discussion on conflicting objectives, transparency, and environmental and social standards.

3. **Depth:** Transformational change is far-reaching and structural or fundamental in nature. As a rule, such changes are at the outcome level, beyond the scope of an individual project. The NAMA Facility defines a range of such outcomes and assesses project proposals according to how many of the outcomes are supported. It thus assesses the potential of the project to catalyse system-changing impacts beyond its direct sphere of influence.

The outcome categories are as follows:

- a. Fundamental, system-changing **decisions** are taken in favour of a low-carbon society.
- b. **Path dependencies** that are detrimental to this objective are broken up, and conducive path dependencies are established.
- c. Replicable, scalable and/or long-lasting financial **instruments** are established.
- d. The objectives are integrated and mainstreamed into **educational institutions**.
- e. Approaches or instruments are **scaled up** or replicated.
- f. An **institution, organisation, committee** etc. that advances progress towards these objectives has been created or significantly strengthened.

‘Impact’ (3.3.) in the **6th Call for Projects** draws the following distinction: “Potential for transformational change (embeddedness, catalytic effect, replicability, scalability and sustainability)”.

Regarding impact indicator 1: Reduced emissions can be attributed to all types of change (incremental, reform, transformation). To raise the ambition at the higher level of a climate-neutral society, the indicator could be supplemented by the balance of emission sources versus sinks (= 0), for example. An option at medium level could be favouring emissions that have been avoided by transformations such as an energy transition, mobility transformation, agricultural transformation etc. or indicators for progress with those transformations. This could be one way of operationalising the assumption that a carbon-neutral society (and other sustainability goals) is difficult or even impossible to achieve without these sectoral transformations.

2.2.3 Practice

Ideally, according to the Monitoring and Evaluation Framework, a project should serve and monitor at least two of the above outcome categories (a-f). One example quoted for outcome category a. is a tax reform for vehicles that is based on actual GHG emissions rather than engine size, and at the same time introduces a labelling scheme for vehicular emissions. An example of category b. is a gradual shift in public expenditure on transport

towards non-motorised mobility and/or public transport. Progress towards these goals should then be measured on a 5-step scale (0 = transformation unlikely to 4 = clear proof of transformational change or transformation highly likely). Indicators used are progress made in the decision-making and/or legislative process (category a.), the allocation of funds in budgetary plans (category b.) and so on.

2.3 Green Climate Fund (GCF)

2.3.1 Definition

The GCF uses the terms ‘transformation’ and ‘paradigm shift’ largely synonymously. ‘Paradigm shift’ is used as the principal category in external communication and project documents, with additional mention of transformational change, solutions, investment, effects etc.

The aim is to “promote the paradigm shift towards low-emission and climate-resilient development pathways in the context of sustainable development”, Strategic Plan¹⁷, p. 12). In the **Funding Proposal** (p. 9, E.1.) interventions are differentiated according to whether they promote a paradigm shift towards low-emission pathways and/or climate-resilient development.

A paradigm shift towards a climate-resilient society may require more explanation, also because resilience is a property of complex systems, which is what transformations are always concerned with. This would be one interpretation that increasing climate resilience

makes a contribution to the paradigm shift towards a climate-neutral society by making its various transformed spheres (social, ecosystems, infrastructure, economy) more resilient. Adaptation to climate change can also be understood as a transformation in its own right, in which there is a fundamental rethink in the direction of greater resilience and, for example, paradigm shifts take place in areas, such as forest restructuring, climate-proof infrastructure etc. In how far the GCF sees a paradigm shift in climate resilience remains somewhat open, even though it supports projects in these fields.

Apart from the criteria below, to date the GCF seems to go without a general definition of transformational change or paradigm shift, as a GCF Learning Paper¹⁸ from 2018 also points out. In the latest **draft Strategic Plan** (p. 5) the GCF commits to further improving the monitoring of paradigm shifts, with a view to becoming a global pioneer in the understanding of transformational change.

2.3.2 Criteria/indicators

The potential for the above-mentioned paradigm shifts is one of the GCF’s main **financing criteria**. The relevant section of the **Funding Proposal** (p. 7, D.2.) further specifies that this means the degree to which the intervention can catalyse impacts beyond the scope of the

intervention itself or beyond a one-off investment. The equivalent to this in the NAMA Facility, for example, is Outcome Indicator 3, or below that the criterion ‘depth’. ‘Depth’ seems to be interpreted here as an overarching aspect, under which a further five criteria are named:

¹⁷ GCF/B.24/Inf.01: The Strategic Plan for the GCF: 2020–2023 ([Weblink](#))

¹⁸ Puri, J. (2018). Transformational Change – The Challenge of a Brave New World. Independent Evaluation Unit (IEU) Learning Paper, Green Climate Fund. Songdo, South Korea ([Weblink](#))

1. “Potential for scaling up and replication” (ibid.)
> Already discussed in the previous examples.
2. “Potential for knowledge sharing and learning” (ibid.)
> There may be options here to more closely link this criterion to transformative change.
3. “Contribution to the creation of an enabling environment” (ibid.)
> See above
4. “Contribution to the regulatory framework and policies” (ibid.)
> See above
5. “Overall contribution to climate-resilient development pathways consistent with relevant national climate change adaptation strategies and plans” (ibid.)
> This seems intended to re-emphasise the climate resilience target in the overarching definition, even as it stems from a different category.

The **draft Strategic Plan** goes further regarding the measurement of results, applying what is referred to as the Integrated Results and Resources Framework (p. 43 onwards). In this, the GCF uses qualitative and quantitative indicators at four results levels. The discussion in the following covers the version of the new strategic plan that includes some new proposed indicators.

Level 1 (GCF-level impact):

This has to do with the overarching level of the paradigm shift in the direction of low-emission pathways and climate-resilient development. As well as a quantitative assessment of emissions savings (see comments under NAMA Facility) and people reached, it will also aim to identify tipping points towards a system transformation in the respective countries, for instance on the basis of behaviour patterns.

The balance between emission sources and sinks (= 0) may further serve carbon neutrality here. The balance may be difficult to measure, but there seems to be little alternative in order to even come close to ‘managing’ this global target. In this case, too, a distinction between transformation on the one hand and incremental change and reform on the other may be one way of encouraging transformative ambition. The various indicators for GHG reductions and system transformation here may

be further correlated causally, and in fact the strategic plan suggests a new indicator on the “extent to which GCF investment has enabled transformational change in developing countries.” A challenge at this level certainly is the desire to measure transformation or paradigm shift with a few indicators or even one including its sub-items, climate neutrality and climate resilience.

Meaningful, purely quantitative indicators for climate resilience at society level remain a challenge. Quantitative proxies for a paradigm shift towards climate resilience could include the number of sectors, ministries, laws, financing mechanisms, insurance policies, social groups, individuals etc. that integrate adaptation to climate change into their texts and routines as a permanent feature. A (supplementary) qualitative survey or description can make the mainstreaming of climate resilience more tangible. For instance, it is possible to describe the extent to which climate resilience drives action in each of the above areas and/or represents a new paradigm in sectors, laws, insurance policies etc. BMZ/GIZ (2014¹⁹) proposes a set of 15 indicators to obtain more comprehensive coverage (ibid., p. 6 ff.). These indicators may each be referenced to the quality criteria in section 3.1 in order to establish the connection with transformations. In some cases there are already overlaps between the BMZ/GIZ approach (ibid.) and the criteria here. The same is true of the approach adopted by CSIRO/GEF/UNEP (2015²⁰), which pursues a similarly all-embracing aspiration.

Transformational change can also mainly be explicitly further advanced in the respective sectors (Level 2 below). All indicators for scaling, sustainability and resilience and social change would then be relevant to this and the quality criterion ‘system transformation’ would be an important prerequisite (sections 3.1, 3.2 and Excel tool in the annex).

Level 2 (results area outcomes):

At least one of eight result areas are expected to be addressed by projects. These are: 1) energy, 2) transport, 3) buildings, cities and industries, 4) forestry and land use, 5) the most vulnerable people, communities and regions, 6) health, well-being, food and water security, 7) built environment, infrastructure, 8) ecosystems and ecosystem services. It is recommended that SDG indicators be used if possible. The main units of measurement in this case again are the reduced emissions in these areas and the enhanced resilience in ‘number of people’ and other indicators.

¹⁹ BMZ/GIZ, 2014, *Assessing and Monitoring Climate Resilience*.

²⁰ O’Connell, D., Walker, B., Abel, N., Grigg, N. (2015) *The Resilience, Adaptation and Transformation Assessment Framework: from theory to application*. CSIRO, Australia.

Options for enhanced ambition could again include linking climate indicators to the transformations anticipated here, such as energy transition, mobility transformation, agricultural transformation etc., or to progress made with those transformations. Climate neutrality, linked to the sectors, can also be measured as the degree of decarbonisation here, in other words the volume of GHG emissions (i.e. strictly speaking not only carbon-based gases) per unit (e.g. in energy production, the production and use of goods, services...).

The resilience indicators are often by their very nature proxies that tend to measure the actual object indirectly, with a high level of uncertainty (see BMZ/GIZ 2014, see footnote).

Furthermore, there may be potential at this level to include transformation fields that appear to be essential to achieving the overarching objectives (see definition). These include the agricultural transformation and transformations of production and consumption patterns. In the final analysis these transformations, in contrast with climate neutrality, are defined by various parameters on result level and each require entire sets of indicators. Individual examples are included in section 3.4, and a more complete overview is provided in the annex in the form of the Excel tool. At first glance these might appear to be less relevant for developing countries and difficult to communicate. Looking at it more closely, exact replication of the same production and consumption patterns would probably have significant impacts on the global climate targets, with the same local upheavals for the environment, health and social resilience. In the field of global trade, in particular, the question arises as to how long such different standards and the externalisation of environmental and social costs can be maintained. In this respect there appears to be potential for further development of the GCF portfolio with full attention given to issues of globally just transitions.

2.3.3 Practice

One great strength and a regular demand made of the GCF may be the focus on national priorities. Other actors in international cooperation probably find it harder to tackle imbalances in the course of agenda-setting and all their consequences. That said, a dilemma also arises with the bottom-up approach. Transformations – whether at society level or those that are ‘only’ sectoral – are quickly suspected of being a neocolonialist agenda or an obstacle to development. They also provide a platform for playing off different development goals against each other. Even if the proponents of transformations can

Level 3 (portfolio outcomes):

In this case the aim is to measure progress with respect to four paradigm shift outcomes. These are:

1. Strengthened capacity for transformational climate investments and enabling frameworks in order to achieve the respective national climate targets
2. Climate innovation catalysed in terms of business models, technologies or practices
3. Mobilisation of relevant investments on a large scale
4. Replication of knowledge to shift finance flows

The indicators listed under these outcomes obviously depend on how transformational change and its criteria are defined at the higher levels.

The indicators under outcome 4, number of knowledge products and number of people trained, certainly satisfy a need for quantitative measurement (which is ostensibly easier to carry out and present). They may remain subject to uncertainties as far as the actual desired results are concerned. In the worst case, they may create incentives to drive the numbers up as high as possible, regardless of quality. The numbers for each of the indicators (products and people) may be very high and the communication and behavioural effect could still be low. One option for further development might be supplement these indicators with formative qualitative data on learning and behavioural effects. Wicked problems of transformation may further inhibit knowledge transfer or knowledge replication (‘from knowledge to action’, see section 1.1.6) due to high complexity and strong context dependency. There appears to be potential for deliberately adding and requiring co-creative modes of working.

Level 4 (institutional outcomes):

This deals with the GCF’s own quality standards, efficiency and transparency etc.

immediately think of synergies and ‘net gains’, potential recipients of GCF funds may struggle to come to terms with an energy transition or the likes of mobility, agricultural or consumption transformations, and to date there has apparently been little explicit demand for transformations on this critical level at the GCF.

Perhaps similarly to the green economy debates, there appears to be still a dilemma between transformational, partly globalised aspirations on the one hand and local perceptions and sectoral interest groups on the other. To

a greater or lesser degree this challenge applies to all funds or ‘donors’, and may be reflected in the cautious wording used for system change (instead of system transformation) at the relevant levels in individual cases, such as the energy transition, mobility transformation, agricultural transformation, consumption transformation and so on. Many industrialised countries are also still a relatively long way away from finding or even seeking majorities for these transformations. Many costs that have hitherto been externalised, in some cases to developing countries, would be shifted once again. For example, using the GCF to exert greater pressure in favour of such transformations would probably put a permanent block on the climate negotiations and bring about the opposite of what was intended. Another (more transformative) inference from this would be to refer even more strongly to the ‘essential’ criteria in section 3.1, in other words to continuous dialogue²¹, joint, co-productive, iterative and adaptive decision-making processes on an equal footing and social justice etc. It is true that this contains a number of terms that might be construed as buzzwords. Yet, ‘efficiency-driven’ global enterprises are also increasingly placing their faith in structures and processes that are capable of greater complexity in place of ‘classical linear management’.

This could mean, for example, that the boundaries between project preparation and implementation would largely disappear, enabling interventions to develop step by step without the need for a precise prediction of the

(transformative) future. At the same time this would address the dilemma of long project preparation periods, by the end of which many circumstances will have changed again. The higher the sums involved become, the longer and more precise preparations seem to have to be, the more difficult it may be to obtain local agreement in advance for the ‘big issues’ and the greater the conflicts with complex reality can become.

Ultimately it should prove possible to develop positive narratives about desired system transformations in all regions of the world and to provide palpable proof that they are true. These narratives may take very different forms, depending on which determining political motives an energy transition, for example, can be linked to. These may include the pursuit of (energy) independence/security, future-proof jobs, modernisation, a clean environment, intergenerational equity (e.g. who pays for the follow-up costs?), or all of these together. The perception of how important which of these is in each case and what is missing cannot be ordained, nor can it be transferred from one country to another, one region to another or one municipality to another. This is another reason why a strong process promise and actors who play a facilitating role at all levels (global negotiations, financing mechanisms, individual interventions) are so important for success. This point is taken up again in sections 3.2 and 3.3.

2.4 Climate Investment Funds (CIF)

2.4.1 Definition

Based on work by the World Bank’s Independent Evaluation Group and the Independent Evaluation Office of the Global Environment Facility (GEF), the CIF defines transformation as follows:

“Strategic changes in targeted markets and other systems, with large-scale, sustainable impacts that shift and/or accelerate the trajectory toward low-carbon and climate-resilient development”²².

As above, it is possible to read different forms of change into this. Options for enhanced transformative ambition could be a switch from ‘low-carbon’ to ‘climate-neutral’ and a framing around ‘system transformation’, ‘paradigm shift’ etc.

²¹ See WBGU, 2011, *World in Transition-A Social Contract for Sustainability*, p. 289, 7.1.3, points 5 and 6

²² See fact sheet *Learning about Transformational Change from CIF’s Experience*.

2.4.2 Criteria/indicators

CIF uses four criteria:

1. **“Relevance:** The strategic focus of CIF investments to support advancement towards CIF’s transformative goals” (ibid.)
> This corresponds with the question of what makes each individual intervention transformative, what form the paradigm shift takes, and so on. The first criterion ‘system transformation’ in section 3.1 has a similar aim.
2. **“Scale:** Contextually large-scale transformational processes and impacts” (ibid.)
> This criterion matches sections 1.1.4 and 3.1.
3. **“Systemic:** Fundamental shifts in system structures and functions” (ibid.)
> This criterion covers parts of sections 1.1.2 and 3.1 and can be combined with the first criterion above, because projects under the heading of ‘transformation’ become relevant when they serve this third point.

4. **“Sustainability:** The robustness and resilience of transformational change” (ibid.)
> This criterion matches sections 1.1.4 and 3.1.

For the purpose of progress measurement, these criteria are combined with three phases in which ‘signals’ of transformational change can be observed:

1. an **early phase**, relating to programme design and to enabling preconditions for transformation;
2. an **interim phase**, relating to interim outcomes beyond the boundaries of the programme; and
3. an **advanced phase**, in which long-term, self-sustaining outcomes take shape.

Based partly on an earlier evaluation²³ and a recent assessment of a range of projects, the criteria and phases are used to develop a framework (CIF, 2020, p. 6²⁴). Further criteria and indicators are defined in each field of the framework. The same is specified once again for the various funds and sectors such as energy, climate resilience and forestry (ibid., p. 10 ff.).

2.4.3 Practice

In 2017, CIF set up the **CIF Transformational Change Learning Partnership** with the aim of addressing sub-topics such as energy, financing, climate risk management etc. in greater depth.

Evaluations of practical examples have been carried out (see footnotes), in which CIF identifies further challenges in the search for ‘signals of transformation’ (CIF, 2020, p. 7) and invites participants to a dialogue.



²³ Itad, 2019, *Evaluation of Transformational Change in the Climate Investment Funds* and ODI, 2019, *Transformational change in the Climate Investment Funds*

²⁴ CIF, 2020, *Signals of Transformational Change*

2.5 Global Environment Facility (GEF)

2.5.1 Definition

The GEF (2012²⁵) argued for transformational change at a comparatively early stage. From an outside perspective, the corresponding definitions seem to have remained rather implicit. One exception is a review dating from 2017²⁶, which defines transformational interventions as:

“Engagements that help achieve deep, systemic, and sustainable change with large-scale impact in an area of global environmental concern.” (p. ii).

This is very much in line with other definitions. If there was a desire to further distinguish this, one option would be to further differentiate system transformations from incremental changes and reforms.

2.5.2 Criteria/indicators

For the GEF, transformational change is above all determined across the board by changes in individual areas and sectors. In the context of climate change, for example, the GEF calls for fundamental transformations in the fields of food production (particularly agriculture), urban systems, energy and circular economy (GEF, 2019²⁷, p. 1). This is likewise largely in line with the key sectors in the current GEF-7 project cycle, which are to be transformed as ‘key economic systems’²⁸.

This ‘determination by sectors’ has the potential to enable relevant transformations such as an energy transition, agricultural transformation etc. to be pursued more explicitly on these system levels. The **funding criteria** and the **GEF-7 Programming Directions** seem to attempt a balance between transformative ambitions and approaches that sound more conservative, such as “investments in sustainable intensification of agriculture” (ibid., p. 4).

Given the relative prominence of transformation as a keyword at the GEF, the latest project documents seem to have potential to include this more explicitly. The terms transformation, transition and paradigm shift do not appear in the Full-sized Project **Identification Form (March 2019)**. A distinction is drawn at two points in the explanations, **How to fill the PIF?**: “Will incremental adaptation be required, or more fundamental transformational change to achieve long term sustainability?” (ibid., p. 11). The same applies to the **Program Framework Template**.

The **Tracking Tools and Results Frameworks** do not refer explicitly to transformational change either, focussing in large part on ‘traditional’ indicators. The **Climate Change Mitigation Tracking Tool** does ask, at the level of small transformations (see Figure 2), about the increasing use of renewable energy sources for the benefit of ‘low GHG development’.

²⁵ GEF, 2012, **Time for Transformational Change**.

²⁶ GEF, 2017, **Review of GEF Support for Transformational Change**.

²⁷ GEF, 2019, **The GEF and Climate Change – Catalyzing Transformation**

²⁸ **GEF-7 Programming Directions**, p. 4

2.5.3 Practice

The GEF Partners (2018²⁹) present a number of examples from existing key sectors. These are forests, landscapes, wildlife, water etc. and hence differ from the recently most salient transformation fields such as energy, traffic, agriculture etc. It might add great value to debate and practice to describe in greater detail what transformations consist of in these contexts (which system is transformed to which other system?) and/or their relevance for other transformation fields.

The GEF [project database](#) also returns hits for the keywords 'transformation' and 'transition'. The examples mostly address market transformations on a technology level, for instance concerning [energy-efficient lighting](#)

and other [technologies for energy transitions](#). It is still rare for projects to be formulated at a somewhat higher 'medium' level, such as an [agricultural transformation](#), or even higher.

While there is no claim that this brief analysis is comprehensive, overall there do appear to be possibilities within the GEF to present the transformative ambitions more saliently in project preparation and implementation. The review dating from 2017³⁰ (p. vi, point 14) arrives at the similar conclusion that the GEF could consider developing a framework for ex-ante assessment of the transformational potential of projects and programmes.



²⁹ GEF Partners, 2018, [Innovation, Scale Up, Transformation: The World Bank Group and the Global Environment Facility](#)

³⁰ GEF, 2017, [Review of GEF Support for Transformational Change](#).



3. Synthesis: Transformative quality, portfolios, processes and indicators

The following suggestions are a synthesis of preparatory work at GIZ³¹ and findings from the analysis of existing approaches in international cooperation (section 2).

3.1 Quality criteria

Quality criteria are described here that can also be referred to as design principles, ‘ingredients’, characteristics or transformational abilities (transformAbilities) for transformative interventions. These criteria apply to transformations in general and therefore also embrace all fields of transformation or sectors in more or less equal measure.

- # One criterion distinguishes transformation from other types of change (incremental change and reforms) and as such serves as a measure of the relevance of transformative interventions:
 - **System transformation/paradigm shift/regime change/fundamentally new overall narrative:**
 - Which system and/or paradigm etc. is to be transformed, e.g. through this intervention and other means, into which fundamentally different system?
 - To what extent does the desired transformation differ from incremental changes (more of the same) or reforms (adaptation of a system), i.e. to what extent does it fundamentally question a system and offer a new one?
 - If the above points apply only in part or not at all: To what extent is this intervention – at the least – not detrimental to possible future system transformations (e.g. no investment in institutions, laws, training and qualifications, technologies or infrastructure that ultimately reinforce path dependencies on the carbon-based society?)

- # Two criteria are essential in order to facilitate transformations, **scaling** and **sustainability over time**. They do not apply solely to transformational change but are indispensable for it. Both criteria are an expression of the ambition of interventions. In the interests of effectiveness and efficiency the aim here should be to position an intervention as realistically as possible in the complex, hard-to-plan environment, depending on the intervention’s resources (financial, time, human, expert/design capacities, influence/legitimation, etc.). Great ambitions tend to arise from the variety and composition of the various interventions, from the evolving political discourse and/or unexpectedly through other emergent developments, whether within or beyond the scope of the intervention:
 - 1) Vertical and horizontal **scaling** of the disruptive innovation across all levels and spheres of society, up to it becoming mainstream and the dominant paradigm. Without this, the disruptive innovation would remain in a niche and would not replace, or only partly replace, the prevailing system. Transformative interventions should therefore be classified according to the following:

³¹ Mainly from the GIZ, 2020, publication, Transforming our Work: Getting Ready for Transformational Projects.

- **Scope or system level** (Figure 2): single technology, social norm etc. (small transformation), across whole sectors (medium transformation), social spheres (large transformations) or right up to the entire (global) society (great transformations). This also includes the relevant dimensions and social spheres: environment, the social dimension, politics, business, science, technology and infrastructure (Figure 3, section 1.1.4).
- **Vertical scaling:** from transformative innovation in a niche to the mainstream, right up to global society. Here, in turn, there are three axes:
 - o **Vertical social level** (Figure 5, section 1.1.6): individual, families/groups, organisations, social milieus, institutions/networks, society
 - o **Vertical geographical levels:** local/neighbourhood, municipality, region, country, region of several countries, continent, global
 - o **Transformation phase** (Figure 4, section 1.1.4): pre-development, take-off, acceleration, stabilisation. Looking at transformation in the narrower sense, only this form of scaling is absolutely necessary. The other types of scaling remain a question of ambition.
- Despite realism, insofar as reality is predictable, complex systems may also respond highly positively to relatively small investments (cf. Greta Thunberg, who started out with no funding). Transformative interventions can therefore also attempt to provoke such self-reinforcing systemic dynamics or **catalytic effects beyond the scope of the intervention** (see also ‘depth’ and ‘repliability’ in the approaches in section 2). A transformation may also be greatly dependent on other levels (see ‘scope’ above), such as a climate-neutral society being dependent on a paradigm shift to an economy for the common good. These are further aspects or subcriteria under ‘scaling’.
 - o One question could therefore be: To what extent does the intervention have a systemic effect beyond the narrower system boundaries, areas of application and action by – possibly in combination with other interventions – creating or reinforcing cascade effects or catalytic effects, which make (social, political, economic, technological...) tipping points in favour of the transformation more probable?
 - o And: Which other system levels need to be tackled as pivotal to the transformation (e.g. paradigm shift to economy for the common good as a prerequisite for a climate-neutral society)?
- 2) **Sustainability** of the new system **over time**, closely tying in with the declining resilience of the old system and increasing resilience of the new one. Without this, there is a danger the new system will return to a niche or artefact status. As interventions can sometimes be specifically focussed e.g. on the *development* of transformative innovations, they cannot, on their own, always work on systemic resilience at a broader level. However, this goal should at least be worked towards in complementary interventions (also a matter of portfolio development, see section 3.2), in order to give such innovations a chance.
 - What contribution does the intervention (or other interventions) make to *weakening* the resilience and path dependencies of the *current* system or to *strengthening* those of the *new* system?
 - o Fundamental, system-changing decisions?
 - o Legal framework?
 - o Subsidies/taxes?
 - o Social change, education?
 - o Social justice, social security, jobs?
 - o Institutions/organisations/panels in various sectors, dimensions, social spheres, levels of society?
 - o Financing instruments and mechanisms?
 - o Research incentives?
 - o Infrastructure?
 - o ...
 - What other contributions does the intervention or other interventions make to the sustainability of the transformative innovation and the new system as a whole?

³² See WBGU, 2011, *World in Transition-A Social Contract for Sustainability*, p. 289

- # A range of other criteria and abilities appear to be essential for helping develop transformations and if possible accelerate³² them:
- The ability to deal with, influence and help shape ‘super complex’ systems (**‘complexAbility’**). The transformations in this context are generally at the highest levels of complexity, because the aim is to change entire social systems. Characteristics of complex systems include hard-to-predict emergent developments that cannot be explained from the individual elements and behave in a non-linear fashion, which can have abrupt, unforeseen changes. This demands transformative interventions, flexibility and adaptability in particular (adaptive management).
 - However, the **capacity to facilitate**, i.e. ability to navigate and shape transformative processes in highly complex environments, also plays a key role. This includes permanent professional and locally recognised support for shaping the overall process and the facilitation of panels, exchange platforms, workshops etc., suitable virtual and physical spaces, methods etc. This capacity is relevant for the early phases of innovations, which must be measured against real requirements (e.g. with design thinking), most especially if the aim is to continue to shape and establish the innovations throughout society.
 - Connected with this is **multidimensionAbility**, i.e. ability to address various social levels such as science, civil society, business and politics, in order to advance transformation across the whole of society. This requires particular facilitation (see boundary workers), resources (boundary objects) and forms of organisation (boundary organisations³³).
- Particularly, this involves the ability to **shape social change** to allow transformative innovations to become a new mainstream, new values and norms. This in turn increases the probability that other levels, dimensions or subsystems, such as politics, economy and technology, will also adapt and that the new system will become stable and more resilient to disturbances and changes such as political change. Approaches used in this context are communication strategies (e.g. nudging, entertainment education, campaigns), co-creative/participatory social learning (including in decision-making), change agents/influencers which can catalyse critical masses/majorities etc.
- Enabling **reciprocity** as a key characteristic which bolsters both acceptance and resilient complex systems. It is in the nature of complex systems that they cannot be controlled through a one-sided top down approach, but rely on a high degree of self-organisation and self-regulation in order to evolve. A new system can therefore be at risk if, for example, it is prescribed and/or controlled from the top down. Reciprocity, both in the process design and in the field of transformation, at all conceivable levels (accountability, power of definition, decision-making, information flow etc.) is therefore a more important prerequisite for actors and structures that are meant to support transformations.
- Closely linked to this, the ability to promote **social justice** (see 2030 Agenda, the principle of ‘leave no one behind’, LNOB). Transformational change is the most radical/disruptive form of change and thus also runs the greatest risk of producing losers, those who have fewer opportunities in the new system. As indicated above, this also has a major influence on the resilience of new systems.

³³ The IPCC, for example, is referred to as a global boundary organisation. Cf. Gustafsson, Karin M, and Rolf Lidskog. 2018. “Boundary Organizations and Environmental Governance: Performance, Institutional Design, and Conceptual Development.” *Climate Risk Management* 19: 1–11.

To sum up, the criteria can be presented as follows:

Mandatory (blue) criteria are those which are indispensable for defining or bringing about a transformation.	
System transformation (transformative relevance)	This distinguishes transformation from other types of change (incremental change and reforms) and as such serves as a measure of the relevance in this context. Aspects of this may be paradigm change, (socio-technical) regime change, or a fundamentally new overall narrative.
Scaling (transformative ambition)	Vertical and horizontal scaling of the disruptive innovation across all levels and sectors of society, up to it becoming mainstream and the dominant paradigm. Without this, the disruptive innovation would remain in a niche and would not replace, or only partly replace, the prevailing system.
Sustainability & resilience (transformative ambition)	Sustainability of the new system over time, closely tying in with the declining resilience of the old system and increasing resilience of the new one. Without this, there is a danger the new system will return to a niche status. Path dependencies of the old and new system are also included here.
Essential (green) criteria are a range of criteria/abilities need to help influence and if possible accelerate transformations.	
ComplexAbility	The ability to deal with, influence and help shape 'super complex' systems. The transformations in this context are generally at the highest levels of complexity, because the aim is to change entire social systems. Characteristics of complex systems include emergent, non-linear and sometimes abrupt developments which are hard to predict. This demands transformative interventions, flexibility and adaptability in particular (adaptive management).
Capacity to facilitate	The ability to navigate transformative processes in highly complex environments. This includes permanent professional and locally recognised support for shaping the process and for facilitation, along with resources such as sufficient time, money, suitable locations and methods.
Multidimension-Ability	The ability to address various social levels such as science, civil society, business and politics, in order to advance transformation across the whole of society. This requires particular facilitation (see boundary workers), resources (boundary objects) and forms of organisation (boundary organisations)
Social-ChangeAbility	The ability to shape social change to allow transformative innovations to become a new mainstream and establish new values, norms and behaviours. This in turn increases the probability that other dimensions, such as politics, economy and technology, will also adapt and that the new system will become more resilient to changes such as political change.
Reciprocity	Enabling reciprocity as a key characteristic which bolsters both acceptance and resilient complex systems. It is in the nature of complex systems that they cannot be controlled through a one-sided top down approach, but rely on a high degree of self-organisation and self-regulation in order to evolve. A new system can therefore be at risk if, for example, it is prescribed and/or controlled from the top down.
Social justice	The ability to promote social justice (cf. LNOB). Transformational change is the most radical/disruptive form of change and thus also runs the greatest risk of producing losers, those who have fewer opportunities in the new system. Conversely, actors may perceive themselves as losers in the current system (cf. intergenerational justice) and therefore set their sights on a transformation.

The criteria or design principles also provide the basis for sets of indicators, which can be assigned to the criteria. The more criteria that are backed with indicators or activities, the better the prospects – that is the assumption.

In the final analysis, at least the first three mandatory criteria must be fulfilled for changes to be defined as transformations. Every transformative intervention

should therefore address these three criteria at least. This means that through its results chain, together with suitable indicators, it should *contribute* to or illustrate how other interventions fulfil these criteria in complementary fashion. For example, two projects can work on a transformation with one of them focusing on scaling and the other on the sustainability of the new system.

3.2 Transformative project types and portfolio development

Transformative environmental policy does not fall within the sphere of responsibility of environmental agencies as much as ‘traditional’ environmental policy does – in fact from a conventional viewpoint the converse tends to be true, that it is the responsibility of other ministries. In this field it is no longer a matter of regulating other sectors in the interests of the environment and negotiating this with the ministries but of reshaping those sectors from the ground up. The role of mainstreaming, which is often thankless and less effective, continues to fall to environmental institutions and their interventions until it proves possible to design an integrated cross-ministerial policy that can provide what is needed for transformations.

New economic paradigms, such as an economy for the common good, may possibly be a prerequisite for this too, under which ministries are bound more closely into cooperation, in the interests of the common goal. As the overarching principle, the common good, expressed in terms of a balance in the three dimensions of sustainability, namely the environment, social impact and the economy, could therefore perhaps also solve the ‘mainstreaming dilemma’ of (transformative) environmental policy. The call for a paradigm shift of this nature is growing louder again as a result of the coronavirus crisis in particular. Transformative interventions can improve their prospects of success, in any case, and perhaps even enable them to take place at all, if system transformations are also supported at other levels.

This and the criteria outlined above indicate that transformations of medium size or above (energy transition, mobility transformation, agricultural transformation) cannot be mastered by individual interventions, projects or programmes (see [WBGU 2011](#)³⁴, sections 5 and 6; NAMA Facility website; [Wuppertal Institut, 2015](#)³⁵). Depending on what ambition is being pursued and what

phase the transformation has already reached, major efforts are required to bring disruptive innovations (further) into the desired mainstream and to ensure that they are lastingly embedded at all necessary social levels. Regulatory top-down mechanisms can be just as important in achieving this as bottom-up inventions and citizens’ movements, not to mention all the deliberative and co-creative processes in between. Great ambitions thus tend to arise from the variety and composition of the various interventions, from the evolving social and political discourse and/or unexpectedly through other emergent developments, whether within or beyond the scope of the interventions.

For development interventions there is the additional major challenge of having to mediate between global and/or bilateral agendas and the partners’ respective national agendas. Transformational change calls at one and the same time for big decisions and innumerable projects in a particular field of transformation; the projects cannot be designed on the drawing board but still should be coordinated with each other.

A whole series of questions therefore arise in the course of the joint development of such fields of transformation and/or portfolios in the three-way relationship between partners, donors and implementing organisations. The tables below provide guidance on the ambition (scaling) and design of transformation portfolios.

Guidance on the ambition (scaling) and design of fields of transformation/transformation portfolios:

³⁴ WBGU, 2011, *World in Transition – A Social Contract for Sustainability*

³⁵ Wuppertal Institut, 2015, *Governance and Action: Design Criteria for Transformational Climate Finance*

Scope/system level (What kind of transformation? Figure 2 and Figure 3)	What is the ambition in the country/ country groups?	What is the ambition of the project?	What are others doing?	What is still needed?
Small transformation: Single technology, law, social norm etc.				
Medium transformation: Sectors such as energy (transition), mobility (transformation), agriculture (transformation)				
Large transformation: Social spheres/dimensions such as economy, environment, cities (e.g. economy for the common good, production & consumption, urban transition)				
Great transformation: Entire economy, for example 2030 Agenda, industrialisation, digitalisation				

Vertical geographical levels (which mainstream?)	What is the ambition in the country/ country groups?	What is the ambition of the project?	What are others doing?	What is still needed?
Local/Neighbourhood				
Municipality				
Region				
Country				
Region of several countries				
Continent				
Global				

Vertical social level (which mainstream?)	What is the ambition in the country/ country groups?	What is the ambition of the project?	What are others doing?	What is still needed?
Individual, families, groups				
Organisations				
Societal milieu				
Institutions, networks				
Society				

Transformation phase (how far advanced is the transformation? Figure 4)	What is the ambition in the country/ country groups?	What is the ambition of the project?	What are others doing?	What is still needed?
Pre-development				
Take-off				
Acceleration				
Stabilisation				

Catalytic effects, other system levels	What is the ambition in the country/ country groups?	What is the ambition of the project?	What are others doing?	What is still needed?
Systemic effect beyond the narrower system boundaries, areas of application and action (cascade effects or catalytic effects using change agents, influencers, social learning, communication strategies etc., which make tipping points in favour of the transformation more probable)				
Other system levels that need to be tackled as pivotal to the transformation? (e.g. paradigm shift to economy for the common good as a prerequisite for a climate-neutral society)				

Sustainability / resilience	What is the ambition in the country / country groups?	What is the ambition of the project?	What are others doing?	What is still needed?
Fundamental, system-changing decisions?				
Legal framework?				
Subsidies/taxes?				
Financing instruments and mechanisms?				
Social change, education?				
Social justice, social security, jobs?				
Institutions / organisations / panels				
Research incentives?				
Infrastructure?				
...?				

These tables are also included in the attached, more complete list of criteria and indicators in the form of an Excel tool. The above table on portfolio design can be used to supplement the selection and adaptation of criteria and indicators.

3.3 Process orientation and outcome orientation

The magnitude of the questions and multiplicity of interventions set out above generate enormous complexity. Low levels of predictability and controllability³⁶, and correspondingly high demands in terms of ‘facilitation abilities’, flexibility and process design, suggest that

the quality of (at least) transformative projects should be judged much more according to their apparent ability to shape and facilitate transformative processes (process orientation)³⁷.

³⁶ Cf. UBA, 2019, *Kriterien zur Bewertung des Transformations-potentials von Nachhaltigkeitsinitiativen* p. 33, green box.

³⁷ See also CIF, 2020, *Signals of Transformational Change*

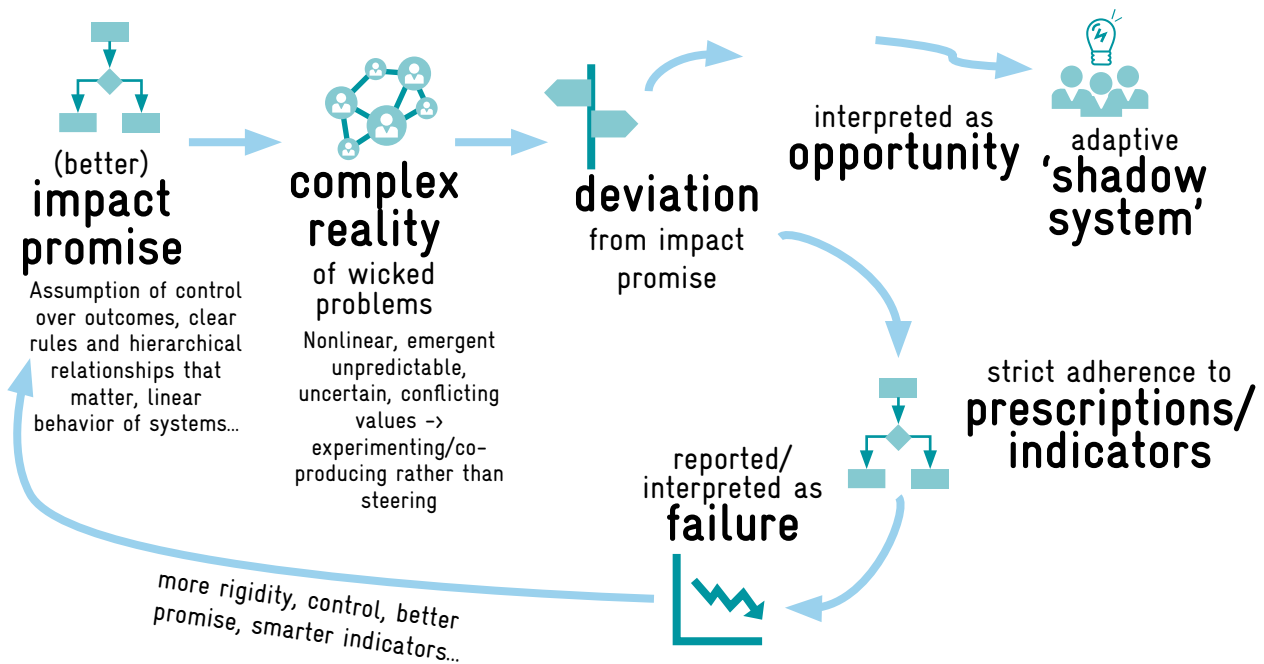
Since the usual promises to produce results (outcome orientation) are subject to extreme uncertainties in this context, an assessment of the quality of projects based primarily on results hypotheses and ‘smart’ indicators offers little meaningful information. Ironically, the complex nature of transformative interventions has the effect that, as a rule, those that promise a ‘good process’ and are able to operate flexibly will achieve better outcomes than those that focus mainly on prescriptive outcomes (see also [Wuppertal Institut, 2015³⁸](#)).

Following a line geared mainly towards outcomes triggers a vicious circle (see figure 7). Outcomes and an impact promise are defined years in advance, on the assumption that rigorous, results-based management will be able to achieve them provided that the hypotheses are sufficiently ‘realistic’ and the indicators sufficiently ‘SMART’.

It is almost inevitable that unforeseen events will arise which force the project managers to adjust their interventions time and time again. These include ‘classic cases’ such as policy changes, delays in legislative processes, new market developments, one-off events, sudden civic movements and many others. The more formalised the process and the more rigid the envisaged outcomes, the greater the probability that the project managers’ adaptations will deviate from the predictions. The managers are caught in a quandary. Formally, the success of their interventions is measured

against the agreements (e.g. project proposal) or predictions that have been made. In fact, the prerequisites for achieving the overarching objectives (such as a climate-neutral society) increasingly change. Although in most cases there are possible ways of adapting projects, as a rule they are highly formalised, costly in terms of time and effort and may also carry the connotation of ‘failure’. If, under such circumstances, project managers want to adhere to both their formal accountability and relevant outcomes, two overlapping realities emerge. On one side we have the ‘reporting world’, in which the aim is to reconcile the outcomes as coherently and consistently as possible with the predictions, while on the other (in complexity research) there are ‘shadow systems’, which ignore part of the formal rules and predictions in order to produce relevant outcomes in the complex environment. Depending on the individual scenario the coherence of the reports regularly reaches its limits, resulting in an admission that differences have arisen, which are usually interpreted as failings when measured against the promised outcomes. The probability that outcomes precisely match those predicted or even exceed them is significantly lower than the likelihood of different outcomes being produced. In the traditional management paradigm (which is suitable for simple and complicated systems) the conclusion that targets have been missed quickly leads to the corollary that the results hypotheses, measurement methods and steering mechanisms have to be differentiated yet further and become even more rigorous. As

Figure 7: The impact-complexity trap



³⁸ Wuppertal Institut, 2015, *Governance and Action: Design Criteria for Transformational Climate Finance*

a consequence, even more thorough and differentiated predictions are made and commissioning procedures are further formalised.

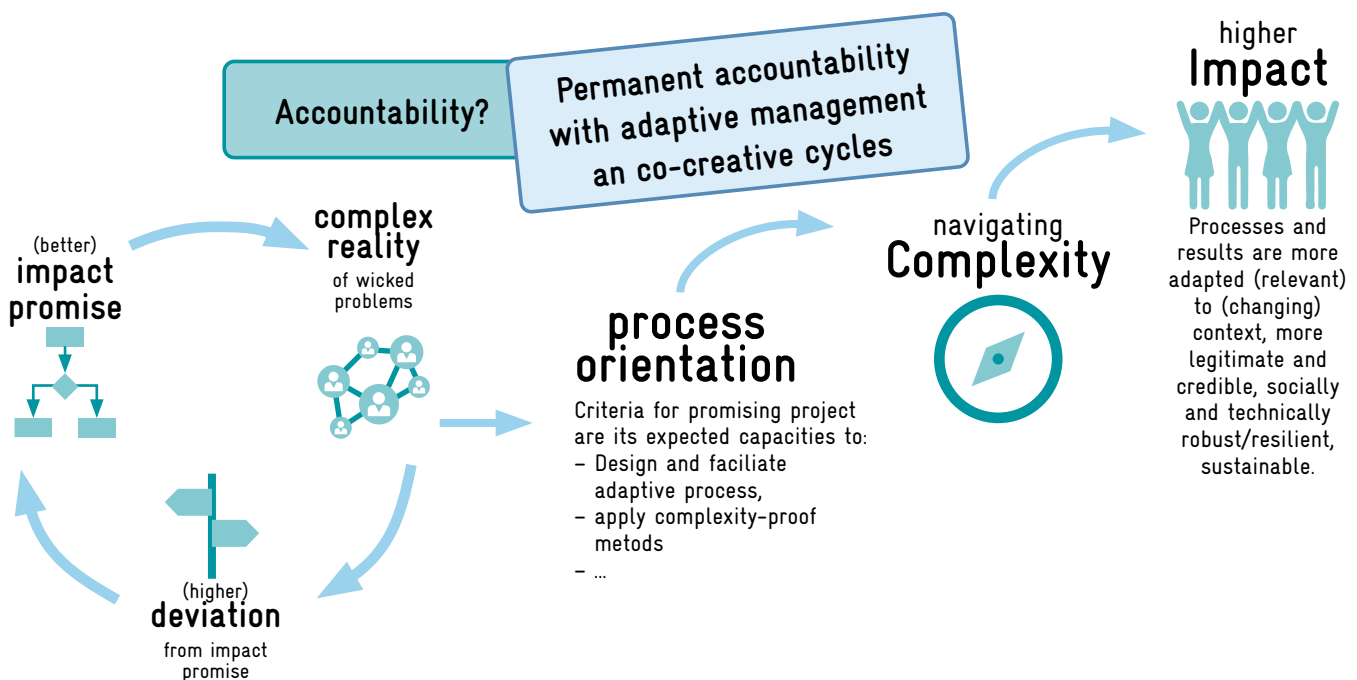
The greater the degree of formalisation and the stronger the attempt to steer complex systems, the higher the probability that there will be discrepancies, parallel worlds and irrelevant outcomes. In short, the vicious circle takes the following form: the outcomes deviate from the promise, the promise becomes more 'precise', which then produces outcomes that deviate further, leading to the promise being made even more 'precise', and so on and so forth. However, the outcome promise in itself is subject to such great uncertainties in complex systems, more or less regardless of the level of differentiation and thoroughness of the basis. There is reason to assume that in future, too, even the most 'sophisticated' models will not be able to predict results in and the behaviour of complex systems (including human interactions) to a satisfactory extent that allows reliably assessable (master) plans (or project proposals) to be drawn up ready for implementation.

It can be even more confusing if project managers put all their efforts into producing the predicted outcomes and submit coherent reports to that effect yet all the while ignore parts of the complex reality. On paper the intervention would be successful, but quite possibly irrelevant.

Focussing more on process orientation and process promises (see figure 8) does not mean having no objectives and drifting aimlessly – on the contrary. Adaptive management³⁹ can be extremely 'monitoring-intensive'. This involves the intervention and its set objectives being (to a justifiable degree) continuously compared to developments in the system and corrective measures being taken. One consequence is in fact that the objectives themselves are subject to this constant review and potential readjustment. It can happen relatively quickly, for example, that a particular technical transformative innovation proves not to be suitable for the mainstream in a certain context, that a political instrument proves on closer examination to have no backing (social/political resilience) and/or that other partners are more suited to capacity development if progress is to be achieved with the transformation in the end.

The task of a monitoring system, at least in this context, is not so much to steer a project on a predetermined path (are we still on the right track?). Successful navigation and design in complex systems requires that the path and thus the monitoring system, indicators, results hypotheses, instruments etc. be called into question at all times (is this a right track and are we wearing suitable footwear?). Firstly this orientation is important if relevant and functioning outcomes are to be achieved at all, and secondly it is a crucial precondition if new systems are to gain acceptance and be socially resilient.

Figure 8: Escape from the impact-complexity trap



³⁹ Adaptive management is one concept among many in this connection. It is also increasingly being tried out in the development context, for instance with USAID (CLA Toolkit, examples) or in the field of climate governance. A wide-ranging analysis of governance projects, for example, arrives at similar conclusions, and coins the term smart implementation (Kirsch, Renate, Elke Siehl, and Albrecht Stockmayer. 2017. Transformation, Politics and Implementation - Smart Implementation in Governance Programs. 1st ed., Baden-Baden: Nomos Verlagsgesellschaft).

Simple, complicated or more structured problems are easier to 'process' (high certainty of knowledge) and require less facilitation (high level of agreement between values and norms). Complex, unstructured transformation issues, on the other hand, require huge facilitation effort and iterative processes. The quality of transformative interventions should therefore be primarily judged on the basis of determined by measuring it against the 'process promise' (capacity to facilitate, process design, methods...) rather than the highly uncertain outcome promise. Implementation should be flexible to allow changes to be made to all aspects of intervention, and proceed on an iterative and adaptive basis rather than following a mapped-out path.

For the commissioning procedure this would mean that the boundaries between project preparation and implementation would largely disappear, allowing interventions to develop step by step without the need for a prediction of the (transformative) future. At the same time this would address the dilemma of long project preparation periods, by which time as a rule many circumstances will have changed. The higher the sums involved become, the longer and more precise the preparation seems to have to be, the more difficult it becomes to obtain local concessions for the 'big issues' in advance and the greater the conflicts with complex reality.

3.4 Indicators

A distinction can be drawn between two different types of indicator:

- # Design indicators, which measure the quality of interventions aimed at influencing transformations (how potentially transformative is an intervention?). They measure the existence and character of the quality criteria referred to above, enabling an assessment of an intervention's prospects of success. They deal with probabilities based on the hypotheses behind the quality criteria outlined above. Due to the huge complexity of transformations in this context, there is almost no guarantee that interventions will succeed, even if they meet all the quality criteria.

However, it can be assumed that the chances of success are significantly higher than for interventions which ignore the criteria. Design indicators are more relevant for transformational change, since specific changes in the system (outcome indicators) are difficult to predict and may not become apparent for a long time (see section 3.3 on process orientation).

- # Outcome indicators, which measure the process or progress of a transformation itself (how far advanced is the transformation in society?). Some common outcome indicators in this context do not necessarily allow conclusions to be drawn on whether these outcomes were achieved en route to a transformation or lead to a transformation. For instance, greenhouse gas emissions are expected to fall on the road towards a climate-neutral society (new paradigm). The reduction per se is an in-

cremental change and can itself be achieved through incremental changes, reforms or transformations in subsystems (e.g. energy generation). In the worst case, incremental changes or reforms consolidate path dependencies on fossil fuels, for example, to the extent that an energy transition and perhaps a climate-neutral society are pushed far into the future. The level of and change in emissions per se are therefore not adequate indicators of whether this transformation is successful or not. On the level of a climate-neutral society, this would be the actual balance between emissions and sinks. Below this, on the level of the relevant sectors, this would not be the emissions either, but the indicators for the energy transition (e.g. progress in the phase-out of coal or the share of renewables), mobility transformation, agriculture transformation etc.

The two types of indicator tend to blur into each other, because if an intervention takes account of certain design principles it will also translate these into activities and outcome indicators where possible. Both generic (for all transformations) and sector-specific indicators can be formulated.

A number of possible indicators are listed in the following, which may serve as examples. They are based on the quality criteria, and are broken down according to design and outcome indicators and generic and sector-specific indicators. A more exhaustive list, containing further indicators and information about verification sources, for example, can be found in the annex in the form of an Excel tool. The tool is easier to use thanks to the filters, and can be updated.

Quality criteria	Indicator	Design/ Outcome	Field of transformation
Blue = mandatory	Mandatory criteria are those which are indispensable for defining or bringing about a transformation. Here, the criterion of system transformation applies only to transformations. Scaling and durability do not apply solely to transformational change but are indispensable for it.		
System transformation (transformative relevance)	This criterion distinguishes transformation from other types of change (incremental change and reforms) and as such serves as a measure of the relevance of transformative interventions. Aspects of this may be paradigm change, (socio-technical) regime change, or a fundamentally new overall narrative.		
System transformation	Which system and/or paradigm, socio-technical regime, narrative etc. is to be transformed, e.g. through the intervention and other means, into which fundamentally different system?	Design	Generic/Overarching
System transformation	Distinguishing characteristics: To what extent does the desired transformation differ from incremental changes (more of the same) or reforms (adaptation of a system), i.e. to what extent does it fundamentally question a system and offer a new one?	Design	Generic/Overarching
System transformation	System neutrality: If the above points apply only in part or not at all: To what extent is this intervention – at the least – not detrimental to possible future system transformations (e.g. no investment in institutions, laws, training and qualifications, technologies or infrastructure that ultimately reinforce path dependencies on the carbon-based society)?	Design	Generic/Overarching
Scaling (transformative ambition)	Scaling of the disruptive innovation, making it mainstream/dominant paradigm/regime/narrative and scaling in 'scope'. Without this, the disruptive innovation would remain in a niche and would not replace, or only partly replace, the prevailing system. As such, this criterion is an indicator for the ambition of the intervention(s)		
Scaling (scope)	What scope or system level is being addressed (single technology, law, social norm etc. – small transformation, whole sectors – medium transformation, social spheres – large transformation, or the entire society – great transformation)?	Design	Generic/Overarching
Scaling (vertical geographical)	Which vertical geographical level (which geographical mainstream) is being targeted (local/neighbourhood, municipality, region, country, region of several countries, continent, global)?	Design	Generic/Overarching
Scaling (mainstreaming)	In which phase is the targeted field of transformation / disruptive innovation (pre-development, take-off, acceleration, stabilisation) and to what extent is the innovation to become mainstream?	Design	Generic/Overarching
Scaling (general)	To what extent does the intervention have a systemic effect beyond the narrower system boundaries, areas of application and action by – possibly in combination with other interventions – creating or reinforcing cascade effects or catalytic effects, which make (social, political, economic, technological...) tipping points in favour of the transformation more probable?	Design	Generic/Overarching


Quality criteria	Indicator	Design/ Outcome	Field of transformation
Scaling (general)	Share of renewable energies in the electricity mix (phase 1 of energy transitions)	Outcome	Energy transition
Scaling (general)	Proportion of nutrients nitrogen and phosphate in regional economic cycles	Outcome	Agriculture transformation
Scaling (general)	Share of zero-emission mobility	Outcome	Mobility transformation
Scaling (general)	Share of cradle-to-cradle (equivalent quality) recycled materials	Outcome	Production and consumption transformation, circular economy
Scaling (general)	Level of decarbonisation: CO2 emissions/unit (e.g. energy production, production and use of goods, services...)	Outcome	Climate-neutral society
Sustainability and Resilience	Sustainability of the new system over time, closely tying in with the declining resilience of the old system and increasing resilience of the new one. Without this, there is a danger the new system will return to a niche or artefact status. As interventions can sometimes be specifically focussed e.g. on the development of transformative innovations, they cannot, on their own, always work on systemic resilience at a broader level. However, this goal should at least be worked towards in complementary interventions (also a matter of portfolio development), in order to give such innovations a chance.		
Sustainability and Resilience	Which factors must be addressed in order to weaken the resilience and path dependency of the current system or strengthen those of the new system? (e.g. fundamental, system-changing decisions, subsidies / taxes, social change, education, social justice, social security, jobs, institutions / organisations / panels, technology, infrastructure (dependence), etc.)	Design	Generic/Overarching
Sustainability and Resilience	Net gain in jobs from the energy transition	Outcome	Energy transition
Sustainability and Resilience	Fare integration (combination of different transport modes at an affordable price)	Outcome	Mobility transformation
Sustainability and Resilience	Number and description of eliminated harmful subsidies which encourage greenfield development on agricultural land	Outcome	Agriculture transformation
Sustainability and Resilience	Decoupling well-being and happiness from resource consumption in production and consumption	Outcome	Production and consumption transformation, Circular economy
Sustainability and Resilience	Decoupling well-being and happiness from greenhouse gas emissions	Outcome	Climate-neutral society

Quality criteria	Indicator	Design/ Outcome	Field of transformation
Green = essential	Essential criteria are a range of criteria/abilities needed to be able to help develop/influence and if possible accelerate transformations. They apply to other forms of change as well, but appear particularly important in this context.		
ComplexAbility	The ability to deal with, influence and help shape 'super complex systems' ('complexAbility'). The transformations in this context are generally at the highest levels of complexity, because the aid is to change entire social systems. Characteristics of complex systems include hard-to-predict emergent characteristics and developments that cannot be explained from the individual elements and do not behave in a linear fashion, with abrupt, unforeseen changes. This demands transformative interventions, flexibility and adaptability in particular (adaptive management).		
ComplexAbility	Are methods used within the intervention to better understand the complexity of the respective systems (e.g. (stakeholder) network analyses, modelling...)?	Design	Generic/Overarching
ComplexAbility	To what extent is the project design iterative and adaptive, to a point where preparation and implementation merge?	Design	Generic/Overarching
ComplexAbility	To what extent is the transformation process capable of proceeding iteratively and adaptively?	Outcome	Generic/Overarching
Capacity to facilitate	Capacity to facilitate, i.e. ability to navigate and shape transformative processes in highly complex environments plays a key role. This includes permanent professional and locally recognised support for shaping the overall process and the facilitation of panels, exchange platforms, workshops etc., suitable virtual and physical spaces, methods etc. This capacity is relevant for the early phases of innovations, which must be measured against real requirements (e.g. with design thinking), most especially if the aim is to disseminate the innovations throughout society.		
Capacity to facilitate	Professional change management of the transformation, of the facilitation within the intervention	Design	Generic/Overarching
Capacity to facilitate	Professional change management of the transformation, of the facilitation in the target system	Outcome	Generic/Overarching
Capacity to facilitate	Facilitation resources such as time, money, opportunities, suitable locations, suitable methods, suitable objects within the intervention	Design	Generic/Overarching
Capacity to facilitate	Facilitation resources such as time, money, opportunities, suitable locations, suitable methods, suitable objects in the target system	Outcome	Generic/Overarching
Multidimension-Ability	MultidimensionAbility i.e. ability to address various social levels such as science, civil society, business and politics, in order to advance transformation across the whole of society. This requires particular facilitation (see boundary workers), resources (boundary objects) and forms of organisation (boundary organisations)		
Multidimension-Ability	Capacity development for interface moderation (see boundary workers), resources (boundary objects) and forms of organisation (boundary organisations)	Design	Generic/Overarching
Multidimension-Ability	Degree of institutionalisation of transformation management/integration of different areas of society (e.g. through boundary organisations, boundary workers, change agents, councils for the future).	Outcome	Generic/Overarching

Quality criteria	Indicator	Design/ Outcome	Field of transformation
Multidimension- Ability	How do actors in different segments of society perceive the credibility, relevance and legitimation of transformative ideas and processes?	Outcome	Generic/Overarching
Social-Change- Ability	The ability to shape social change to allow transformative innovations to become a new main-stream, new values and norms. This in turn increases the probability that other levels/ di-mensions/subsystems, such as politics, economy and technology, will also adapt and that the new system will become stable and more resilient to disturbances/changes such as political change. Key terms in this context are communication strategies (e.g. nudging, entertainment education, campaigns), co-creative/participatory social learning (including in decision-mak-ing), change agents/influencers, which can catalyse critical masses/majorities etc.		
Social-Change- Ability	Is the communication paradigm 'from knowledge to action' (knowledge transfer) questioned and inverted to 'from action to knowledge'?	Design	Generic/Overarching
Social-Change- Ability	How specifically and appropriately are the target groups addressed? Is the strategy based on sound target group analysis and pre-tests? Is there direct contact to target groups and is primary data on the target group available?	Design	Generic/Overarching
Social-Change- Ability	Are different prerequisites for behaviour change ad-dressed, such as knowledge (awareness, information, experiences...), abilities, motivation (values, norms, beliefs, attitudes, routines...) and supporting con-ditions (legal and social norms, physical / geograph-ical structures, incentives)?	Design	Generic/Overarching
Social-Change- Ability	Extent of 'transformation knowledge' and capacity (triple loop learning) among the target groups which enables them to continue the same or comparable processes autonomously	Outcome	Generic/Overarching
Social-Change- Ability	What concrete changes are apparent: Values, social norms, attitudes, behaviours, practices...?	Outcome	Generic/Overarching
Social-Change- Ability	Acceptance for and share of consumption of organic and/or regional and/or fair trade foods	Outcome	Agricultural transfor-mation, food transfor-mation
Reciprocity	Enabling reciprocity as a key characteristic which bolsters both acceptance and resilient com-plex systems. It is in the nature of complex systems that they cannot be controlled through a one-sided top down approach, but rely on a high degree of self-organisation and self-regula-tion in order to evolve. A new system can therefore be at risk if, for example, it is prescribed and/or controlled from the top down.		
Reciprocity	To what extent is accountability for the project required in different directions?	Design	Generic/Overarching
Reciprocity	To what extent is accountability for the transfor-mation required in different directions?	Outcome	Generic/Overarching
Reciprocity	What level of participation is achieved in the field of transformation, from information to joint decision-making?	Outcome	Generic/Overarching

Quality criteria	Indicator	Design/ Outcome	Field of transformation
Social justice	The ability to promote social justice (cf LNOB). Transformational change is the most radical / disruptive form of change and thus also runs the greatest risk of producing losers, those who have fewer opportunities in the new system.		
Social justice	In the project, to what extent are the different forms of justice reconciled with each other? (E.g. between social levels, local, global, intergenerational, historical justice, mutually agreed justice, overriding benefit (utilitarianism), distributive justice...)?	Design	Generic/Overarching
Social justice	In the field of transformation, to what extent is there discourse on the forms of justice to be addressed?	Outcome	Generic/Overarching
Social justice	To what extent do different segments of society benefit from a transformation?	Outcome	Generic/Overarching
Social justice	Costs of energy production from fossil and nuclear sources for present generations compared to those for future generations	Outcome	Energy transition

...A more exhaustive list, containing further indicators and information about verification sources, for example, can be found in the annex in the form of an Excel tool. The tool is easier to use thanks to the filters, and can be updated.



Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn

Friedrich-Ebert-Allee 32 + 36
53113 Bonn, Germany
T +49 228 44 60-0
F +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn, Germany
T +49 61 96 79-0
F +49 61 96 79-11 15

E info@giz.de
I www.giz.de