

EVALUATION OF INTERVENTIONS FOR CLIMATE CHANGE ADAPTATION

Synthesis Report

2023



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This synthesis report concludes the modular DEval evaluation of interventions for climate change adaptation. The objective of this report is to assess the effectiveness and impact of the adaptation portfolio of German development cooperation (DC) and the implementation of mainstreaming adaptation as well as the promotion of transformative and conflict-sensitive adaptation interventions. In addition to an evaluation synthesis on the effectiveness and impact of interventions, the evaluation also comprises case analyses, theory-building desk studies and workshops.

The German Federal Government contributes to international climate financing via adaptation-relevant official development assistance. With nature-based solutions and infrastructure interventions, German DC partially makes effective contributions to climate change adaptation. However, the benchmark of mainstreaming adaptation in the broader German DC portfolio is barely fulfilled. Increasingly important approaches such as transformative adaptation interventions have been promoted only partially, and conflict-sensitive interventions barely at all.

The evaluation recommends increasing the effectiveness and impact of the German adaptation portfolio via nature-based solutions, infrastructure interventions and mainstreaming adaptation as well as strengthening evidence-based policy-making. In addition, innovation spaces should be created for transformative interventions, and the context-specific design of conflict-sensitive adaptation interventions should be promoted.

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SUMMARY

Background

Climate change is one of the greatest challenges in the history of mankind. The global consequences of climate change jeopardise the preservation and development of natural and human systems and are already leading to high ecological, social and economic costs today. The poorest countries are particularly affected by the negative impacts of climate change. At the same time, there are still opportunities to strengthen sustainability and resilience for both people and the environment. When it comes to dealing with the impacts of climate change, adaptation plays a key role.

German development cooperation (DC) aims to strengthen climate resilience by adapting to climate change. The German Federal Government is financially committed to this objective, as well. Between 2011 and 2020, Germany's climate-related official development assistance (ODA) as reported to the Organisation for Economic Co-operation and Development (OECD) amounted to USD 45.4 billion, approximately a quarter of all German ODA. Of that amount, over USD 17.5 billion were committed for climate change adaptation interventions.

But to what extent did the Federal Government set relevant priorities for adaptation-related ODA? To what extent do adaptation interventions achieve their objectives? And to what extent does German DC contribute towards strengthening climate resilience in developing and emerging countries? The German Institute for Development Evaluation (DEval) sought to answer these questions in a modular evaluation of climate change adaptation interventions.

The portfolio and allocation analysis of the evaluation ("evaluation module 1") shows that German DC largely achieves its funding goals and sets relevant priorities by committing adaptation funding to countries that are vulnerable to climate change (Noltze and Rauschenbach, 2019). When it comes to the effectiveness of adaptation interventions, however, an additional module ("evaluation module 2") clearly shows that the substantial funds in the large adaptation-relevant sectors of agriculture and water as well as in coastal protection – an area of the environmental protection sector – are barely reflected in the achievement of objectives of adaptation interventions (Noltze et al., 2023). "Evaluation module 3" found a discrepancy between the objective of comprehensively addressing climate risks and the limited relevance of individual instruments (Leppert et al., 2021).

This synthesis report ("final report") compiles the findings from evaluation modules 1-3 and answers four overarching evaluation questions.

Firstly, the evaluation investigates how German DC systematically considers climate risks – in terms of mainstreaming adaptation. In doing so, it examines German DC's long-time objective for its handling of climate risks. This includes avoiding negative adaptation outcomes and impacts, increasing adaptive capacities and exploiting beneficial opportunities by integrating adaptation into the programming of the German DC portfolio (beyond adaptation interventions).

Evaluation question 1: To what extent does German DC systematically consider climate risks?

Secondly, the evaluation conducts an overarching review of the effectiveness and impact of German adaptation interventions. To this end, it examines how various types of adaptation interventions contribute towards strengthening climate resilience through their objectives of better responding to shocks, stressors and residual climate risks, increasing adaptive capacities and enhancing the enabling environment. The evaluation groups the interventions into nature-based solutions, infrastructure interventions, technological options, informational/educational interventions, institutional and regulatory framework, financial/market mechanisms and social/behavioural interventions.

Evaluation question 2: To what extent does German DC make effective and impactful contributions to climate change adaptation?

Thirdly, the evaluation examines transformative adaptation interventions. Sustainably responding to the climate crisis increasingly necessitates a transformative and just transition towards a socio-economic system that is climate-neutral, social and inclusive without leaving anyone behind. The evaluation examines whether German DC pursues the objective of transformative adaptation policy, whether it has an internationally compatible conceptual understanding of how to design transformative adaptation interventions and whether it uses appropriate interventions.

Evaluation question 3: To what extent does German DC promote transformative adaptation interventions?

Fourthly, the evaluation looks at German DC's objective of integrating the cross-cutting issue of conflict sensitivity into interventions for adaptation to climate change. Many developing and emerging countries are subject to multiple vulnerabilities, often including conflicts in addition to climate vulnerability. This gives rise to complex interactions regarding adaptation to climate change. For example, a growing body of evidence indicates that climate change exacerbates conflicts. At the same time, conflicts limit the effectiveness and impact of interventions. On the other hand, adaptation interventions have the potential to promote peace or reduce conflict, which contributes to mitigating climate-related economic losses and maintaining livelihoods.

Evaluation question 4: To what extent does German DC ensure interplay between adaptation interventions and the cross-cutting topic of conflict sensitivity?

The purpose of the evaluation is to support the future alignment and impact-oriented further development of the German DC adaptation portfolio. The conclusions and recommendations of the evaluation are aimed at the Federal Ministry for Economic Cooperation and Development (BMZ) and the Funding Programme of the International Climate Initiative (IKI), which the Federal Ministry for Economic Affairs and Climate Action (BMWK) has been implementing since 2022 in close cooperation with the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) and the Federal Foreign Office (AA). They are also aimed at the governmental implementing organisations KfW Development Bank (KfW) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

Methodology

This evaluation comprises several methodological components. A case analysis on the mainstreaming of adaptation in German DC interventions and a study on the quality of adaptation indicators in monitoring and evaluation serve as the basis for answering the evaluation question regarding the systematic consideration of climate risks. To answer the question regarding the effectiveness and impact of the German adaptation portfolio, the evaluation uses an evaluation synthesis of the findings of Leppert et al. (2021) and Noltze et al. (2023). To address the evaluation questions on transformative and conflict-sensitive adaptation interventions, the evaluation relies on desk studies and workshops. The connection of the results to the development cooperation context is supported by a portfolio analysis.

Results, conclusions and recommendations

Adaptation financing

The Federal Government's adaptation-related ODA contributes towards achieving international climate funding objectives. With annual new commitments of approximately EUR 2.15 billion from budget funds (bilateral and multilateral), Germany is one of the largest bilateral adaptation donors globally in terms of ODA reported to the OECD and makes significant financial contributions to the relevant multilateral organisations. However, German DC only partially fulfils the benchmark of providing special support for Small Island Developing States. This is evident for both the bilateral (see Noltze and Rauschenbach, 2019) and multilateral (this evaluation) segments of the German adaptation portfolio.

Consideration of climate risks

When it comes to the systematic consideration of climate risks, there is clearly a significant discrepancy between German DC's long-time objective of mainstreaming adaptation in the broader German DC portfolio and the way this is implemented in practice. On the one hand, German DC has relevant and internationally compatible safeguards and interventions. On the other hand, the case analysis regarding the adaptation mainstreaming of 23 adaptation-relevant interventions in especially climate-vulnerable contexts found barely any indication that climate risks are handled systematically in practice. Neither in the assessments nor in the design and implementation of the evaluated interventions did German DC effectively apply the requirements for avoiding negative climate impacts caused by interventions, for exploiting beneficial opportunities arising from climate change or for increasing adaptive capacities, which have been binding since 2014. The benchmark of mainstreaming adaptation is therefore barely fulfilled. In light of this assessment, the evaluation comes to the following recommendation:

Recommendation 1: GIZ and KfW should effectively mainstream adaptation in order to

- increase the effectiveness and impact of the German DC portfolio on climate resilience in the partner countries
- by 1) avoiding negative impacts, 2) better responding to residual climate risks, 3) increasing adaptive capacities and 4) exploiting beneficial opportunities.

In terms of putting “recommendation 1” into practice, the BMZ could 1) monitor mainstreaming and support the exchange of experiences between organisations, 2) introduce quality assurance in the “environmental and climate assessment” quality criterion and 3) make adaptation-relevance a default for interventions in especially climate-vulnerable contexts in keeping with the precautionary principle.

Effectiveness and impact of adaptation interventions

The results of the evaluation synthesis show that German DC uses adaptation interventions that effectively contribute towards better responding to shocks and stressors in climate-vulnerable contexts and increasing the adaptive capacities in countries that lack such capacity. Nature-based solutions and infrastructure interventions make the clearest contribution to achieving objectives and strengthening climate-resilience. Interventions combined with informational/educational interventions continue to show increased potential for outcomes and impacts. However, German DC also funds a range of interventions shown to have either no or even negative adaptation effects. The enhanced enabling environment and better handling of residual climate risks also represent objectives to which the interventions used are found to make barely any contribution, if at all. This includes informational/educational interventions and interventions to improve the institutional and regulatory framework as well as financial and market mechanisms. Conflicting and partially even negative effect and impact findings arise mostly for technological options and for social and behavioural interventions. The latter category comprises 25 percent of interventions funded by German DC. However, there are barely any robust findings for unintended (negative) outcomes and impacts and contributions causing maladaptation, in particular; accordingly, the statements are subject to a higher degree of uncertainty in comparison to the proven or unproven positive outcomes and impacts. Overall, the German adaptation interventions partially fulfil the benchmark of contributing to adaptation to climate change. In light of this assessment, the evaluation comes to the following recommendations:

Recommendation 2: The BMZ and the IKI Funding Programme should expand the funding for nature-based solutions and infrastructure interventions in order to

- help deal with shocks and stressors more effectively in particularly climate-vulnerable contexts
- and help increase adaptive capacities in countries where these capacities are low.

In terms of putting “recommendation 2” into practice, there would be additional potential in combining various interventions if they also include informational and educational interventions. Interventions with the objective of enhancing the enabling environment, in particular, could be examined using specific theories of

change and indicators to establish their effectiveness and impact. The funding could also be expanded in particular in cooperation with other donors and (multilateral) organisations.

Recommendation 3: The BMZ and the IKI Funding Programme should strengthen the evidence-based programming of the adaptation portfolio in order to

- make the German adaptation portfolio more effective
- and thus contribute to strengthening climate resilience in the partner countries.

In terms of putting “recommendation 3” into practice, the BMZ and the IKI Funding Programme could compel the implementing organisations to make adaptation interventions easier to evaluate and increase the quality of evaluation – by systematically including the vulnerability context and using adaptation-related theories of change, objectives and indicators. To supplement evidence from project evaluations, rigorous (accompanying) evaluations could be promoted, especially in “evidence-scarce” areas of the portfolio. The evaluations by the implementing organisations could also address unintended effects and the risk of maladaptation better than they have done up to now. Together with the implementing organisations, the BMZ and the IKI Funding Programme could improve the framework conditions for systematic learning – also through cross-sectional analyses.

Transformative adaptation interventions

The results of the theory-building desk studies and workshops show that German DC generally pursues a transformative climate policy. In addition, it defines transformation in line with internationally recognised standards and thus has an internationally compatible conceptual understanding at operational level. What is missing are sufficiently adaptation-specific transformation objectives and a strategic framework for transformative adaptation. The understanding of the transformation concept also differs between the individual ministries and organisations. German DC has a range of adaptation-relevant and conceptually appropriate transformative interventions which are also implemented. However, the extent to which these interventions contribute to fundamental change in practice is an open question. The benchmark of maintaining an internationally compatible understanding of transformative, appropriate adaptation interventions is therefore partially fulfilled. In light of this assessment, the evaluation comes to the following recommendation:

Recommendation 4: The BMZ and the IKI Funding Programme should create innovation spaces for transformative adaptation interventions and provide financing in order to

- refine and integrate existing approaches
- and develop new approaches.

In terms of putting “recommendation 4” into practice, GIZ and KfW could 1) develop innovative concepts, objectives and indicators, 2) design appropriate monitoring, evaluation and learning approaches as well as cross-ministry exchange formats and support knowledge management, 3) pilot transformative interventions in cooperation with academia/accompanying research, 4) help create an error-tolerant culture through more transparency and openness and 5) more consistently demonstrate principles such as partnerships for development and target group orientation.

Conflict-sensitive adaptation interventions

When it comes to ensuring interplay between adaptation interventions and the cross-cutting topic of conflict sensitivity, the results of the theory-building desk studies and workshops show that German DC above all follows a “do no harm” approach. Realising potential synergies for strengthening resilience more broadly has played a secondary role up to now. This is insufficient in light of the complex interactions between adaptation and conflict. On the one hand, adaptation interventions are suitable for preventing violent conflicts and stabilising the livelihoods of people in fragile countries, though they also carry the risk of exacerbating conflicts. On the other hand, adaptation outcomes and impacts are affected by violent conflict. The evaluation shows that their effectiveness and impact is limited in contexts of conflict. Conflict-sensitive approaches are therefore

growing more important for the design and implementation of adaptation interventions. The benchmark of German DC to design adaptation interventions in a conflict-sensitive manner has barely been fulfilled up to now. In light of this assessment, the evaluation comes to the following recommendation:

Recommendation 5: In countries with a high escalation potential and high climate risk, GIZ and KfW should design conflict-sensitive adaptation interventions in order to

- ensure adaptation outcomes and impacts in conflict contexts,
- avoid outcomes and impacts that exacerbate conflict
- and contribute to peacebuilding.

In terms of putting “recommendation 5” into practice, the BMZ could make designing conflict-sensitive adaptation interventions mandatory in countries with a high escalation potential and high climate risk. GIZ and KfW could integrate the conflict sensitivity check when considering options for adaptation interventions and integrate the climate assessment when considering options for action in peacebuilding and security interventions.

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ABBREVIATIONS AND ACRONYMS

AA	Federal Foreign Office
AF	Adaptation Fund
BMUV	German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
BMWK	German Federal Ministry for Economic Affairs and Climate Action
BMZ	German Federal Ministry for Economic Cooperation and Development
CIF	Climate Investment Funds
CLA	Rio marker for climate change adaptation
CRI	Climate Risk Index
CRS	Creditor Reporting System (reporting system for official development assistance to the OECD)
DC	Development cooperation
EGM	Evidence Gap Map
ESKA	Escalation potential analysis
EU	European Union
FC	Financial cooperation
GCF	Green Climate Fund
GDP	Gross domestic product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IHM	Intervention Heat Map
IKI	International Climate Initiative
IPCC	Intergovernmental Panel on Climate Change
KfW	KfW Development Bank
ND-GAIN	Notre Dame Global Adaptation Initiative
NDCs	Nationally Determined Contributions
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
OECD DAC	OECD Development Assistance Committee
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
ToC	Theory of Change
TC	Technical cooperation
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

1. INTRODUCTION

1.1 Background

Climate change is already adversely affecting natural and human systems today, leading to major losses and damages (IPCC, 2022a). Increasing climate-related hazards, combined with the exposure and vulnerability of these systems, are exceeding adaptation limits. This is causing great environmental, social and economic costs. At the same time, there are still opportunities to ensure that human and natural systems are sustainable and resilient (IPCC, 2022a). Supporting those societies particularly affected by climate change in strengthening their climate resilience and avoiding maladaptation¹ is one of the most urgent challenges facing the international community (UN, 2015; UNFCCC, 2015).

When it comes to dealing with the impacts of climate change, adaptation plays a key role (IPCC, 2022a). Adaptation interventions hold the potential to reduce societies' exposure and climate vulnerability, but they also carry the risk of maladaptation. This is true for reactive as well as for incremental and transformative forms of adaptation. In light of the interactions between the climate and ecological as well as human systems, the latest report from the Intergovernmental Panel on Climate Change (IPCC) attaches great importance to the interplay of human development and adaptation to climate change (IPCC, 2022a). In addition to effective adaptation interventions, development achievements are increasingly contingent on the systematic consideration of climate risks and the transformative capacity of societies.

German development cooperation (DC) aims to strengthen climate resilience by adapting to climate change and supports developing and emerging countries in realising social, economic and environmental transformation (BMZ, 2021a). The German Federal Government is financially committed to this objective, as well. Germany's climate-related official development assistance (ODA) for the period from 2011 to 2020 as reported to the Organisation for Economic Co-operation and Development (OECD) amounted to USD 45.4 billion, approximately a quarter of all German ODA. Of that amount, over USD 17.5 billion were committed for climate change adaptation interventions. In 2019 and 2020, the Federal Government committed approximately USD 2 billion for climate-relevant ODA from budget funds alone. On average, KfW Development Bank (KfW) committed an additional USD 500 million of its own funds each year.

But to what extent did the Federal Government set relevant priorities for adaptation-related ODA? To what extent do interventions for adaptation to climate change achieve their objectives? And to what extent does German DC contribute towards strengthening climate resilience in its partner countries? The German Institute for Development Evaluation (DEval) sought to answer these questions in a modular evaluation of climate change adaptation interventions (see Noltze and Rauschenbach, 2019; Leppert et al., 2021; Noltze et al., 2023).

The portfolio and allocation analysis ("evaluation module 1") of adaptation-relevant ODA showed that German DC sets relevant priorities in interventions for adaptation to climate change (Noltze and Rauschenbach, 2019). Germany is therefore more likely to make adaptation commitments to countries that are climate-vulnerable than to those that are not. However, the degree of vulnerability does not determine the level of funding. Some countries receive disproportionately high levels of adaptation-relevant ODA, while others – such as Small Island Developing States (SIDS) – receive comparatively little funding.

According to the results of another module ("evaluation module 2") on the effectiveness and impact of adaptation interventions, however, the substantial funding is thus far not reflected in the achievement of adaptation objectives (better responding to shocks and stressors, increasing adaptive capacities, enhancing the enabling environment) in the adaptation-relevant sectors/areas of agriculture, water and coastal protection (Noltze et al., 2023). Neither outcomes nor impacts are observed for a majority of German adaptation interventions in this field. In the international comparison, though, interventions co-financed by German DC show potential for effects and impacts, namely nature-based solutions and infrastructure interventions. In an in-depth analysis of irrigation infrastructure interventions by German DC in Mali,

¹ Maladaptation refers to actions that may increase the risk of negative climate-related changes, such as through higher greenhouse gas emissions, increased or outsourced vulnerability to climate change, more unequal results or declining prosperity (now or in the future). In most cases, maladaptation is an unintended consequence of actions/interventions (IPCC, 2022).

the evaluation found significant contributions towards sustainably strengthening climate resilience in a region particularly threatened by the consequences of climate change (BenYishay et al., 2023).

Despite adaptation interventions that reduce risks, many countries still find themselves subject to residual climate risks. This increasingly leads to major damage and economic losses particularly in developing countries. Another module of the evaluation (“evaluation module 3”) shows that German DC has only partially fulfilled the benchmarks relating to comprehensively addressing residual climate risks up to now (Leppert et al., 2021). Contrary to expectations, the selection of interventions for better responding to residual climate risks is not always systematically based on climate risk analyses or the needs of target groups. There is also only partial consideration of the partner countries’ priorities. Internationally, German DC plays a pioneering role in the comprehensive risk management approach. However, there is clearly also potential for improvement in the coordination with other actors and in the interaction between interventions in order to expand the breadth and depth of risks covered and to reach particularly vulnerable and marginalised target groups.

This synthesis report of the modular adaptation evaluation compiles the findings from the previous evaluation modules and derives findings on four additional topics:

Firstly, the evaluation investigates how German DC systematically considers climate risks – in terms of mainstreaming adaptation. In doing so, it examines German DC’s long-time objective for its handling of climate risks. This also includes avoiding negative adaptation outcomes and impacts, increasing adaptive capacities and exploiting beneficial opportunities by integrating adaptation into the programming of the German DC portfolio (beyond interventions with climate adaptation as a principal or significant objective). In light of the significant challenges already presented by the effects of climate change today – and those that will arise in the future – it is increasingly important to mainstream adaptation in the broader DC portfolio.

Secondly, the evaluation conducts an overarching review of the effectiveness and impact of German adaptation interventions. Hardly any evidence has been produced for this question up to now – the same applies to interventions at international level (see Noltze et al., 2023). This evaluation closes existing evidence gaps.

The synthesis report also includes a formative evaluation of the more recent aspirations of German DC. Accordingly, the evaluation examines German DC’s objective of promoting transformative adaptation policy. Both achievement of the Sustainable Development Goals (SDGs) as part of the 2030 Agenda (UN, 2015) and implementation of the Paris Agreement (UNFCCC, 2015) require fundamental change in development now more urgently than ever (CIF, 2021; IPCC, 2022a).

In another formative priority, the synthesis report investigates German DC’s objective of integrating the cross-cutting issue of conflict sensitivity into interventions for adaptation to climate change. Many developing and emerging countries are subject to multiple vulnerabilities, often including conflicts in addition to climate vulnerability. This gives rise to complex interactions regarding adaptation to climate change. For example, a growing body of evidence indicates that climate change exacerbates conflicts. At the same time, conflicts limit the effectiveness and impact of interventions. On the other hand, adaptation interventions have the potential to promote peace or reduce conflict, which contributes to mitigating climate-related economic losses and maintaining livelihoods.

1.2 Objective and purpose

This evaluation aims to provide a synthesis of findings from the modular adaptation evaluation (see Leppert et al., 2021; Noltze et al., 2023; Noltze and Rauschenbach, 2019) and to answer development evaluation questions relating to:

- The systematic consideration of climate risks (“adaptation mainstreaming”) in German DC;
- The contributions of German DC towards adapting to climate change and strengthening climate resilience; and
- The promotion of transformative and conflict-sensitive adaptation interventions.

The purpose of the evaluation is to support the future alignment and impact-oriented further development of the German DC adaptation portfolio. The conclusions and recommendations of the evaluation are aimed at the Federal Ministry for Economic Cooperation and Development (BMZ) and the Funding Programme of the International Climate Initiative (IKI), which the Federal Ministry for Economic Affairs and Climate Action (BMWK) has been implementing since 2022 in close cooperation with the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) and the Federal Foreign Office (AA). They are also aimed at the governmental implementing organisations KfW Development Bank (KfW) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

1.3 Subject

The subject of the evaluation is the international climate policy interventions of the Federal Government to adapt to climate change. This comprises all adaptation-relevant ODA with a “Rio marker for climate change adaptation” (CLA), including interventions with adaptation as a principal objective (CLA-2) and as a significant objective (CLA-1). As the Rio marker was added to the OECD Creditor Reporting System (CRS) in 2010, the evaluation covers the period of 2011–2020.

The subject of the question regarding systematic consideration of climate risks was expanded to include “adaptation-adjacent” interventions from outside the German adaptation portfolio. Interventions are “adaptation-adjacent” if they have adaptation-relevant sectoral objectives in particularly climate-vulnerable countries (see Section 4.1).

1.4 Evaluation questions

This synthesis report of the modular adaptation evaluation focuses on four evaluation questions, which are operationalised using corresponding evaluation dimensions. Evaluation questions 1 and 2 are summative (theory-testing), while evaluation questions 3 and 4 are formative (theory-building). The procedure of the rating and the rating scale are presented in Section 7.1 of the Annex.

Evaluation question 1: To what extent does German DC systematically consider climate risks?

Evaluation dimensions: 1) examination of relevant questions to identify and address climate risks in the assessments, 2) inclusion of options for actions to address climate risks in the assessments, 3) implementation of options for action over the course of interventions, 4) consideration of climate risks in monitoring and evaluations.

Evaluation question 2: To what extent does German DC make effective and impactful contributions to climate change adaptation?

Evaluation dimensions along the evaluation criterion of effectiveness: 1) achievement of objectives, 2) contribution of the interventions to the achievement of objectives and 3) examination of possible unintended effects.

Evaluation dimensions along the evaluation criterion of impact: 1) extent to which (intended) higher-level development changes can be detected or foreseen, 2) contribution of the intervention to detectable or foreseeable development changes and 3) examination of possible unintended development changes.

Evaluation question 3: To what extent does German DC promote transformative adaptation interventions?

Evaluation dimensions: 1) transformative objectives, 2) internationally compatible conceptual understanding of transformative adaptation interventions, 3) appropriateness of transformative interventions.

Evaluation question 4: To what extent does German DC ensure interplay between adaptation interventions and the cross-cutting topic of conflict sensitivity?

Evaluation dimension: Design of conflict-sensitive adaptation interventions to 1) avoid outcomes and impacts that exacerbate conflict, 2) realise positive side effects (co-benefits) and 3) ensure effectiveness and impact in conflict contexts.

The modular adaptation evaluation assesses the success of the German adaptation portfolio according to the international evaluation criteria of the OECD Development Assistance Committee (OECD DAC, 2019). The portfolio and allocation analysis (evaluation module 1) by Noltze and Rauschenbach (2019) assesses the relevance and coherence of the portfolio. The evaluation modules on the effectiveness and impact of adaptation interventions (evaluation module 2, Noltze et al., 2023) and on the response to residual climate risks (evaluation module 3, Leppert et al., 2021) assess the effectiveness, impact and sustainability of German DC adaptation interventions. This synthesis report focuses with evaluation question 2 on the overarching assessment of effectiveness and impact. In accordance with the BMZ guidelines on applying the evaluation criteria to German DC (BMZ, 2020), this report also includes a summary of the contributions of adaptation interventions towards the 2030 Agenda for Sustainable Development (see Section 5.6).

1.5 Structure of the report

The report is structured as follows: Following the introduction (Section 1), Section 2 describes the evaluation's methodology. Section 3 contains the results of the portfolio analysis. Section 4 contains the findings on systematic consideration of climate risks (Section 4.1), on the effectiveness and impact of adaptation interventions (Section 4.2) and on transformative (Section 4.3) and conflict-sensitive adaptation interventions (Section 4.4). The conclusions and recommendations of the evaluation can be found in Section 5. The Annex (Section 7) contains the rating scale, the evaluation matrix, further tables and illustrations, an overview of all recommendations of the modular adaptation evaluation and the schedule. It also presents the evaluation team and others involved in the evaluation.

2. METHODOLOGY

2.1 Evaluation design

This evaluation comprises both theory-building and theory-testing methodological components. A case analysis on the mainstreaming of adaptation in German DC interventions (Section 2.3) and a quality assessment of indicators (Section 2.4) serve as the basis for answering the evaluation question regarding the systematic consideration of climate risks (evaluation question 1). To answer the question regarding the effectiveness and impact of the German adaptation portfolio (evaluation question 2), the evaluation uses an evaluation synthesis of the findings on outcomes and impacts of Leppert et al. (2021) and Noltze et al. (2023) (Section 2.5). To address the evaluation question regarding transformative (evaluation question 3) and conflict-sensitive (evaluation question 4) adaptation interventions, the evaluation relies on theory-building desk studies and workshops (Section 2.6). As in the other evaluation modules (see Leppert et al., 2021; Noltze et al., 2023; Noltze and Rauschenbach, 2019), the connection of the results to the development cooperation context is supported by a portfolio analysis (Section 2.2).

2.2 Portfolio analysis

The portfolio analysis is a macro-quantitative analysis of the Federal Government's reporting to the OECD regarding German climate-relevant or adaptation-relevant ODA (see also Noltze and Rauschenbach, 2019). Using the OECD CRS data as a basis, the evaluation covers Germany's contractually agreed commitments to individual partner countries (bilateral DC), earmarked German contributions to individual countries via multilateral organisations (multi-bilateral DC, also referred to in the evaluation as bilateral in accordance with the OECD) and core contributions to multilateral organisations (multilateral DC). At the time of this report's publication, CRS data was available up to the year 2020. The portfolio analyses of the evaluation modules of Noltze and Rauschenbach (2019), Leppert et al. (2021) and Noltze et al. (2023) focus on the bilateral segment of the German adaptation portfolio. To supplement those findings, this portfolio analysis focuses on the share of multilateral engagement.

In addition to reporting climate/adaptation-relevant ODA, the Federal Government also reports its international climate financing to the United Nations Framework Convention on Climate Change (UNFCCC) and the European Union (EU). The UNFCCC and EU reporting entails political commitments that have usually not been formalised through contracts and that have systematic differences for different donors (Roberts and Weikmans, 2017). At the time of this report's publications, the Federal Government had submitted climate reporting to the UNFCCC up to 2018 and to the EU up to 2019.

Compared to the reporting of international climate financing to the UNFCCC and EU, the OECD CRS data has the following advantages: Firstly, it contains contractually agreed commitments that barely change at all over time. Secondly, all important international donors report regularly to the OECD in line with standardised procedures, which makes it possible to compare donors. Thirdly, the data can be compared over time, and it is more up to date than the UNFCCC and EU data at the time of this report's publication.

When it comes to calculating the bilateral climate/adaptation-relevant ODA, grant equivalents of KfW development loans have been included in the analysis since the 2017 reporting year (OECD DAC, 2021). Grant equivalents indicate the degree of concessionality of the development loans in relation to the market conditions. They are calculated using the respective grant element (percentage that specifies the concessionality of the loan), the amount of the market funds and the Rio markers of the respective interventions.

To calculate the multilateral climate-relevant core contributions of the Federal Government to multilateral organisations, the evaluation uses the imputation method² of the OECD (OECD, 2015) and applies the same principle to calculate the adaptation-relevant shares. Germany's core contributions to individual multilateral organisations are first calculated based on OECD data regarding bilateral donors' use of the

² Imputation generally refers to mathematical procedures used to compensate for missing data in statistical surveys.

multilateral system. The adaptation quotas of individual multilateral organisations are then determined via the climate financing quotas and the relative share of adaptation financing. These quotas are based on the average quota of the current year and of the previous year. The calculated adaptation quota can then be multiplied by the bilateral donor's core contribution, which enable reporting on the approximate actual share of adaptation financing (OECD DAC, 2018).

In line with the evaluation's focus of interest, this evaluation module uses funding commitments (see Berthélemy, 2006; Boussalis and Peiffer, 2011) for interventions with climate adaptation as a principal objective (CLA-2) and as a significant objective (CLA-1). It counts funds for CLA-2 interventions completely and funds for CLA-1 interventions at 50 percent and combines them in one variable for climate adaptation commitments. The analysis for CLA-1 markers is based on discounted funds (see Betzold and Weiler, 2018). There is also a differentiation between budget-eligible and ODA-eligible market funds. The latter category includes development and promotional loans, investments and other forms of capital market funding.

The results are presented both descriptively over time and analytically via regression analyses. The evaluation used various models for this. They determine the likelihood of SIDS receiving commitments from multilateral organisations (logit models) and the likely amount of the commitments (tobit models). These probabilities are also compared with those of other vulnerable countries. The vulnerability of a country was defined using the exposure index of the Notre Dame Global Adaptation Initiative (ND-GAIN). This index (scale from 0 to 1) measures exposure as a component of vulnerability. The ND-GAIN exposure rating is especially well suited for allocation analyses, since it directly measures the physical prerequisites for negative consequences of climate change (including via the expected rise in temperature, the precipitation level, agricultural yields and the share of land area less than ten metres above sea level). The exposure index thus contains no socio-economic variables that could cause multicollinearity and endogeneity problems³ in the regression models (see Noltze and Rauschenbach, 2019, p. 32). The evaluation also uses the index to determine the capacity of a country to adapt to potential negative impacts of climate change (ND-GAIN *Capacity*). Higher values for this indicator define a high level of vulnerability and a low adaptive capacity (Chen et al., 2015). Table 5 in the Annex provides an overview of all variables used in the regression analysis.

2.3 Case analysis of adaptation mainstreaming

Evaluating the consideration of climate risks (adaptation mainstreaming) in German DC requires the evaluation subject to be expanded beyond the adaptation portfolio (defined as the sum of all CLA-2 and CLA-1 interventions). Due to the size of the German "CLA-o portfolio" (all interventions other than CLA-2 + CLA-1), a systematic case selection of "adaptation-adjacent interventions" was conducted to ensure an efficient evaluation. According to the principle of most likely cases (Eckstein, 1975), the evaluation assumes here that interventions with a clear connection to adaptation are especially likely to exhibit adaptation mainstreaming. In turn, if these interventions do not exhibit adaptation mainstreaming, this finding is likely to be true for the rest of the portfolio. This would disprove the assumption of climate mainstreaming in the German DC portfolio.

The evaluation defines adaptation-adjacent interventions as interventions whose title and short description in the OECD CRS data indicate a connection to adaptation and which are also implemented in a highly climate-vulnerable context (physical exposure as per the ND-GAIN vulnerability index with exposure values of 0.50 or higher, corresponding to the 75th to 100th percentile of the variable; see Chen et al., 2015).

³ Multicollinearity occurs when two or more explanatory variables of a regression analysis strongly correlate with one another, which leads to instability in the estimated regression coefficients. Endogeneity occurs when there is a correlation between one or more explanatory variables and the disturbance variable, and this distorts the estimate.

The adaptation-adjacent interventions are identified by applying a text-mining procedure to the OECD CRS data.⁴ Interventions were only examined if they were assessed after the BMZ's environmental and climate assessment was introduced in 2014 and – to allow for implementation of any options for action revealed in the assessments – if they had a project term of at least two years at the time of data collection. The sample is thus limited to the period of interventions that were examined between 2014 and 2019.⁵

The resulting sample of adaptation-adjacent interventions underwent a qualitative document analysis to examine their systematic consideration of climate risks. The evaluation first focused on the binding climate assessments for all German DC interventions. In terms of adaptation-relevance, the evaluation investigated whether the climate assessments included an examination of any negative climate impacts and whether they explored options for increasing adaptive capacities and exploiting beneficial opportunities arising from climate change. The assessment reports of the implementing organisations GIZ and KfW served as the data basis. In the second step, the evaluation analysed the implementation of recommendations for action (arising from the assessments) and other unrelated adaptation interventions. The data basis for this step were the project proposals (to assess the design) and the latest available reporting (to assess the implementation).

2.4 Quality assessment of indicators

To determine whether systematic consideration of climate risks occurs, this evaluation examines the suitability of the monitoring and evaluation systems for assessing the success of adaptation interventions in German DC. Building on the evaluation synthesis of Noltze et al. (2023), it assesses the quality of the indicators used in project evaluations. The data basis comprises 79 evaluation reports covering a total of 113 adaptation interventions of GIZ and KfW (see Noltze et al., 2023).

In the first step, all adaptation-relevant indicators were identified. The evaluation then classifies the indicators as belonging to the levels of service provision (output level), use of service (outcome level) or development changes (impact level). Finally, the indicators are assessed in terms of 1) their connection to responding to climate risks (appropriateness), 2) their usefulness for contributions at the respective level (relevance), 3) the use of measuring units and reference values (comparability) and their verifiability (measurability).

2.5 Evaluation synthesis on effectiveness and impact

The effectiveness and impact of German DC are determined via an evaluation synthesis from the various methodological components of the modular adaptation evaluation. The data basis comprises the evaluation synthesis of project evaluations of German adaptation interventions, the results of the systematic review of scientific evaluations and studies on the effectiveness and impact of international adaptation interventions from the second evaluation module of the evaluation by Noltze et al. (2023) as well as the data and findings on the effectiveness and impact of adaptation interventions for better responding to residual climate risks from the case studies of the third evaluation module of the evaluation by Leppert et al. (2021). The starting point for this evaluation synthesis is the Evidence Gap Map (EGM) by Doswald et al. (2020), which was commissioned by DEval and the Green Climate Fund (GCF). The EGM is a systematic literature review of scientific studies and grey literature on the effectiveness and impact of adaptation interventions in low- and middle-income countries. For additional data, the evaluation drew on an Intervention Heat Map (IHM) also

⁴ DEval uses machine learning to examine the German portfolio's relevance to adaptation (Wencker, 2022). In accordance with Weikmans et al. (2017), all OECD CRS entries with the Rio markers CLA-1 and CLA-2 from 2012 (N=5,200) were manually checked for adaptation-relevance. The respective entries were classified as adaptation-relevant if the CRS short description or title clearly listed adaptation as an objective and/or activity. Using the classifications of Weikmans et al. (2017), an algorithm was trained to recognise connections to adaptation and applied to all the CRS data.

⁵ The analysis excluded sector programmes and global projects since they cannot be correlated with country-specific information on climate vulnerability.

shown in Doswald et al. (2020). The IHM is a graphical illustration of the frequencies of adaptation interventions with regard to their objectives.

Based on the typology of Biagini et al. (2014) and in line with Doswald et al. (2020), the evaluation conceptually distinguishes between seven different types of adaptation interventions (see Table 1).

Table 1 Types of adaptation interventions

Types	Definitions	Examples of interventions
Nature-based solutions	Activities that make use of ecosystems and biodiversity as well as sustainable management, conservation and restoration of ecosystems.	Restoration of forests, wetlands and mangroves, conservation agriculture, agroforestry, sustainable forestry, restoration of rivers, forestation of water catchment areas, protective planting of vegetation on mountainsides
Infrastructure interventions	Activities with structural components	Dams, dykes, irrigation and drainage systems, wells, sea walls
Technological options	Technological activities	Drought-tolerant seeds, irrigation technologies, fertilisers, desalination technologies
Informational/educational interventions	Informational and educational activities	Training courses, capacity development, flood information
Institutional and regulatory framework	Activities to support laws, plans, standards and other regulatory interventions	Politics, regulations, laws, zoning, land use plans, improved transparency, involvement, combating corruption
Financial and market mechanisms	Financial transactions and market-driven activities	Climate risk insurance, loans, subsidies
Social/behavioural interventions	Activities relating to social security, social change and changed behaviour	Diversification of livelihoods, migration

Source: Adapted from Doswald et al. (2020) and IPCC (2014). Note: The definitions used are those in Doswald et al. (2020). Some new definitions have been presented in the meantime, such as the United Nations Environment Programme's definition of nature-based solutions (UNEP, 2022b). This definition is more detailed, but it is still conceptually compatible with the definition in Doswald et al. (2020).

In accordance with the IPCC (2014, 2018), the evaluation analyses the contributions of adaptation interventions towards strengthening climate resilience and avoiding maladaptation across three basic objective dimensions (see Table 2).

Table 2 Objectives of adaptation interventions

Objectives	Subcategory	Definition
Better responses to shocks and stressors	Reduced exposure Reduced risk	The ability of target groups to better respond to shocks and stressors while reducing permanent negative effects on long-term livelihoods
Increased adaptive capacities	Social benefits Economic benefits	The ability of target groups to deal with alternative lifestyles in an informed and proactive way, conscious of changing conditions
Enhanced enabling environment	Environmental systems Socio-economic systems Institutional systems	Systematic changes in environmental, socio-economic and institutional systems to strengthen resilience

Source: Adapted from Doswald et al. (2020).

2.6 Theory-building desk studies and workshops

To answer the formative evaluation question on the promotion of transformative adaptation interventions and to address the cross-cutting topic of conflict-sensitive adaptation, the evaluation uses theory-building processes and supplements them with selected empirical analyses.

The evaluation first created a theory of change (ToC) for both topics. The starting point for this was a qualitative content analysis of scientific and grey literature as well as internal work aids and preliminary design work by the ministries and their implementing organisations. The evaluation then conducted a reflection on the identified objectives, chains of action and approaches with experts and decision-makers from development policy and implementation. Unlike for the topic of transformation, the desk study on the topic of conflict sensitivity mainly relied on scientific literature due to the available data. In light of this, the evaluation supplemented the work on this cross-cutting topic with an additional workshop with selected academics.

Finally, the theoretical models were compared with the available empirical data. For the topic of transformation, this evaluation synthesised empirical results from publicly accessible evaluations by international actors. For the topic of conflict sensitivity, it used data assessing the success of adaptation interventions and investigated the influence of conflicts on the effectiveness and impact of adaptation interventions using regression analyses.

2.7 Limitations

For evaluation question 1 on the consideration of climate risks, this evaluation focused on how adaptation mainstreaming is implemented in practice at the operational level in modules (project level); there was no evaluation at strategic level (e.g. sector or country strategies). To identify adaptation-adjacent cases, machine learning was used to analyse the titles and short descriptions of interventions in the OECD CRS data. This procedure ensures a highly representative case selection in relation to the overall DC portfolio between 2014 and 2019, however – due to the limited scope of the short descriptions – it accepts some inaccuracies in the CRS reporting of individual cases in doing so.

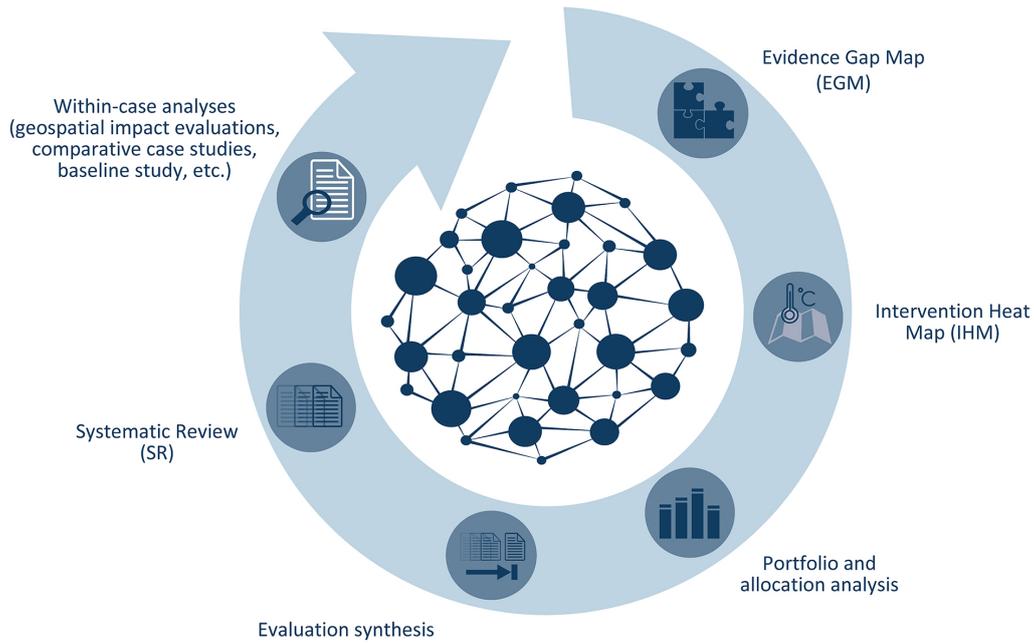
Evaluation question 2 regarding effectiveness and impact is answered based on the results of the second evaluation module of Noltze et al. (2023) and the third evaluation module of Leppert et al. (2021). The limitations mentioned in the two module reports therefore also apply to this synthesis report.

2.8 Method integration

The modular adaptation evaluation comprises a method-integrated design with many different sequential and parallel, cross-case and within-case, qualitative and quantitative methodological components. This method-integrated design serves to increase both the methodological quality of the evaluation (evaluation quality) and its policy-relevance (usefulness). The former is achieved by systematically triangulating different

methods; the latter is achieved by generating extensive evidence relating to the evaluation’s various causal and non-causal questions. The various methods are integrated both at the level of the cross-case portfolio evaluation (EGM, IHM, evaluation synthesis, systematic review, etc.) and in the context of individual within-case analyses (geospatial impact evaluation of irrigation infrastructure interventions in Mali, baseline study on the introduction of climate risk insurance in the Philippines, comparative case studies on addressing residual climate risks, etc.) as well as – thanks to systematic case selection procedures – between the cross-case and within-case analyses (see Figure 1).

Figure 1 Method-integrated design of the modular adaptation evaluation



Source: DEval, own visualisation.

3. PORTFOLIO

3.1 Benchmarks

This portfolio analysis builds on the portfolio and allocation analysis by Noltze and Rauschenbach (2019, evaluation module 1) and examines the extent to which German DC fulfils the following benchmarks:

Portfolio analysis: To what extent does adaptation-relevant ODA contribute to achieving the Federal Government’s international climate funding objectives?

Benchmark 0.1: The mitigation and adaptation commitments balanced from budget funds amount to at least EUR 4 billion per year by 2020.

Benchmark 0.2: German DC makes significant contributions towards adaptation to climate change via multilateral organisations.

Benchmark 0.3: German DC supports SIDS in adapting to climate change, particularly through multilateral cooperation.

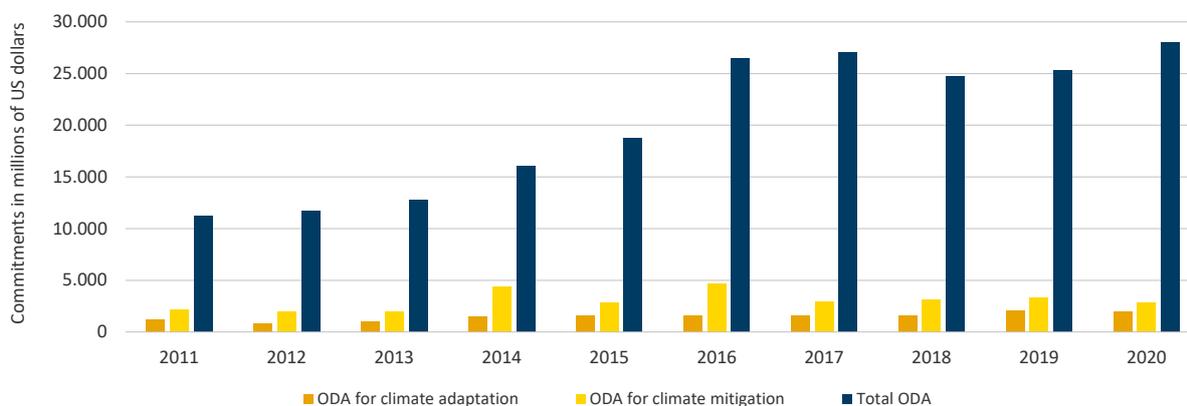
Benchmark 0.1 is based on the Federal Government’s objective of increasing its climate funding from budget funds to an annual total of EUR 4 billion by 2020 and distributing these funds to mitigation and adaptation interventions in a balanced manner (BMZ, 2016, 2019, see also Noltze and Rauschenbach, 2019). With Benchmark 0.2, the evaluation examines the Federal Government’s positioning in the field of multilateral engagement in accordance with the BMZ’s “climate and energy” core area strategy (BMZ, 2022). Benchmark 0.3 focuses on the role of multilateral cooperation in supporting SIDS (BMZ, 2022).

3.2 Findings

Development policy is increasingly also climate policy. According to the Federal Government’s reporting of climate/adaptation-relevant ODA to the OECD, the commitments for mitigation and adaptation interventions increased between 2011 and 2020 and amounted to a total of USD 45.4 billion from budget funds and KfW’s own funds during that period, accounting for roughly a quarter of all German ODA (see Figure 2).

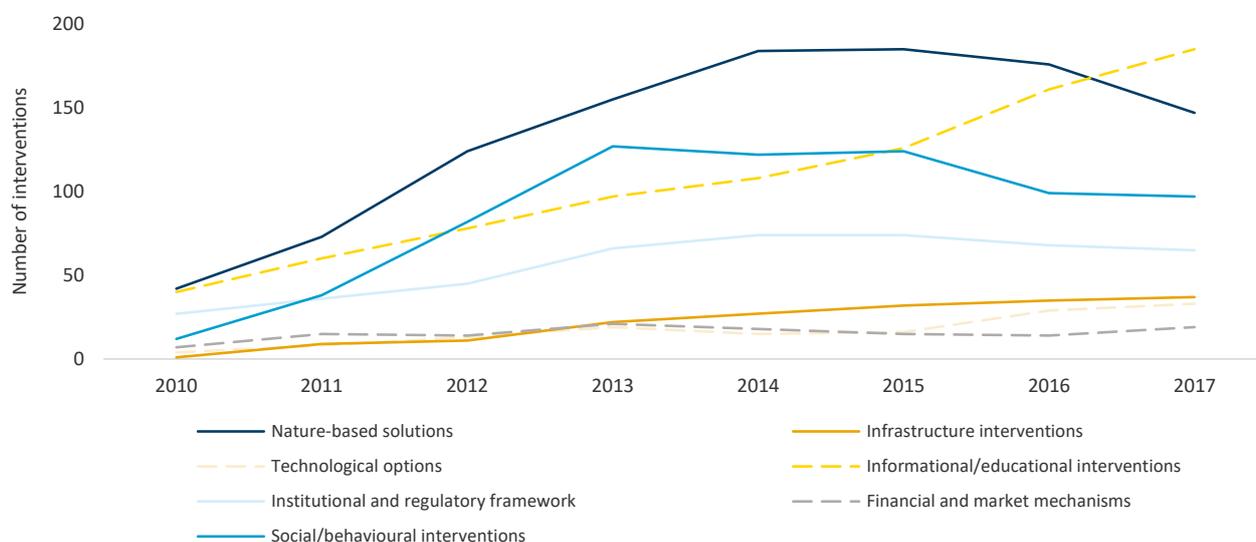
Benchmark 0.1: The mitigation and adaptation commitments balanced from budget funds amount to at least EUR 4 billion per year by 2020.

With over USD 17.5 billion from budget funds and KfW’s own funds, Germany committed the most adaptation funding of any OECD member country in the period of 2011–2020. This amount represents approximately eight percent of all German ODA. Interventions with climate adaptation as a significant objective (CLA-1) received two thirds of that amount, while the other third went to interventions with adaptation as a principal objective (CLA-2). From budget funds alone (bilateral and multilateral), Germany most recently (2020) committed adaptation-relevant ODA totalling approximately USD 2.15 billion; including KfW’s own funds, the total commitments amounted to approximately USD 2.25 billion for 2020.

Figure 2 German DC: climate-relevant ODA compared to overall ODA (in millions of US dollars)

Source: OECD DAC CRS data, own calculations. The diagram shows grants and loans from budget funds and KfW's own funds (including grant equivalents from 2017 onwards). CLA-1 interventions were discounted 50 percent.

German DC adaptation interventions chiefly rely on nature-based solutions (41%) and social/behavioural interventions (25%). However, the priorities change over time (see Figure 3). While the share of nature-based solutions and social/behavioural interventions are declining, informational/educational interventions are growing more important. The funding for other types of adaptation interventions has remained essentially constant over time. Infrastructure interventions have slightly but steadily grown more important over time.

Figure 3 German adaptation interventions over time

Source: DEval, own visualisation as per Doswald et al. (2020).

Benchmark 0.2: German DC makes significant contributions towards adaptation to climate change via multilateral organisations.

The Federal Government engages with international climate policy mainly through bilateral cooperation (see also Noltze and Rauschenbach, 2019). Germany also makes core contributions to multilateral organisations (also referred to as “multilateral DC”). The OECD CRS data can be used to calculate Germany’s climate/adaptation-relevant core contributions to multilateral organisations for the years 2013 to 2020 (see Section 2.2). During this period, Germany provided core contributions amounting to approximately USD 52.8 billion to multilateral organisations, making it the leading donor among OECD countries. There are 16 multilateral organisations that receive core contributions from Germany and use those funds to support adaptation to climate change. The total sum of adaptation-relevant core contributions amounts to approximately USD 2.5 billion (2013 to 2020). This represents around five percent of all multilateral core contributions made by the Federal Government. In the period of 2011–2020, Germany additionally made earmarked contributions to multilateral organisations (as previously mentioned, referred to as “bilateral funds” in line with the OECD) for climate adaptation amounting to a further USD 2.4 billion.

Of the USD 2.5 billion in core contributions to multilateral organisations for funding adaptation interventions, the greatest German contributions between 2013 and 2020 went to the International Development Association of the World Bank (24%), the Green Climate Fund (GCF; 20%) and the Adaptation Fund (18%) followed by the African Development Fund (AfDF; 11%), the Trust Fund of the Global Environment Facility (GEF; 9%) and the GEF Least Developed Countries Fund (9%). However, the organisations allocated different shares of these contributions to adaptation interventions, as described in Section 2.2. While the Adaptation Fund used 100 percent of the funds for climate adaptation interventions, the share for the GEF Least Developed Countries Fund lies at 83.4 percent. Against this backdrop, this evaluation calculates the adaptation-relevant shares of multilateral core contributions.

Benchmark 0.3: German DC supports SIDS in adapting to climate change, particularly through multilateral cooperation.

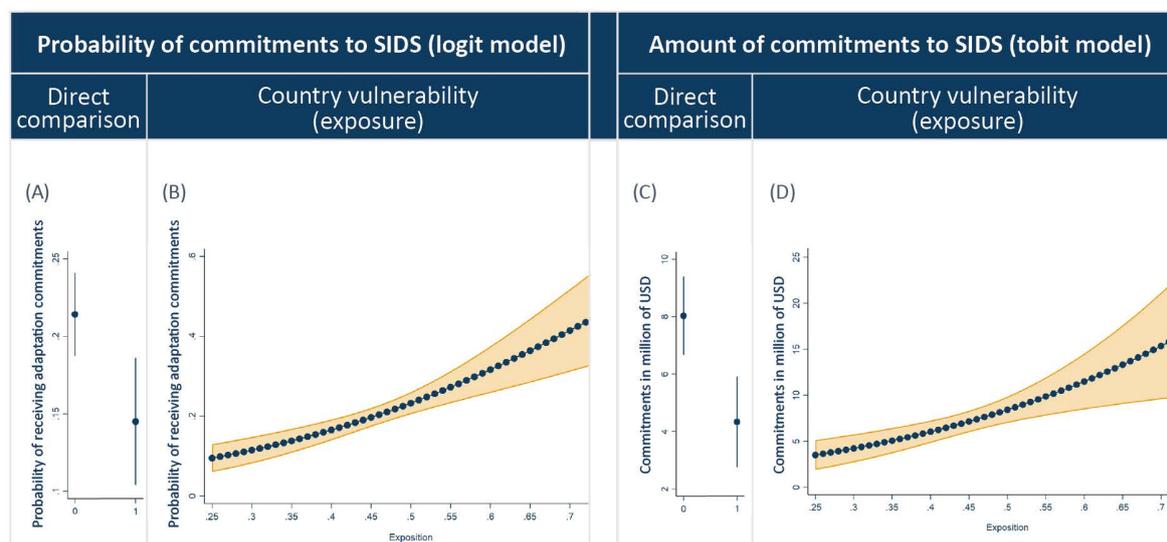
For the share of the bilateral adaptation portfolio and the earmarked multilateral adaptation funds, the allocation analysis by Noltze and Rauschenbach (2019) showed that the likelihood of receiving German adaptation commitments increases in correlation with a country’s climate vulnerability. However, contrary to expectation, Noltze and Rauschenbach (2019) found that SIDS have a below-average likelihood of receiving German adaptation commitments. With the analysis of core contributions, it is now possible to critically address the question of whether SIDS benefit more strongly from multilateral funds. To this end, the evaluation calculates the probability for SIDS to receive adaptation commitments from multilateral organisations (limited to those receiving core contributions from Germany according to the OECD DAC data) as well as the amount of the commitments.⁶

The results of the regression analyses (see Table 6) show that SIDS are not more likely to receive adaptation commitments, also in terms of core contributions from multilateral organisations (see Figure 4 [A]). Their probability of receiving multilateral commitments is 14 percent; the probability for other countries is 21 percent. This proportion remains unchanged even when distinguishing between commitments for interventions that have adaptation as a principal or significant objective. The evaluation also finds that the SIDS category has no influence on the amount of multilateral commitments. Adjusted to their population size, SIDS receive on average USD 3.7 million less in adaptation commitments than other countries (see Figure 4 [C]). Here too, the amount of commitments rises with increasing vulnerability (as defined by the ND-GAIN exposure value; see Figure 4 [D]). However, the probability for SIDS to receive adaptation commitments from multilateral core contributions does rise with increasing climate vulnerability (see Figure 4 [B]). In line

⁶ The evaluation estimates the probability of receiving commitments using logistical regression analyses (logit models) and the likely amount of commitments using tobit models.

with Noltze and Rauschenbach (2019), this indicates that SIDS status is not the decisive factor for allocation decisions, but climate vulnerability.

Figure 4 Probability for climate-vulnerable SIDS to receive adaptation commitments via multilateral core contributions



Source: OECD DAC CRS data, own calculations. The diagram shows grants and loans for adaptation interventions (only CLA-2) from budget funds and KfW's own funds. CLA-1 interventions were discounted 50 percent. Probabilities and amounts of commitments with 95% confidence intervals. 0=not SIDS (n=114), 1=SIDS (n=35).

Summary of the findings:

- The Federal Government's adaptation-related ODA contributes towards achieving the Federal Government's international climate funding objectives; from budget funds alone (bilateral and multilateral), Germany most recently (2020) allocated adaptation-relevant ODA totalling approximately USD 2.15 billion.
- When financing interventions, German DC mainly focuses on nature-based solutions, social/behavioural interventions and informational/educational interventions.
- German adaptation financing is chiefly allocated via bilateral DC. German DC also makes significant multilateral contributions to climate change adaptation via core contributions.
- Contrary to objectives, SIDS do not receive particular support; this applies equally to Germany's bilateral (see also Noltze and Rauschenbach, 2019) and multilateral financing (this evaluation).

4. FINDINGS

4.1 Consideration of climate risks

4.1.1 Benchmarks

To address the question regarding the consideration of climate risks (“adaptation mainstreaming”), the evaluation operationalises the evaluation dimensions introduced in Section 1.4 through the following benchmarks (see Section 7.2 in the Annex):

Evaluation question 1: To what extent does German DC systematically consider climate risks?

Benchmark 1.1: German DC systematically assesses climate risks and potential approaches for avoiding negative impacts, increasing adaptive capacities and exploiting beneficial opportunities arising from climate change.

Benchmark 1.2: Interventions are designed to include options for action tailored to the identified climate risks.

Benchmark 1.3: The interventions implement options for action tailored to the identified climate risks.

Benchmark 1.4: The monitoring and evaluation systems of German DC take climate risks into account.

Benchmark 1.5: The monitoring and evaluation systems of German DC use appropriate indicators that ensure the evaluation of effectiveness and impact.

4.1.2 Theory of change

German DC sees the systematic consideration of climate risks as a defining characteristic of climate-resilient DC (BMZ, 2021a). This consideration is intended to ensure that the assessment, planning and implementation of all interventions avoid negative impacts and exploit beneficial opportunities arising from climate change. Another objective is to increase adaptive capacities. The BMZ made consideration of these aspects binding for all interventions in the bilateral portfolio from 2014 onwards. A new “environmental and climate assessment” quality criterion is also currently being developed as part of the “BMZ 2030” process. It is to define provisions for the systematic avoidance of environmental and climate risks and more broadly exploiting beneficial opportunities. This is meant to ensure the successful integration of climate and environmental issues in DC across country and sector boundaries. This criterion builds on the existing assessment specifications. The IKI Funding Programme applies the performance standards (“*Performance Standards on Environmental and Social Sustainability*”) of the International Finance Corporation (IFC) of the World Bank Group.

With the defined objectives and design of climate and adaptation mainstreaming, German DC largely conforms to international practice. In a comparison of German climate assessments with the respective interventions of 31 bilateral and multilateral organisations (see Table 7 and Table 8 in the Annex), this evaluation finds both similarities and minor differences. The majority of German interventions fundamentally adhere to the IFC performance standards. Despite their wide scope, the IFC standards do not, however, explicitly address climate risks and adaptation. This is due in part to the fact that the IFC standards have not been updated since they were originally published around ten years ago. What’s more, the standards were designed for IFC investments in private companies and do not so much serve as an absolute benchmark, but more as a safeguard for IFC investments and as a diagnostic tool to support companies on the path to improved sustainability via investments and advisory services. The consideration of beneficial opportunities arising from climate change, on the other hand, is a distinguishing feature of German DC.

The implementing organisations are responsible for implementing the provisions of the environmental and climate assessment. The organisations integrate the provisions of different commissioning parties into their organisation-specific safeguard systems and supplement them with additional assessment aspects of their own. At GIZ, the environmental and climate assessments are part of the Safeguards and Gender Management System; at KfW, they are part of the general project and programme management instructions. With regard to the adaptation assessment, GIZ also emphasises a precautionary approach in dealing with uncertainties.

In line with the understanding of other development banks, KfW goes beyond the provisions of the environmental and climate assessment in climate mainstreaming to distinguish between the climate resilience created by interventions and the climate resilience of interventions themselves. In addition, KfW recently added the response to residual climate risks as an additional assessment aspect in the project/programme management instructions (see Leppert et al., 2021).

4.1.3 Findings

The identified adaptation-adjacent interventions comprise 23 CLA-0 interventions (with no adaptation objectives) which nevertheless exhibit a connection to adaptation according to the OECD CRS titles and short descriptions and which are implemented in countries with a high level of climate vulnerability (ND GAIN >0.5). Figure 5 provides an overview of the regional distribution of the sample with an indication of interventions in adaptation-relevant sectors⁷. 19 of the 23 interventions were commissioned by the BMZ and four by the IKI Funding Programme.

Figure 5 Regional distribution and sector classification of adaptation-adjacent interventions (N=23)



Source: DEval, own visualisation. The short titles of interventions are listed. Further information on the individual interventions can be found in Table 9 in the Annex.

⁷ The representation shows classification to the agriculture, water and coastal protection sectors, which collectively account for the majority of all adaptation commitments at 60 percent (2011–2019) (see Noltze et. al, 2023).

Benchmark 1.1: German DC systematically assesses climate risks and potential approaches for avoiding negative impacts, increasing adaptive capacities and exploiting beneficial opportunities arising from climate change.

In the first step, this evaluation focuses on the project assessments. It first examines preliminary assessments (“screenings”) to evaluate the extent to which interventions address potential connections between changing climate parameters and the effectiveness and impact of interventions as well as how the interventions increase adaptive capacities. For cases in which the screening indicates an adaptation-relevant intervention, the evaluation then investigates in an in-depth assessment the extent to which the intervention includes the analysis and identification of options for action to avoid negative impacts, to increase adaptive capacities and to exploit beneficial opportunities as well as whether a risk classification was conducted.

Complete documentation of the adaptation screening is only available in six (of a total of 23) cases. A screening was conducted for one additional intervention, but it was found to not be adaptation-relevant. There was thus also no note of whether an in-depth analysis is required. For one additional intervention there is no assessment documentation available, but the project proposal described climate impacts and risks, the vulnerability of the target group and the extent to which the risks can be influenced. As there is no evidence of an assessment process for the remaining 15 interventions, it can be assumed that they were not assessed for climate risks.

For the classification of adaptation relevance, there are technically plausible reasons only in five cases. However, it is not comprehensible how and on what data basis the classification was made. For this reason, only one financial cooperation (FC) intervention in Mali exhibits an in-depth assessment that presents detailed climate analyses and transparent sources for the information. For another technical cooperation (TC) intervention, the documents logically argue that climate parameters and adaptive capacities were not relevant components for implementation in the case of a risk management office in Somalia serving solely to ensure the safety of GIZ employees. For two more cases, the reasons are partially or largely not comprehensible. For example, the BMZ assessment obligation should have been implemented for one TC intervention (Studies and Experts Fund) even though internal GIZ work aids exempted the intervention from their own assessment obligations. For this intervention, the information provided does not convincingly explain why a forest project is not climate-relevant or why, beyond the adaptation impact of a forest, there are no relevant options for increasing adaptive capacities. Transparent reasoning would have ensured better comprehensibility in this case. One TC intervention in Kenya does fulfil the assessment provisions in principle; however, the project proposal mentions “harsh climate and environmental conditions” that reportedly led to “damage and loss of property”. This contradicts the assessment results, which see no adaptation relevance and list no climate risks. Similarly, for a TC intervention providing macroeconomic advisory services with the objective of reducing poverty in Rwanda, the documents describe the climate impact on the agricultural sector – the most important sector for employment; however, the assessment makes no clear classification of adaptation relevance.

In three cases, the content analysis found inconsistencies regarding the objectives of the adaptation assessment or the concepts of climate risks and adaptation. For example, the in-depth assessment for one TC intervention that formally fulfilled the benchmark was rejected, since “an in-depth climate change mitigation assessment [could not demonstrate] any additional significant potentials”. In another TC intervention, climate change was found to have “no adaptation risks”. A further TC intervention that formally partially fulfilled the benchmark declined to perform an in-depth assessment on the grounds that the project would “not directly contribute to adaptation to climate change”. Reasons such as this reveal that the objectives of the adaptation assessment remain unclear. The forest and biodiversity intervention mentioned in the previous paragraph, which found no adaptation relevance, mentions in a reporting document that the implementation was disrupted by forest fires caused by the El Niño phenomenon. An adaptation assessment would have found climate parameters to be highly relevant in this case. This would have made it possible to identify climate risks for the interventions and corresponding options for action in advance and take them into account in the design phase.

Contrary to the evaluation team's expectation, the screenings only found one TC intervention to be adaptation-relevant, confirming its formal obligation to conduct an in-depth assessment. The assessment of this intervention documents the results of the analysis in terms of the expected climate changes and affected areas. It also lists biophysical and socio-economic impacts. In addition, it notes the necessity of increasing the adaptive capacities and resilience of the target group. The prioritised options for each field of action are documented, though it remains unclear what further options were identified, if any. No risk classification or sources of information are apparent. Another BMZ intervention failed to clearly classify the adaptation relevance but still conducted an in-depth assessment. It was not conducted using the appropriate form, and there is no risk classification. Furthermore, for the intervention classified as adaptation-relevant – as with all the other interventions examined – it is not clear whether general assessment principles such as partnership, efficiency, transparency and the creation of synergies with other cross-cutting topics were upheld. Only the previously mentioned FC intervention transparently cites the sources it used.

Benchmark 1.2: Interventions are designed to include options for action tailored to the identified climate risks.

Benchmark 1.3: The interventions implement options for action tailored to the identified climate risks.

In the second step, the evaluation aimed to determine whether the assessment results were incorporated into the design and implementation of interventions. To this end, it examined the extent to which the design of the interventions (as described in the project proposal) reflects the consideration of climate risks and the options identified in the in-depth assessment. According to the documents, though, there was only one case in which the process of a screening and in-depth assessment took place and options for action were prioritised in the design and implementation. In one additional case, an in-depth assessment was conducted independently of the estimated adaptation relevance. For the former, the evaluation examined the extent to which the proposed options for action are reflected in the design. The evaluation then assessed the consideration of climate risks in the implementation (based on the latest available reporting). Due to the low number of available assessment results and identified options for action, the design and implementation were analysed using an open approach. This approach examined, independently of the assessments, the extent to which the design and implementation considered climate risks in line with adaptation mainstreaming.

The results show that climate risks – independently of the assessments – were not considered in the design and implementation in any of the cases in question. They were mentioned to a small extent in some cases, though. For example, one monitoring report pointed to an improved response to droughts. For the adaptation-relevant intervention, the documentation does not clearly indicate which options for action were considered in the design. For the implementation, the final report includes only a few approaches drawn from the options for action. For the BMZ intervention subject to an in-depth assessment without any classification of its adaptation-relevance, transparent and technically comprehensible reasons are given for why it was not necessary for the design to consider any additional options for action. Beyond this reasoning, it is clear that adaptation aspects played a role in the implementation. Overall, only this FC intervention appears to have sufficiently considered climate risks.

Based on the sample of adaptation-adjacent CLA-o interventions, the evaluation finds barely any evidence that climate risks were systematically considered. Neither the assessments nor the design and implementation of the evaluated interventions incorporate approaches to avoid negative impacts of climate change on the intervention, to exploit beneficial opportunities arising from climate change or to increase adaptive capacities. In particular, there is no evidence that beneficial opportunities are exploited. There is also barely any reflection on the potential impacts of climate change on the success of the interventions – despite the highly climate-vulnerable context. This disproves any assumption of adaptation mainstreaming based on the “most likely cases”. It is therefore highly unlikely that the mainstreaming of adaptation or the systematic consideration of climate risks occurs in the broader portfolio (beyond CLA interventions) of German DC.

The very limited consideration of climate risks is not just contrary to German DC's own objectives – it also presents a significant discrepancy with a view to the priorities of partner countries. Based on an analysis of the Nationally Determined Contributions (NDCs) of a total of 29 bilateral and eight global partner countries, this evaluation found that 85 percent of these countries prioritise climate and adaptation mainstreaming in their NDCs.

Benchmark 1.4: The monitoring and evaluation systems of German DC take climate risks into account.

The evaluation synthesis by Noltze et al. (2023) shows that only a few evaluations of German DC adaptation interventions explicitly deal with climate risks. In turn, most of the reports by GIZ and KfW do not describe the theory of change relating to the adaptation outcomes and impacts of the implemented interventions. In total, verifiable impact findings are available for only 16 percent of all adaptation interventions evaluated up to now (N=118) in terms of how they address climate risks. This doesn't mean that the envisioned adaptation objectives are not achieved in the remaining 84 percent of interventions. It simply means that there is barely any evidence of the contribution of German interventions towards dealing with climate risks. The share of interventions for which verifiable impact findings are available is higher for interventions with adaptation as a principal objective (CLA-2), at 19 percent (N=36), than for interventions with adaptation as a significant objective (15%, CLA-1, N=82).

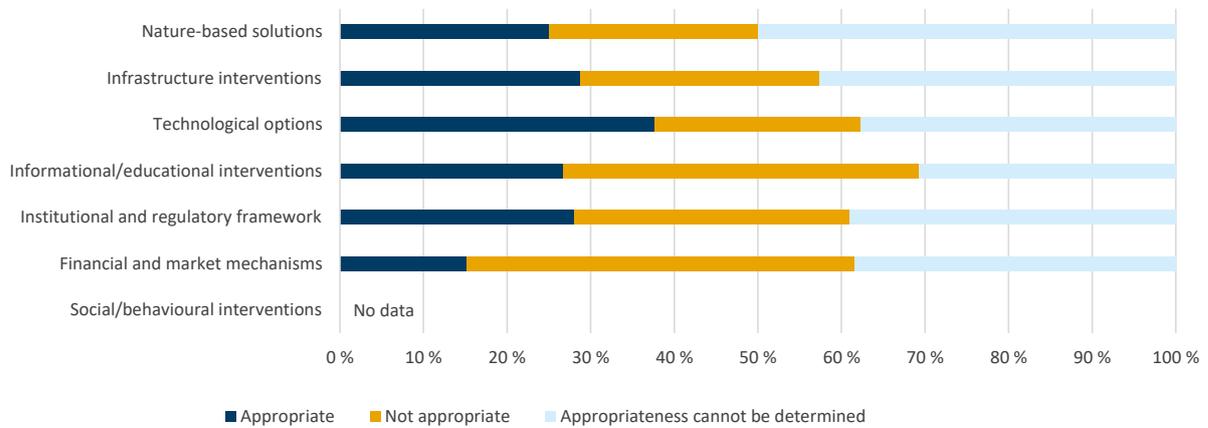
Benchmark 1.5: The monitoring and evaluation systems of German DC use appropriate indicators that ensure the evaluation of effectiveness and impact.

The quality assessment of indicators finds approximately 30 percent of the indicators used in the evaluations to be appropriate for assessing the effectiveness and impact. These appropriate indicators 1) make connections to dealing with climate risks, 2) provide information on the contributions of interventions at the individual output, outcome and impact levels, 3) disclose their measuring units and use reference values and 4) are measurable as part of the monitoring and evaluation systems.

For example, one CLA-2 informational/educational intervention in South Sudan aims to support the population's resilience to climate risks by introducing natural resource management. One appropriate indicator (as per the criteria described above) used in evaluating this intervention is the share of the target group farming with conservation agriculture methods adapted to the changing climatic conditions.

For the total of 118 adaptation interventions in the 79 GIZ and KfW project evaluations, 169 indicators were identified at various levels of the impact chain (46 at the output level, 102 at the outcome level and 21 at the impact level). 86 percent of the 118 interventions exhibit at least one impact indicator at the level of direct results (outcome level). For 18 percent of the interventions, at least one indicator could clearly be assigned to the impact level. Of the 123 outcome and impact indicators, 27 percent were deemed appropriate.

Figure 6 Appropriateness of indicators for evaluating the effectiveness and impact of different types of interventions



Source: DEval, own visualisation as per the evaluation synthesis by Doswald et al. (2023). The data encompasses CLA-2 and CLA-1 interventions. No evaluations were identified for the type “social/behavioural interventions”.

The highest share of appropriate indicators for evaluating effectiveness and impact is found for technological options (see Figure 1), while the lowest is found for financial and market mechanisms. For nature-based solutions, there is a notably higher share of indicators whose appropriateness cannot be determined due to insufficient theories of change and discussions. There is high share of inappropriate indicators for informational/educational interventions and for financial and market mechanisms.

Summary of the findings:

- When it comes to the systematic consideration of climate risks (“adaptation mainstreaming”), the evaluation finds a significant discrepancy between the benchmark and implementation in German DC.
- Neither in the assessments nor in the design and implementation of the evaluated interventions did German DC apply the requirements for avoiding negative climate impacts caused by interventions, for exploiting beneficial opportunities or for increasing adaptive capacities.

4.2 Effectiveness

4.2.1 Benchmarks

In the assessment of effectiveness and impact, this evaluation builds on the sectoral analyses by Noltze et al. (2023) and operationalises the evaluation dimensions introduced in Section 1.4 via the following benchmarks (see Section 7.2 in the Annex):

Evaluation question 2: To what extent does German DC make effective and impactful contributions to climate change adaptation?

Benchmark 2.1: German DC adaptation interventions contribute towards achieving the objectives “better responding to shocks and stressors”, “increasing adaptive capacities”, “enhancing the enabling environment” and “better responding to residual climate risks”.

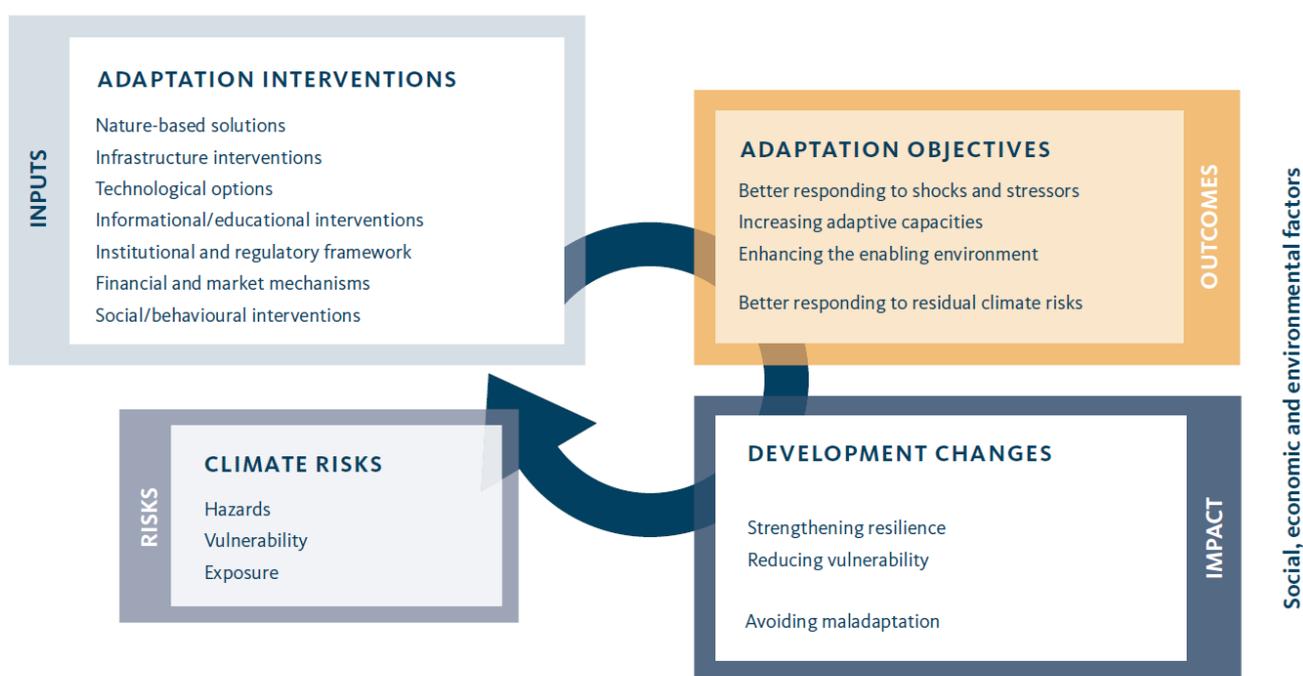
Benchmark 2.2: Adaptation interventions of German DC contribute in a verifiable or foreseeable manner towards development changes (“strengthening climate resilience”, “reducing vulnerability” and “avoiding maladaptation”).

4.2.2 Theory of change

The new IPCC status report (2022) sees adaptation interventions more strongly than ever as a necessary prerequisite for dealing with climate risks and calls for more evidence regarding the effectiveness and impact of interventions. In the following section, the evaluation presents an overarching theory of change (Figure 7). It then assesses the effectiveness and impact of German adaptation interventions.

As described in Section 2.5, the evaluation groups the interventions into nature-based solutions, infrastructure interventions, technological options, informational/educational interventions, institutional and regulatory framework, financial/market mechanisms and social/behavioural interventions (input level). For the objectives of adaptation interventions, it distinguishes between better responding to shocks and stressors, increasing adaptive capacities and enhancing the enabling environment (see also Section 2.5) and extends the theory of change – as a reaction to the results of the third module of the evaluation (see Leppert et al., 2021) – with the objective of better responding to residual climate risks (outcome level). The impact level encompasses strengthening climate resilience, reducing vulnerability and avoiding maladaptation. In the context of wide-ranging social, economic and environmental factors, changes at the various outcome and impact levels contribute towards better responding to the hazards arising from climate risks as well as exposure and vulnerability.

Figure 7 Overarching theory of change for the effectiveness and impact of adaptation interventions



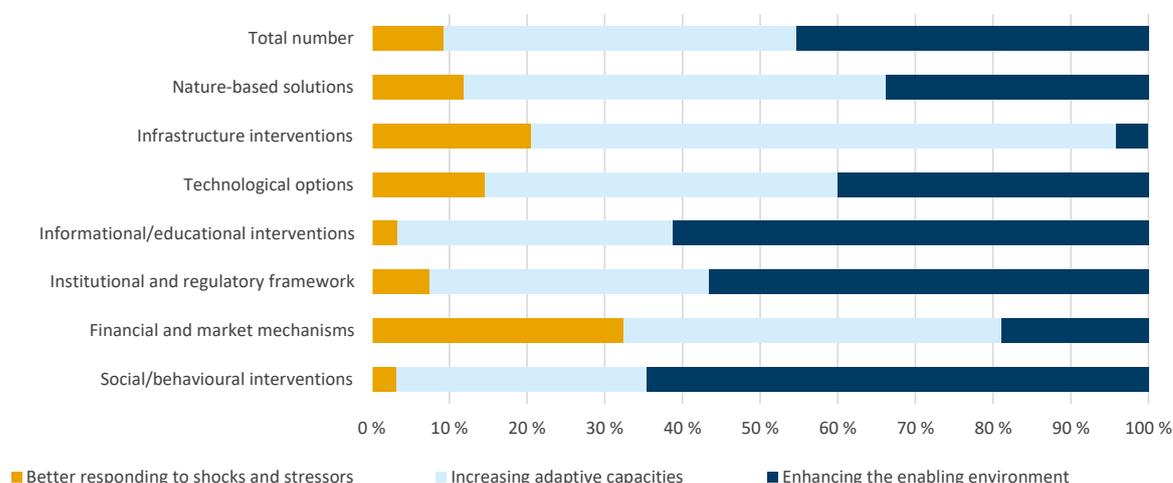
Source: DEval, own visualisation as per Doswald et al. (2020), IPCC (2022) and Leppert et al. (2021).

4.2.3 Findings

The findings section is structured as follows: it first presents the findings regarding “better responding to shocks and stressors”, “increasing adaptive capacities” and “enhancing the enabling environment”. It then presents the findings on “better responding to residual climate risks”.

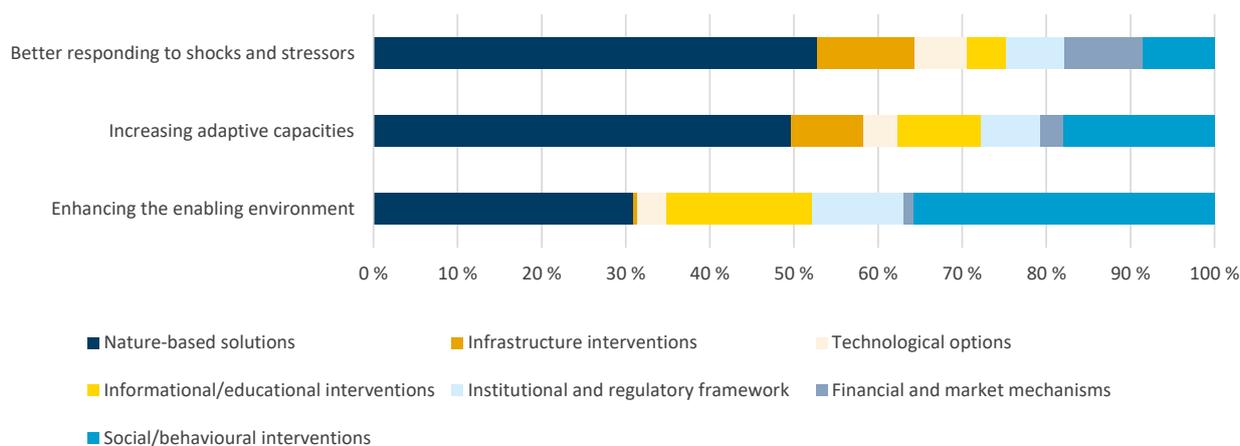
With a share of 45 percent each, most German adaptation interventions have the objectives of increasing adaptive capacities and enhancing the enabling environment (see Figure 8). 10 percent of the adaptation interventions aim to better respond to shocks and stressors. The objectives vary depending on the type of intervention (see Figure 8). 75 percent of the infrastructure interventions and 54 percent of interventions with nature-based solutions mainly aim to increase adaptive capacities. 65 percent of the social/behavioural interventions and 61 percent of the informational/educational interventions strive to establish an enhanced enabling environment. Better responding to shocks and stressors is more often the objective of financial and market mechanisms (32%) and infrastructure interventions (21%).

Figure 8 Types of adaptation interventions and their objectives



Source: DEval, own visualisation based on IHM data on German DC adaptation interventions from Doswald et al. (2020).

The systematic review findings on the effectiveness of international adaptation interventions (Noltze et al. 2023) reveal a somewhat different picture of the objectives, with 36 percent of interventions focussing on better responses to shocks and stressors, 47 percent on increasing adaptive capacities and only 16 percent on an enhanced enabling environment. Like in the German portfolio (see Figure 9), the international evidence shows that shocks and stressors are mainly addressed via nature-based solutions (24%). However, international interventions promote adaptive capacities more strongly through social/behavioural interventions (20%). Nature-based solutions and financial and market mechanisms (19% each) are both used to establish an enhanced enabling environment, while German DC also uses more social/behavioural interventions to pursue this objective.

Figure 9 Objectives of German adaptation interventions (by type of intervention)

Source: DEval, own visualisation based on IHM data on German DC adaptation interventions from Doswald et al. (2020).

Benchmark 2.1: German DC adaptation interventions contribute towards achieving the objectives “better responding to shocks and stressors”, “increasing adaptive capacities”, “enhancing the enabling environment” and “better responding to residual climate risks”.

The interventions’ specific contributions towards achieving the respective objectives were evaluated by compiling the data from the IHM (see Doswald et al., 2020) and the systematic review of the effectiveness of international adaptation interventions (see Noltze et al., 2023). Figure 10 presents the results in the form of a results matrix.

Nature-based solutions and infrastructure interventions, in particular, show positive effects (see Box 1, for example). However, only 25 percent of German DC interventions deploy social/behavioural interventions. For these interventions, the systematic review by Noltze et al. (2023) largely shows significantly negative effects. For example, Mallick and Sultana (2017) report increases in crime and conflict in their evaluation of interventions for resettling vulnerable population groups in a coastal region of Bangladesh. Due to a significant evaluation gap in this area, it is not clear to what extent these findings also apply to German DC. The second evaluation module (on adaptation evaluation) finds no evaluation reports from German DC with outcome and impact findings on social/behavioural interventions (see Noltze et al., 2023). The third evaluation module (on better responding to residual climate risks) also points to an implementation and evidence gap in the area of transformative risk management.

Box 1 Example for the integration of international evidence into the evaluation of effectiveness and impact of German adaptation interventions

Coastal ecosystems and coastal forests in South-East Asia are partially destroyed or at least heavily degraded. This also heavily restricts the protective function of mangrove forests, for example; they can no longer protect coastal inhabitants and infrastructure from many negative climate change impacts such as rising sea levels and the associated flooding or are no longer able to mitigate these effects.

Via technical and financial cooperation, German DC aims to ensure better protection of coastal forests, sustainable use of resources, biodiversity conservation and adaptation to climate change. German DC uses nature-based solutions as well as institutional and informational approaches to ensure better responses to shocks and stressors. The evaluation reports of German DC demonstrate the success of these interventions in the area of coastal protection.

International evidence supports the effectiveness and impact of comparable interventions. Several scientific studies find nature-based solutions to be effective for reducing the impact of shocks and stressors on coastal inhabitants (Bhattacharjee and Behera, 2018; Chinh et al., 2016). Forest coverage supported

by reforestation and/or the conservation of coastal forests can reduce the level of destruction caused by flooding and thus protect the population and their properties (Bhattacharjee and Behera, 2018).

Interventions focussing on technological options have a negative effect on adaptive capacities as well as on enhanced enabling environments. This may be due to the lack of combination with other interventions such as informational/educational interventions, for example (for more on this, see Module 2). Tabbo and Amadou (2017), for instance, note that farmers must be trained to use technologies for improving production if these technologies are to be successful. According to the IHM, though, only two percent of German DC adaptation interventions focus on technological options.

Across all types of adaptation interventions, it is clear that the literature mainly covers positive adaptation outcomes and impacts, while there are fewer findings on negative effects. One exception is the international evidence on the objective of enhancing the enabling environment. The evidence here is conflicting (heterogeneous positive and negative effects) and does not reveal a clear effect. This applies above all to informational/educational interventions and interventions to improve the institutional and regulatory framework as well as financial and market mechanisms, which collectively account for 29 percent of all interventions.

Noltze and Rauschenbach (2019) show that German adaptation funds are largely allocated to partner countries with high climate vulnerability and low adaptive capacities. In terms of the types of adaptation interventions, this evaluation shows that mainly nature-based solutions are used in vulnerable to highly vulnerable countries and that these interventions are mostly associated with positive adaptation outcomes and impacts there. Countries with low climate vulnerability, on the other hand, see more infrastructure interventions and social/behavioural interventions. Furthermore, the main objectives in vulnerable countries are increasing adaptive capacities and enhancing the enabling environment. This is confirmed by Noltze and Rauschenbach (2019), who demonstrate that the probability of receiving German adaptation funds is somewhat higher for countries with low adaptive capacities.

In countries with high vulnerability and/or low adaptive capacities, German DC achieves mainly positive outcomes and impacts when it comes to better responding to shocks and stressors (see Figure 18 in the Annex). Only in highly vulnerable countries and those with very low adaptive capacities does the probability of achieving positive effects for this objective lower slightly as expected. The situation is similar for the objective of increasing adaptive capacities. In contrast, there is a higher probability of a positive outcome/impact for interventions aiming to establish an enhanced enabling environment in countries with average vulnerability and high adaptive capacities. When interpreting these findings, though, it must be considered that the least amount of evidence is available for countries with very low or low vulnerability and those with very high adaptive capacities, accounting for under 5 percent of studies each.

Figure 10 Evidence on the effectiveness and impact of German and international adaptation interventions

Interventions	Number	Adaptation objectives		
		Better responding to shocks and stressors	Increasing adaptive capacities	Enhancing the enabling environment
Nature-based solutions	576	68	313	195
Infrastructure interventions	73	15	55	3
Technological options	55	8	25	22
Informational/ educational interventions	178	6	63	109
Institutional and regulatory framework	122	9	44	69
Financial and market mechanisms	37	12	18	7
Social/behavioural interventions	350	11	113	226
Overall (percentage)	1.391	129 (10%)	631 (45%)	631 (45%)

Source: DEval, own visualisation based on the German DC data from Doswald et al. (2020). The numbers represent the number of German adaptation interventions. Green = significantly positive effect, yellow = insignificant effect, red = significantly negative effect, grey = no evidence available on the effectiveness of international adaptation interventions. Hatched areas indicate that no clear assignment to a specific direction of effect is possible and represent conflicting evidence.

German DC mainly deploys single interventions or combinations of at most 2 types of adaptation interventions (collectively accounting for 80% of all interventions). According to findings from the evaluation synthesis and from Module 3 (Leppert et al., 2021), this mainly entails a combination of interventions relating to the institutional and regulatory framework and informational/educational interventions. The results of the systematic review show that the probability of an adaptation intervention being effective rises with an increasing number of interventions (see Figure 19 in the Annex). The combination of interventions causes no significant changes in the direction of the effect (positive, neutral or negative) compared to the respective individual interventions. However, there is a stronger tendency towards increasing positive effects when four or five different interventions are combined. It must be noted, though, that only eight percent of the evidence reviewed here pertains to the effectiveness and impact of combinations of four or five interventions.

The probability of achieving positive effects is higher for combinations involving informational/educational interventions than for other combinations. This effect is especially clear when informational/educational interventions are combined with nature-based solutions or social/behavioural interventions. For example, KfW implemented an intervention in the agricultural sector in Vietnam that combined the protection and sustainable use of a reforested area (nature-based solution) with training for forestry advisors (informational/educational intervention).

The overarching ToC (see Figure 7) shows that, in addition to better responding to shocks and stressors, increasing adaptive capacities and enhancing the enabling environment, better responding to residual climate risks can also contribute to adaptation impacts. Interventions for better responding to residual climate risks are particularly effective if there are no further adaptation options available currently or in the future (IPCC, 2018). These limits to adaptation depend on various factors – in addition to technological feasibility and subjective risk tolerance, economic, cultural, capacity-related, political and ecological factors also play a role here (Leppert et al., 2021). Figure 11 shows how the interventions examined in the third evaluation module for better responding to residual climate risks fit into the theory of change of German adaptation interventions and international findings on effectiveness and impact. It reveals that residual climate risks are mainly addressed via informational/educational interventions (with the objective of increasing adaptive capacities), but also through financial and market mechanisms (with the objective of better responding to shocks and stressors) and through interventions for improving the institutional and regulatory framework. However, these findings are based on German DC interventions that have been limited in number up to now and that are mostly new (Leppert et al., 2021). The findings therefore portray the potential effectiveness and impact of interventions.

Overall, German DC interventions for better responding to residual climate risks are found to make mostly positive, but also a few negative contributions to impact. There is also conflicting evidence when it comes to the objective of enhancing the enabling environment. According to the results of the third evaluation module, the positive contributions to effectiveness and impact could be increased further by ensuring interplay between different interventions (see Leppert et al., 2021). These findings show that combinations currently involve an average of two to three interventions – mainly combinations of interventions addressing the institutional and regulatory framework and informational/educational interventions. For example, one technical cooperation intervention in rural India combines risk insurance financed by third parties with risk provisioning to increase the planning capacity of local partners at district level and grant them access to funding via a climate fund.

Figure 11 Number and direction of effect of interventions for better responding to residual climate risks (based on international evidence)

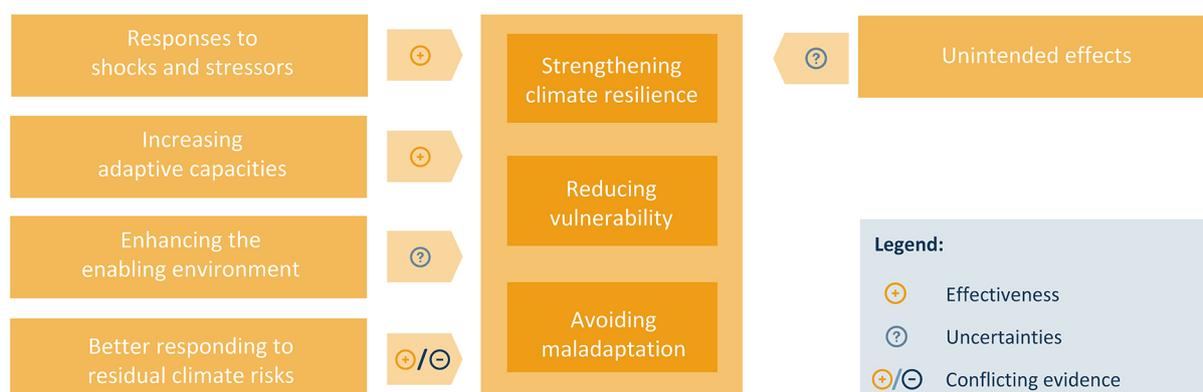
Interventions	Number	Adaptation objectives		
		Better responding to shocks and stressors	Increasing adaptive capacities	Enhancing the enabling environment
Nature-based solutions	0	0	0	0
Infrastructure interventions	2	1	0	1
Technological options	1	1	0	0
Informational/educational interventions	14	3	8	3
Institutional and regulatory framework	8	0	1	7
Financial and market mechanisms	8	5	1	2
Social/behavioural interventions	1	0	1	0
Overall (percentage)	34	10 (30%)	11 (32%)	13 (38%)

Source: DEval, own visualisation based on data from Leppert et al. (2021) and Doswald et al. (2020). The numbers represent the number of German adaptation interventions from Leppert et al. (2021). Green = significantly positive effect, yellow = insignificant effect, red = significantly negative effect, grey = no evidence available on the effectiveness of international adaptation interventions. Hatched areas represent conflicting evidence and indicate that no clear assignment to a specific direction of effect is possible.

Benchmark 2.2: Adaptation interventions of German DC contribute in a verifiable or foreseeable manner towards development changes (“strengthening climate resilience”, “reducing vulnerability” and “avoiding maladaptation”).

At impact level the effect of interventions is determined by their contributions towards strengthening climate resilience, reducing vulnerability and avoiding maladaptation (IPCC, 2022a). This evaluation shows clear, mostly positive contributions towards the objectives of “better responding to shocks and stressors” and “increasing adaptive capacities” (see Figure 12). Due to limited and conflicting evidence, there is uncertainty regarding corresponding contributions towards impact relating to the objective of “enhancing the enabling environment”. The situation is similar for the objective of “better responding to residual climate risks”, although Leppert et al. (2021) show clear potential for effects in this area.

Figure 12 Contributions of adaptation objectives to strengthening climate resilience, reducing vulnerability and avoiding maladaptation



Source: DEval, own visualisation.

There is a significant evaluation and evidence gap regarding unintended effects and maladaptation. Maladaptation mainly arises due to unintended effects of adaptation interventions (IPCC, 2018, 2022). It can even increase the climate vulnerability of the affected population (or states, regions etc.) or reduce their climate resilience (see IPCC, 2018; Schipper, 2020). The evaluations of German DC insufficiently cover unintended effects and potential maladaptation. Against this backdrop, Noltze et al. (2023) addressed the evaluation of side effects and co-benefits in their analysis of GIZ and KfW evaluation reports. The reports mainly disclose co-benefits and barely address unintended, negative effects. However, there is evidence of negative side effects caused by interventions for better responding to residual climate risks. For example, Leppert et al. (2021) report that interventions for better responding to residual climate risks can contribute towards increasing marginalisation of disadvantaged groups if, for instance, borrowers become unable to repay their loans and are forced to sell work equipment in order to service their insurance policies.

Summary of the findings:

- German DC uses nature-based solutions and infrastructure interventions to ensure effective adaptation interventions in better responding to shocks and stressors and increasing adaptive capacities.
- German DC supports a range of interventions for which no findings on effectiveness and impact or even significantly negative findings on effectiveness and impact are available. For the objectives of enhancing the enabling environment and better responding to climate risks, German DC also uses interventions that make barely any contribution, if at all.
- The evaluation finds potential for increasing effectiveness and impact by combining various interventions, particularly by ensuring interplay with informational/educational interventions.
- The modular evaluation reveals limitations in terms of the evaluability and the available evidence on the impact and effectiveness of German adaptation interventions; this especially applies to findings on unintended effects and potential maladaptation.

4.3 Transformative adaptation

4.3.1 Benchmarks

To address the question regarding the promotion of transformative adaptation interventions, the evaluation operationalises the evaluation dimensions introduced in Section 1.4 through the following benchmarks (see Section 7.2 in the Annex):

Evaluation question 3: To what extent does German DC promote transformative adaptation interventions?

Benchmark 3.1: German DC pursues the objective of transformative adaptation policy.

Benchmark 3.2: German DC has an internationally compatible conceptual understanding of how to design transformative adaptation interventions.

Benchmark 3.3: German DC uses appropriate transformative interventions.

4.3.2 Theory of change

In assessing the benchmarks to answer the evaluation questions, the evaluation begins by creating a theory of change for transformative adaptation interventions.

The 2030 Agenda (UN, 2015) and the Paris Agreement (UNFCCC, 2015) have designated the transformation of human systems as a guiding principle of sustainable development. The new IPCC status report also calls for a fundamental shift in development (IPCC, 2022a). This entails both reducing greenhouse gas emissions and adapting to climate change (IPCC, 2022a). German DC has also set itself the objective of enacting transformative climate policy (BMZ, 2021a).

But what does transformation mean with regard to climate change adaptation? What are the objectives of transformative adaptation interventions? And how are they defined? As per the current IPCC status report, transformative adaptation entails changing the fundamental attributes of a socio-economic system in anticipation of the climate and its impacts (IPCC, 2022a). In contrast, gradual adaptation – also referred to as incremental adaptation – maintains the integrity of an existing system (IPCC, 2014, 2022; Kates et al., 2012). Many governments and organisations use the IPCC's definition for orientation. It is not a globally valid definition, though, and every international organisation has its own understanding of transformative adaptation interventions. This understanding partially builds on the IPCC definition and additionally includes the desired direction of change – such as inclusion, just transition (see Box 2) or sustainable development (Adaptation Fund, 2021; Climate Investment Funds, 2019, 2021; Global Environment Facility, 2018, 2020, 2021; Green Climate Fund, 2020, 2021; Kehrer, 2020; Pal et al., 2017; Puri et al., 2021; see Table 10 in the Annex).

Box 2 *Just transition in the context of transformative adaptation*

Just transition refers to the transition towards a socio-economic system that is climate-neutral, social and inclusive (BMZ, 2023a). In the context of climate change, the just transition approach encompasses principles, processes and practices designed to ensure that no people, places, sectors, countries or regions are left behind in the transition from a carbon-based to a low-carbon economy (IPCC, 2022b). Transformative adaptation can contribute towards a just transition by ensuring that aspects such as equality and justice are considered in the planning and implementation of transformative adaptation interventions and that unintended effects are avoided.

The definitions are similar above all in their objectives. Many organisations base their understanding on that of the Climate Investment Funds (CIF). The CIF defines the objective of transformative adaptation as the promotion of a fundamental change in adaptation-relevant systems with significant contributions towards development paths that are inclusive, resilient and sustainable (Climate Investment Funds, 2021). Climate-resilient development paths, in turn, can contribute to additional co-benefits such as sustainable development, poverty reduction, climate change mitigation or environmental protection (IPCC, 2014, 2022). A fundamental shift entails sufficient change in the structure or function of a system that goes beyond existing approaches and enables new change processes (IPCC, 2022a). Adaptation-relevant systems are broadly defined and can be applied to all structures and processes of natural and human systems (BMZ, 2021a; IPCC, 2014, 2022). Transformative adaptation can expand the existing intervention catalogue,

overcome soft adaptation limits⁸, reduce residual climate risks to a tolerable level and achieve social objectives (IPCC, 2022a). This can entail refining and integrating existing approaches as well as developing new approaches (BMZ, 2021a; Kehrer, 2020).

There is consensus in the scientific literature that transformative processes occur in a non-linear manner (Van den Berg et al., 2019). A plausible cycle of transformative adaptation processes follows an S-shaped progression (Climate Investment Funds, 2021; Rogers, 2003). This progression consists of typical steps: adoption, take-off, acceleration and stabilisation (see also Rotmans et al., 2001). The cycle is influenced by multiple interacting factors that can be social, cultural, economic, biological, technical or political in nature, for example (IPCC, 2022a). Other influencing factors include values and the behaviour of participants and affected persons as well as potentially conflicting objectives between the relevant actors (Adger, 2016).

This cycle of transformative adaptation interventions contains multiple dimensions that represent the qualities of a transformative shift. The CIF distinguishes between five dimensions of transformation (Climate Investment Funds, 2021):

- **Relevance:** Accordance with the transformation objectives of the global, bilateral and national agendas and contexts;
- **Systemic change:** Fundamental change to social, economic and ecological systems, institutions and policies;
- **Speed:** Fast and flexible implementation;
- **Scale:** Temporal, geographic and/or sectoral scaling;
- **Sustainability:** Permanent change to the structures and framework conditions of the new system.

Several international organisations follow the relatively comprehensive conceptual framework of the CIF dimensions (2021; see Tables 3 and 10 in the Annex).

Table 3 Use of the CIF dimensions by international DC stakeholders

Stakeholder	Relevance	Systemic change	Speed	Scale	Sustainability	Other
CIF	•	•	•	•	•	
GEF	•	•		•	•	
AF	•	•	•	•	•	
GCF	•			•		•

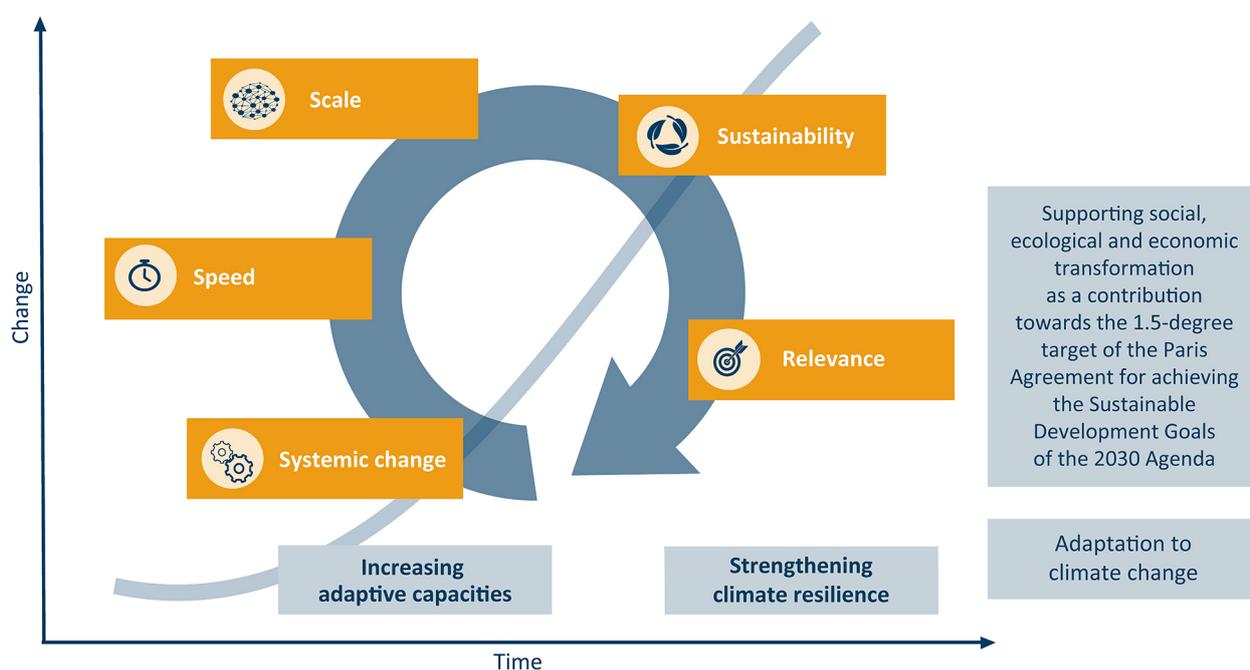
Source: DEval, own visualisation based on sources in Table 10 in the Annex.

⁸ Adaptation limits are reached when a system is unable to avoid intolerable risks. Hard limits are reached when there are no further options available for adaptation. Soft limits are reached when options exist but are currently not available to the affected system (IPCC, 2019). For example, elevating a dyke can mitigate damage from rising sea levels caused by climate change. An intervention like this addresses a “soft” adaptation limit, since the limit can be deferred through technology.

Combined with the cycle of transformative adaptation processes, these five dimensions of the CIF framework can also be used to design a ToC of transformative adaptation interventions (see Figure 13). Via fundamental transformation, transformative adaptation interventions first contribute to increasing the adaptive capacities of relevant systems and subsequently towards strengthening climate resilience and adapting to climate change.

Together, the diversity of these dimensions and the non-linear cycle make for highly complex, multidimensional impact pathways. This is not compatible with a purely linear results matrix. The dimensions can therefore target different points in the cycle of transformative adaptation processes and be addressed in varying sequences. The different conceptual frameworks do not agree on whether it is necessary to comprehensively address all dimensions in order to achieve a transformative shift or whether it is sufficient to address individual dimensions.

Figure 13 Theory of change of transformative adaptation interventions



Source: DEval, own visualisation.

Both incremental and transformative adaptation processes can contribute towards transformative adaptation although these processes are conceptually different (see Table 4). Multiple incremental adaptation processes can jointly lead to transformative adaptation, for example when a successful pilot intervention is scaled up. However, transformative adaptation can also occur more radically with no incremental adaptation process, for example through shifts in social and economic power relationships via degrowth and green economy approaches (IPCC, 2022a).⁹

⁹ Degrowth approaches aim to reduce consumption, production and greenhouse gas emissions and to increase social justice, ecological sustainability and well-being (Hickel, 2021). Green economy aim to create a sustainable economy that conserves natural resources and puts less strain on the environment (German Environment Agency, 2022).

Table 4 Difference between incremental and transformative adaptation along the dimensions of transformation

Dimension	Incremental adaptation	Transformative adaptation
Relevance	Reactive; current conditions; maintain status quo	Anticipatory and planned; future conditions; addresses power imbalances and causes of social injustice
Systemic change	Integrity of a system; changes within a system	Systemic change; cross-system and structural changes
Speed	Slow changes; weak ability to respond	Fast changes; strong ability to respond
Scale	Small scope at one level	Temporal, geographical and/or sectoral scaling; large scope at multiple levels
Sustainability	Short-term changes; future uncertainty is not considered	Focus on future, permanent transformation; future uncertainty is considered and integrated into the decision-making process

Source: DEval, own visualisation as per Lonsdale et al. (2015).

4.3.3 Findings

Benchmark 3.1: German DC pursues the objective of transformative adaptation policy.

The BMZ and the IKI Funding Programme both have a general (mitigation and adaptation) yet insufficiently adaptation-specific objective for transformative climate policy. There is no cross-ministry strategy for designing transformative adaptation interventions. With its core area strategy for climate and energy, the BMZ sets itself the objective of “social, ecological and economic transformation”. Closely related to this objective, the BMZ supports a just transition (see Box 2) in which it supports partner countries in closely integrating the areas of climate change mitigation, sustainable economic development and social progress (BMZ, 2023a). The IKI Funding Programme also references the objective of a social transformation (for more on this, see the integrated 2030 environmental programme of the BMUV; BMUB, 2016). As a founding ministry of the IKI Funding Programme, the BMUV also anchored this objective in the tendering guidelines of the Nationally Appropriate Mitigation Actions Facility (Kehrer, 2020). Most of the Federal Government’s climate and adaptation-relevant ODA is thus underpinned by the idea of transformative adaptation.

Benchmark 3.2: German DC has an internationally compatible conceptual understanding for designing transformative adaptation interventions.

In terms of its definition and conceptual framework, German DC has an internationally compatible understanding of transformation. The BMZ and the IKI Funding Programme base their overarching definition on the IPCC and CIF frameworks. In terms of design, the GIZ and KfW guidelines are in line with internationally recognised dimensions of transformation. At the time of this evaluation, there is no specific theoretical framework for transformative adaptation.

In its core area strategy, the BMZ (2021a) defines transformation as change in the fundamental qualities of a system, including value systems, regulatory, legislative or bureaucratic regimes, financial institutions and technological or biological systems. For the IKI Funding Programme, the BMUV’s integrated environmental programme (BMUB, 2016) understands transformation as an approach that takes up social changes and promotes new, sustainable lifestyles, work approaches and economic models – and that thus updates the instruments available for environmental policy. The ministries therefore have a general (but no specific) understanding of transformation for climate change adaptation interventions and leave the design and operationalisation to the implementing organisations (Kehrer, 2020; Wittmer et al., 2021). A specific theoretical framework for transformative adaptation at strategic level would support this operationalisation. Such a framework could help to define the conceptual boundary between transformative and non-transformative interventions; this differentiation represents a challenge at both strategic and operational level.

A comparison reveals a fundamental alignment between the understanding of transformation of the German ministries the BMZ (2021a) and the BMUV as founding ministry of the IKI Funding Programme (BMUB, 2016) and the international frameworks of the IPCC (2022) and the CIF (2021). Both sides especially emphasise the aspect of fundamental change in relevant systems and have compatible objectives. While the BMZ's core area strategy (2021a), for example, defines fulfilling the Paris Agreement and the 2030 Agenda as an objective, the CIF (2021) aims for significant contributions towards development pathways that are more inclusive, resilient and sustainable.

German technical and financial cooperation also use various dimensions of transformation to design transformative adaptation interventions (Horn-Haacke et al., 2021; Kehrer, 2020). The criteria or design principles of GIZ thus largely match the dimensions of the CIF (Kehrer, 2020). GIZ sets individual characteristics such as relevance, systemic change, scale, sustainability and resilience as mandatory criteria. It also names capacities that influence transformation and can accelerate it: capacity for complexity, capacity to facilitate, capacity for multidimensionality, capacity for social change, reciprocity and social justice (Kehrer, 2020). These capacities are in line with a just transition approach. The KfW directly references a predecessor of the current CIF dimensions, using it as a basis to develop transformative approaches, theories of change and indicators (Horn-Haacke et al., 2021). German financial cooperation is thus also compatible with the international conceptual framework.

Benchmark 3.3: German DC uses appropriate transformative interventions.

In the following section, the evaluation classifies and assesses relevant transformative interventions along the five CIF transformation dimensions. The interventions were selected in a workshop with relevant German DC stakeholders and then contextualised with further evidence (see also Figure 14):

- **Relevance:** Climate risk analyses, transformative country strategies and partnership approaches of German DC can help increase the relevance of interventions. Aligning the global and/or bilateral agenda and priorities with those of national partners presents a challenge since interventions should be coordinated in order to achieve the transformation objectives together (Kehrer, 2020). Climate risk analyses can be used to define common transformation objectives, develop transformative country strategies and identify relevant interventions. Partnership approaches between the commissioning party, implementing organisation and local partners can increase the relevance by jointly taking responsibility for a transformation objective in the partner country, promoting ownership and creating broader acceptance. Evidence from the assessment of international interventions additionally shows that context analyses in partner countries are important for identifying the framework conditions required for transformation (Pal et al., 2017).
- **Systemic change:** German DC's approach of comprehensive risk management along with climate and development partnerships can achieve fundamental, systemic change. A wide spectrum of interlinked interventions in comprehensive risk management – from climate risk analyses to interventions for better responding to residual climate risks – can contribute towards systemic change (BMZ, 2019; Leppert et al., 2021). Combinations of interventions can cover more target groups, sectors and climate risks, for instance (Kehrer, 2020; Leppert et al., 2021). This approach can be expanded, though, to achieve a stronger impact orientation in selecting interventions and ensuring interplay between them (Leppert et al., 2021). The international evidence shows that an approach like this can give rise to co-benefits, such as for interaction between adaptation and mitigation and for sustainable development (Climate Investment Funds, 2019). Bilateral climate and development partnerships between Germany and its partner countries can also contribute towards systemic change – as in Rwanda, for example – by striving for a comprehensive economic transformation in line with a green economy approach (BMZ, 2022).

- **Speed:** Emergency programmes, interventions from the areas of disaster management and humanitarian aid as well as German DC partnership approaches can be implemented quickly and effectively, thus contributing towards transformative change. One example is the design of the Emergency COVID-19 Support Programme, which relies on interventions that can quickly have an impact (BMZ, 2021a). When it comes to climate change, stakeholders also need to react quickly when climate-related hazards occur. This capacity to react can be strengthened via partnership approaches. One example of this is the NDC Partnership, which is designed to react quickly and flexibly to changes in partners' needs and requirements (see BMU/BMZ, 2021; Noltze et al., 2023). The international evidence confirms that, in addition to reaction capacity, the flexibility or adaptability of interventions before and during implementation is important in order to react to changing climate risks or context factors appropriately and with sufficient speed (Green Climate Fund, 2020, 2021; Pal et al., 2017). Lessons learned should already be regularly considered during implementation (Global Environment Facility, 2018, 2020).
- **Scale:** Donor-coordinated and partnership approaches of German and international DC can contribute towards systemic change if they can be temporally, geographically and/or sectorally scaled up. For example, the NDC Partnership provides comprehensive support for global coordination of the implementation and further development of Nationally Determined Contributions in many developing and emerging countries (BMU/BMZ, 2021). Promoting multilateral cooperation can also contribute towards scaling, such as via the Team Europe initiatives and the multi-donor World Bank programme for social security. Experience from international DC confirms that donor-coordinated approaches like this can contribute towards the scaling of transformation (Climate Investment Funds, 2019).
- **Sustainability:** Policy-based financing, climate-resilient infrastructure interventions and cross-ministry environmental policy in German DC can contribute towards sustainable, transformative change. Following the heavy flooding and landslides in the Indian state of Kerala in 2018, for example, a climate loan was used for the Rebuild Kerala initiative to coordinate the recovery (Rebuild Kerala, 2018). The objective of the FC intervention was to improve the living conditions for the population with a view to future climate risks by rebuilding more resilient infrastructure. Within German DC, an integrated, cross-ministry environmental policy could also contribute to sustainable transformation (Kehrer, 2020).

Figure 14 Examples of transformative interventions of German DC

Source: DEval, own visualisation.

Summary of the findings:

- German DC has a general transformation objective and an internationally compatible understanding of transformation. However, it has no specific theoretical framework for transformative adaptation interventions.
- German DC uses a range of appropriate transformative interventions.

4.4 Conflict-sensitive adaptation

4.4.1 Benchmarks

To address the question regarding the promotion of conflict-sensitive adaptation interventions, the evaluation operationalises the evaluation dimensions introduced in Section 1.4 through the following benchmarks (see Section 7.2 in the Annex):

Evaluation question 4: To what extent does German DC ensure interplay between adaptation interventions and the cross-cutting topic of conflict sensitivity?

Benchmark 4.1: German DC integrates the cross-cutting topic of conflict sensitivity into interventions for adapting to climate change.

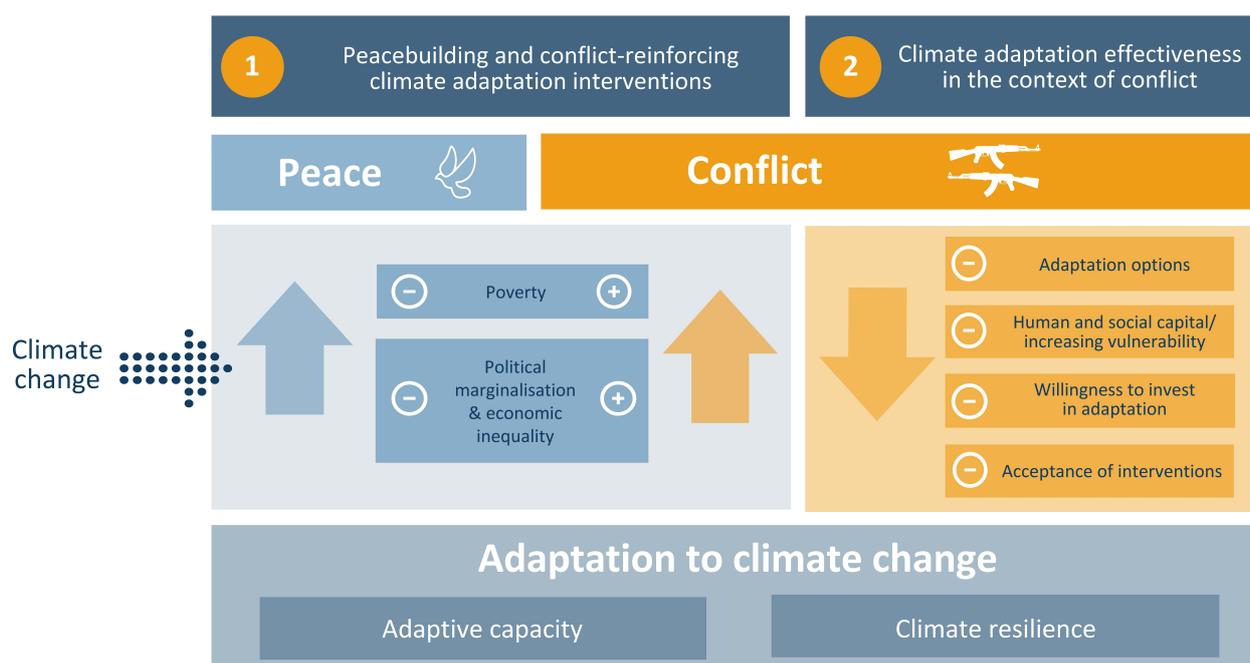
4.4.2 Theory of change

In assessing the benchmark to answer the evaluation question, the evaluation begins by creating a theory of change for conflict-sensitive adaptation interventions (see Figure 15). This ToC developed in cooperation with the BMZ, the IKI Funding Programme, GIZ, KfW and scientists outlines two impact pathways: how adaptation interventions impact peace/conflict and how conflicts influence the effectiveness and impact of adaptation interventions. The outlined ToC as well as all results and recommendations on the topic of conflict sensitivity

refer to violent conflicts. This category includes civil wars in which the state is a party to the conflict, international wars between two or more states as well as non-state wars in which the state is not a party to the conflict. Following the Uppsala Conflict Data Program method, the evaluation also distinguishes between violent conflicts of varying intensity. A country is in a state of conflict if at least 25 people are killed there annually in acts of war; a country is in a state of war if at least 100 people are killed there annually in hostilities (Pettersson et al., 2021).

When it comes to climate change adaptation, German DC works above all with especially climate-vulnerable countries (see Noltze and Rauschenbach, 2019). Many countries are vulnerable in multiple ways, however, from social and economic tensions to violent conflicts. This evaluation examines contexts in which armed hostilities between (at least two) organised groups take place. As described above, this may entail conflicts between the governments of two countries (inter-state wars), between governments and opposition groups such as rebels (civil wars) or non-state conflicts in which the government does not participate (such as land conflicts between ethnic groups). It can be assumed that the negative effects of climate change exacerbate or even trigger some conflicts. In terms of resilience to a wide range of risks, adaptation interventions in fragile contexts are thus particularly important. On the one hand, adaptation interventions have the potential to prevent conflicts, help manage crises and improve economic livelihoods in fragile countries, but they simultaneously pose the risks of exacerbating or even triggering conflicts. On the other hand, adaptation outcomes and impacts are also influenced by the state of conflict. Conflict-sensitive approaches are therefore growing more important for the design and implementation of adaptation interventions.

Figure 15 Theory of change for conflict-sensitive adaptation interventions



Source: DEval, own visualisation based on literature research and consultations with representatives from the BMZ, the IKI Funding Programme, GIZ and KfW as well as conflict and adaptation researchers.

Impact pathway 1: Effects of adaptation interventions on peace and conflict

There are plausible theoretical arguments for the potential of climate change to trigger or exacerbate armed conflicts. Firstly, the literature discusses resource scarcity induced by climate change which can in turn lead to distribution conflicts (Homer-Dixon, Thomas 2001). Secondly, it is assumed that climate variability and climate change will have largely negative consequences for human prosperity that lower the opportunity costs for people to take up armed conflict (Miguel et al., 2004). Thirdly, the impacts of climate change could exacerbate social and economic inequality within a society, thus increasing the risk of conflict (Kahl, 2006).

To date, though, there is little evidence of a causal relationship between climate vulnerability and armed conflict; only a few studies have been able to prove a direct causality up to now (van Weezel, 2020). The strongest correlation is found between climate vulnerability and minor conflict, the weakest between climate vulnerability and civil wars (Detges, 2017; Linke et al., 2018; Nordkvelle et al., 2017). The findings also indicate that climate vulnerability is more likely to exacerbate existing conflicts than to trigger new ones (Eastin, 2016; von Uexkull and Buhaug, 2021; Yeeles, 2015). Furthermore, factors such as limited socio-economic development or low state performance capacity have historically played a more important role in the emergence of conflicts (Mach et al., 2019). Overall, it seems premature to draw conclusions regarding the influence of climate vulnerability and climate change on wars, since the impacts of climate change have only just begun to manifest themselves and most of the relevant research on weather events and conflict is limited to Sub-Saharan Africa, which does not enable generalisation across regions (Adams et al., 2018).¹⁰ In contrast, certain risk factors for conflict such as poverty and political marginalisation have been confirmed (Gleditsch, 2012; Theisen, 2012; Ward et al., 2010). The following section therefore outlines how climate change adaptation interventions can influence these two factors and under which conditions they can promote peace or exacerbate conflict (see Figure 15).¹¹

Adaptation interventions aim to reduce vulnerability and strengthen resilience, including economic resilience via poverty reduction to mitigate the (often negative) economic effects of climate change. Successful adaptation interventions can help alleviate economic losses caused by climate change and maintain livelihoods. For example, heavy rain events or drought can negatively affect the harvests and incomes of farmers who practice rainfed agriculture. Artificial irrigation interventions with flood water in Mali are intended to help reduce small farmers' vulnerability to irregular rainfall and strengthen their resilience to the climate change impacts described above by supporting a permanent and sustainable shift in irrigation and cultivation methods. If these interventions stabilise the population's economic situation, then their opportunity costs for earning a livelihood as rebels (or fighters in other armed groups) are relatively high. The individual incentives for farmers to "go to war" should thus remain unchanged or at least not increase as dramatically as would be the case if the economic consequences of climate change had not been limited by an adaptation intervention. In addition, wealthier individuals are less vulnerable to the negative impacts of a conflict since they can better protect themselves (Ibáñez and Vélez, 2008).

When adaptation interventions fail to have an impact or even contribute to maladaptation (see Section 4.2), they can also worsen the livelihood of the target group or other groups, though. Maladaptation often results from interventions that help reduce vulnerability in the short term but increase vulnerability in the long term. The above example of farmers using artificial irrigation clearly explains the risk of maladaptation. The existing research tends to agree that rainfed agriculture is particularly vulnerable to the negative impacts of climate change – such as lack of rain – (Bellon et al., 2011) and that artificial irrigation is necessary to reduce this vulnerability (Gbetibouo, 2009). However, other studies conclude that this depends on the context and that artificial irrigation can increase the target group's vulnerability to climate change in certain cases (Lioubimtseva and Henebry, 2009). In particular, the intervention can exacerbate poverty by leading farmers to switch to more capital-intensive production methods, which could increase their vulnerability in the event of future crop failures caused by climate change (Lioubimtseva and Henebry, 2009). In addition, the intervention may put the target group in a better position (than before) but negatively affect the livelihood of another group. For example, Duflo and Pande (2007) show how artificial irrigation involving new dams reduces poverty among the target group, but the intervention negatively impacts the incomes of people who live downstream from the project location and use water from the river.

¹⁰ One global overview study of the period from 1948 to 2008 also suggests that, on average, distribution questions regarding access to drinking water have led to increased international cooperation and thus helped avoid conflicts (Bernauer and Böhmelt, 2020).

¹¹ Climate change can also influence the risk of conflict via climate-induced migration by increasing the risk of conflict in host communities, for example (see Reuveny, 2007). When functioning as an adaptation strategy, however, migration can also improve the economic situation of the remaining population by reducing local pressure on scarce resources and through remittances. In this context, the evaluation module on responding to residual climate risks determined that interventions for supporting climate-induced migration contribute towards reducing poverty among climate migrant groups and climate-vulnerable host population groups (Leppert et al., 2021).

Just as adaptation interventions can both reduce and increase poverty, they can also have heterogeneous impacts on social inequality in societies. Ideally, interventions are designed to reduce social inequality or at least not exacerbate it. Both the selection of the target group and the design of decision-making processes can be decisive in this regard. Participatory adaptation processes ideally give marginalised groups a voice to ensure their concerns are taken into account when building more resilient communities (Bronkhorst et al., 2014). However, this gives rise to the question of how to ensure that the traditionally politically dominant groups support interventions that grant marginalised groups (and potentially the “other side” in a conflict) stronger political influence.

To date, the literature contains more evidence that climate change adaptation interventions exacerbate social inequality and cement existing power balances than evidence that they dismantle inequality. However, it should be examined whether this is due to publication bias. One mechanism that can exacerbate inequality is elite capture. Evaluations of adaptation interventions in Nepal, India and Tanzania show how politically influential and wealthier stakeholders siphon the “profits” of the interventions and instrumentalise the interventions for political purposes (Eriksen et al., 2021; Omukuti, 2020; Taylor and Bhasme, 2021; Yates, 2012) such as by channelling resources to strategically important electoral districts as patronage, as suggested by evidence from Brazil and Mozambique (Artur and Hilhorst, 2012; Nelson and Finan, 2009). Interventions with a flawed design can also result in elite capture. For many agricultural interventions, the target group needs to make certain investments in order to benefit from the intervention. The resource of land can prove especially problematic in this context if interventions exclude the non-landholding population, who often have particularly low incomes and are politically marginalised (Chapman et al., 2016). Evidence from São Tomé and Príncipe shows how adaptation interventions drove farmers into casual labour for major landowners and thus exacerbated inequitable work relations (Mikulewicz, 2021).

The causal relationship between poverty and climate-risk is complex, though. The fact that poorer countries exhibit higher climate risks than wealthy countries is chiefly due to the insufficient governance and weak institutions that correlate with poverty (Verwimp et al., 2019). Furthermore, the absolute poverty level is not the crucial factor, but unequal poverty levels among different groups (horizontal inequality; Kahl, 2006). This is especially the case when one of the groups affected by poverty is under-represented politically and above all when this group has a separate ethnic identity (Cederman et al., 2011; Koubi et al., 2018). Adaptation interventions can thus only support peace via poverty reduction or increased prosperity if they do not simultaneously increase economic (and social) inequality.

Impact pathway 2: The influence of conflicts on the effectiveness and impact of adaptation interventions

Relatively little literature explores the question of how exactly conflicts affect adaptation to climate change (Eriksen et al., 2015). The quite recent literature on this topic focusses on the question of how conflicts affect adaptation but makes barely any connections to DC interventions.

A conflict can generate vulnerability by restricting human and social capital (Barnett, 2006) and limiting the options for adapting to climate change (see Eriksen and Lind, 2009). In fragile states, government capacities to support adaptation to environmental impacts are often limited. The impression that the government has failed to strengthen resilience can weaken the social contract between citizens and the state even further (Vivekananda et al., 2014). Assets for subsistence that would usually strengthen the resilience of households can become liabilities in conflict contexts when the claims to resources are contentious (Lautze and Raven-Roberts, 2006). A conflict also limits the ability of governments to use available resources in the best way possible.

Another plausible connection pertains to the willingness of target groups to invest in conversion processes if there is a risk that future conflicts will jeopardise the investments in the near future. In a situation like this, people may prefer to continue using conventional practices (in agriculture, for example) rather than investing in a conversion.

There is also the risk that an adaptation intervention may be accepted by too small a segment of the population to succeed. The conflict may influence the level of acceptance, for example if people perceive the intervention as being spearheaded by one party to the conflict. The BMZ considers DC interventions to be fundamentally problematic if they are not planned inclusively, if they further marginalise important conflict parties or disadvantaged groups, or if they disproportionately strengthen individual groups (BMZ, 2013). Adaptation interventions also involve decisions about stakeholders, values, priorities and the distribution of opportunities, resources and benefits. In fragile contexts with lines of conflict between the participating groups, there is a risk that individual groups will not consider these decisions to be legitimate and fail to support the intervention, which could limit the effectiveness and impact (Mohamed-Katerere, 2014).

The evaluations have varying findings on the effectiveness and impact of DC in fragile contexts. While KfW finds that the success of their projects is slightly limited in fragile countries (KfW Entwicklungsbank, 2015), the DEval evaluation of German DC in fragile contexts by Wencker and Verspohl (2019) finds no such correlation in all KfW and GIZ interventions across all sectors. Against this backdrop, this evaluation examined the effectiveness, impact and overall ratings of German project evaluations influenced by conflict in the period of 2011 to 2020. Supporting the theoretical connections between conflict and adaptation interventions described above, this evaluation found that the project success of adaptation interventions is lower in contexts of conflict than in peacetime.¹² The data basis comprised 167 GIZ and KfW adaptation interventions from a total of 59 countries. 14 interventions took place in war contexts and 64 in conflict contexts. The evaluation estimated logistic multi-level models and conducted simple logistic regressions with standard errors clustered at country level.¹³ The dependent variable is the assessment of the intervention as “successful” (score 1–3) or “not successful” (score 4–6). The negative correlation between war and project success is most clear in the effectiveness rating; its statistical significance in the impact and overall rating is only around ten percent. If adaptation interventions in conflict contexts are limited in their success, this poses the question of whether accompanying peacebuilding interventions could mitigate this effect. The evaluation comes to a positive result here in terms of the effectiveness rating. If an adaptation intervention also has peace and security as a principal or significant objective, the reduced effectiveness in conflict and war compared to peacetime is less pronounced. However, the statistical significance of the correlation is only

¹² It may be the case that interventions in conflict contexts calculate the expectation of limited effectiveness into the design of the theories of change. However, the results show that even if the ambition level were potentially systematically lower in conflict contexts than in non-conflict contexts, this difference in the ambition level would not be large enough to entirely account for the reduced effectiveness in war contexts.

¹³ A common alternative to these models with similar data structures are logistic regression with fixed country effects. Because the independent variables at country level change only slowly over time, though, these regressions are less suitable in this case. Models were also estimated with the original scale, but this revealed no effects.

around ten percent, and these correlations are not seen for the impact and overall rating. These empirical investigations, together with the results of the reconstructed ToC, underscore the importance of interplay between DC interventions for climate change adaptation and for peace and security.

4.4.3 Findings

Benchmark 4.1: German DC integrates the cross-cutting topic of conflict sensitivity into interventions for adapting to climate change.

To what extent do German DC adaptation interventions avoid conflicts and promote peace (impact pathway 1)? Conflict-sensitive climate programming aims for interventions for adaptation to climate change (and mitigation) that avoid exacerbating conflict and, ideally, promote peace (Gustafsson, 2016). Assessments of conflict potential – referred to as escalation potential analyses – are conducted annually in the partner countries of German DC on behalf of the BMZ. Depending on the results of this assessment, additional conflict and context analyses may be obligatory for the implementing organisations. Peace and conflict assessments form the methodological framework for analysing the causes and consequences of conflicts. In addition to these analyses, the escalation potential analysis (ESKA) gives rise to further provisions for the commissioning and steering of interventions in the respective country in order to design interventions in a conflict-sensitive manner. To date, the design and implementation of interventions in these fragile contexts have focussed mainly on the do-no-harm principle for avoiding unintended negative effects. There is less consideration of potential co-benefits of interventions – including ones for climate change adaptation.

In addition to the impact pathway 1 described here, The BMZ “Resilience” fact sheet (BMZ, 2021b) also lists possible approaches for ensuring peacebuilding co-benefits. It calls for three capacities to be strengthened in term of resilience. First: Stabilisation capacities should enable people affected by crises to meet their basic needs, retain the functionality of important structures and ensure survival during and after times of crisis (BMZ, 2021b, p. 2). This approach could also be applied to interventions for adapting to climate change to achieve peacebuilding co-benefits with such interventions. Second: Adaptation capacities should empower people and structures to adapt to long-term changes, cope with negative impacts and, ideally, minimise them (BMZ, 2021b, p. 2). This approach is consistent with an assumption in the literature on strengthening economic resilience through adaptation interventions with peacebuilding co-benefits (see Bronkhorst et al., 2014). Third: Transformation capacities should promote social, environmental and economic transformation (see Section 4.3) and give rise to further synergies between adaptation and peacebuilding interventions. For example, Verwimp et al. (2019) describe special transformation potential (and needs) in post-conflict countries with high climate vulnerability.

In addition to realising potential co-benefits of adaptation interventions on peace (as outlined in impact pathway 1 in Section 4.4.2), there is also potential for synergy between climate and conflict analyses. Systematic consideration of the (forecasted) effects of climate change appears to be a significant factor for realistically estimating a country’s conflict escalation potential.¹⁴ The escalation potential analysis is designed to consider all potential causes and drivers of conflict, including climate change. To date, though, it is not obligatory to examine climate change as a possible conflict factor in countries with a heightened climate risk. Failure to consider climate change as a potential driver of conflict could cause the risk of violent conflict to be underestimated, though.

Ministerial specifications such as the new BMZ “peace and security” quality criterion form the overarching framework for conflict-sensitive development cooperation. This new quality criterion was being developed at the time of this evaluation. The objective is to create an instrument for standardising various assessments and safeguards in the area of peace and security. It remains to be seen whether it will contain provisions for

¹⁴ According to Gustafsson (2016), all interventions with the objective of peacebuilding should consider the consequences of climate change as potential causes and triggers of conflict.

integrating climate risk into a country's estimated conflict potential and for realising co-benefits on peace and security in interventions from other areas (such as adaptation to climate change).

To what extent does German DC ensure the effectiveness and impact of adaptation interventions in conflict contexts (impact pathway 2)? Climate-resilient peacebuilding takes short and long-term climate risks into account in the programming and implementation of peacebuilding interventions (Gustafsson, 2016). Climate proofing aims to avoid negatively impacting the climate and to achieve positive effects on adaptive capacities or emissions reductions. To date, though, climate risks have been integrated into peacebuilding interventions mainly via the do-no-harm aspect of climate proofing. There is thus a drive to avoid negative impacts on adaptation to climate change. Environmental and climate assessments are one tool used for this purpose. However, in-depth conflict analyses by the implementing organisations could also be used to design adaptation interventions whose objectives and design are adjusted to the conflict context, addressing the fact that the conflict exacerbates climate vulnerability and weakens adaptive capacities (Buhaug and von Uexkull, 2021). So far, German DC has attempted to counteract the potentially limited effectiveness by mainstreaming conflict sensitivity. This begins with the country-specific risk analyses mentioned above. A country's ESKA classification gives rise to concrete provisions for commissioning and steering interventions in that country, including ones on considering the principles of conflict sensitivity, dealing with risks and (preventative) peacebuilding. At the country level, these results can be connected with overarching climate risk analyses for programming adaptation interventions. The safeguard systems of the implementing organisations also conduct project-specific conflict sensitivity assessments as well as environmental and climate assessments which are available for use in the specific design of interventions.¹⁵ Taking the mainstreaming climate change adaptation as an example, however, this evaluation finds a significant discrepancy between the provisions and how they are implemented in practice (see Section 4.1).

The BMZ "climate and energy" quality criterion is also currently under development. It is not yet clear to what extent it will also serve as a guide, in addition to the do-no-harm provisions, for ensuring that DC interventions in the area of peace and security have positive effects on climate adaptation.

Finally, it is clear that, to date, there are no specific provisions for systematically integrating the climate change context into the conflict analyses or integrating the conflict context into the environmental and climate assessments.

Summary of the findings:

- German DC follows a do-no-harm approach in relation to the interplay between adaptation interventions and the cross-cutting topic of conflict sensitivity. Realising potential synergies for strengthening resilience more broadly has played a secondary role up to now.
- Adaptation interventions have potential for preventing conflict and dealing with crises as well as stabilising livelihoods in fragile countries; however, they also pose the risk of exacerbating conflict.
- Adaptation outcomes and impacts are affected by conflicts. The effectiveness and impact of adaptation interventions is limited in conflict contexts, but auxiliary peacebuilding interventions can increase their effectiveness in such contexts.

¹⁵ Interventions located at the nexus of climate change and security include "FREXUS" in Mali, Chad and Niger (<https://www.water-energy-food.org/frexus-improving-security-and-climate-resilience-in-a-fragile-context-through-the-water-energy-food-nexus>), "Human mobility in the context of climate change" (<https://www.giz.de/de/weltweit/67177.html>) and "Green Central Asia" (<https://berichterstattung.giz.de/2021/unser-arbeit-weltweit/green-recovery/green-central-asia-initiative>).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Adaptation financing

To expand on the comprehensive portfolio and allocation analysis by Noltze and Rauschenbach (2019), this evaluation investigated the extent to which adaptation-relevant German ODA contributes towards achieving the “four billion target” for annual climate financing from budget funds as of 2020. It also examined how German DC achieves its objective of making significant adaptation contributions to multilateral organisations and especially supporting SIDS.

With over USD 17.5 billion from budget funds and KfW’s own funds, Germany committed the most adaptation funding of any OECD member country in the period of 2011–2020. Climate-relevant ODA (with a total of USD 45.4 billion for mitigation and adaptation interventions between 2011 and 2020) accounts for around one quarter of all German ODA. From budget funds alone (bilateral and multilateral), Germany most recently (2020) allocated adaptation-relevant ODA totalling approximately USD 2.15 billion.

The benchmark for German climate financing, which calls for a balanced proportion of mitigation and adaptation commitments with at least EUR 4 billion from budget funds, is fulfilled by the contribution of the adaptation-relevant ODA.

With adaptation-relevant core contributions totalling USD 2.5 billion (2013 to 2020), Germany makes significant contributions to the budgets of relevant multilateral organisations. The period of 2011–2020 saw an additional USD 2.4 billion earmarked for adaptation interventions of multilateral organisations (classified as bilateral funds in this evaluation in line with the OECD).

German DC fulfils the benchmark of making significant contributions towards adaptation to climate change via multilateral organisations.

SIDS are particularly affected by the impacts of climate change. Contrary to the Federal Government’s objective and taking account of climate vulnerability, the probability of SIDS receiving German adaptation financing is no higher than for other potential recipient countries. This is evident for both the bilateral (see Noltze and Rauschenbach, 2019) and multilateral segments of the German adaptation portfolio (see this evaluation). The probability that countries receive funds only rises with increasing vulnerability.

German DC only partially fulfils the benchmark of supporting SIDS in adapting to climate change via multilateral cooperation.

Ultimately, the contributions of the international donor community are not sufficient to fulfil the international climate funding objectives. Industrial countries have thus far failed to meet their objective of mobilising USD 100 billion annually for climate change mitigation and adaptation in developing countries from 2020 onwards. With a view to international adaptation financing, the current Adaptation Gap Report from the UN Environment Programme notes that developing countries’ needs already amount to ten times the level of commitments today and will continue to increase significantly in the coming years (UNEP, 2022a). In this context, the Federal Government’s new objective of increasing its international climate funding to EUR 6 billion in annual new commitments by 2025 at the latest (BMZ, 2023b) is a step in the right direction. With a view to climate forecasts, however, this is still not sufficient to address the increasing climate risks in partner countries to an appropriate degree. From the perspective of this evaluation, this is also due to the high share of interventions with adaptation as a significant objective; only one third of German DC adaptation interventions set adaptation as a principal objective and thus at least theoretically work towards genuine adaptation effectiveness and impact. Furthermore, it is not possible to achieve the adaptation objectives solely through funding. Accordingly the DEval modular adaptation evaluation contains multiple recommendations for optimising adaptation funding, including more thoroughly considering climate risks taking account of the international division of labour (see Noltze and Rauschenbach, 2019, see also Annex 7.4), updating the portfolio to directly support NDCs and NAP processes (see Noltze et al., 2023) as well as developing instruments for responding to residual climate risks (see Leppert et al., 2023) or increasing the use of particularly effective interventions (see Section 5.3 of this report).

5.2 Consideration of climate risks

To determine the extent to which German DC systematically considers climate risks, the evaluation conducted a case analysis on adaptation mainstreaming and examined a total of 23 CLA-0 interventions in highly climate-vulnerable countries in terms of how they deal with climate risks. This involved investigating German DC's objective of avoiding negative climate impacts in assessments as well as in the design and implementation of interventions, of increasing adaptive capacities and of making it possible to exploit beneficial opportunities arising from climate change.

The evaluation found barely any evidence of climate risks being systematically addressed. The assumption of systematic adaptation mainstreaming in the wider DC portfolio is therefore disproved. Neither in the assessment nor in the design and implementation of the evaluated interventions are there plans for avoiding negative climate impacts caused by interventions, for exploiting beneficial opportunities or for increasing adaptive capacities. There is also barely any reflection on the potential impacts of climate change on the success of the interventions – despite the highly climate-vulnerable context.

The benchmark of systematically considering climate risks as well as avoiding negative impacts, increasing adaptive capacities and exploiting beneficial opportunities in the assessment, design and implementation of German DC interventions is barely fulfilled.

In light of this assessment, the evaluation comes to the following recommendation:

Recommendation 1: GIZ and KfW should effectively mainstream climate adaptation in order to

- increase the effectiveness and impact of the German DC portfolio on climate resilience in the partner countries
- by 1) avoiding negative impacts, 2) better responding to residual climate risks, 3) increasing adaptive capacities and 4) exploiting beneficial opportunities.

Implementation guidance for recommendation 1: The BMZ could

- More effectively monitor implementation and support the exchange of experiences by creating a learning environment,
- Define quality assurance in the “environmental and climate assessment” quality criterion and
- Make adaptation relevance a default consideration for interventions in particularly climate-vulnerable contexts in line with the precautionary principle.

5.3 Effectiveness and impact of adaptation interventions

To determine the extent to which German DC makes effective contributions towards adaptation to climate change, the evaluation carried out a synthesis of the results on effectiveness and impact from the evaluations by Noltze et al. (2023) and Leppert et al. (2021) and supplemented this with further analyses incorporating data from Doswald et al. (2020). The evaluation investigated the extent to which German DC adaptation interventions lead to achievement of the objectives of “better responding to shocks and stressors”, “increasing adaptive capacities” and “enhancing the enabling environment” (outcome level) and, in the process, make contributions towards “strengthening climate resilience” or “reducing climate vulnerability” and “preventing maladaptation” (impact level).

The results show that German DC uses adaptation interventions that contribute towards better responding to shocks and stressors in climate-vulnerable contexts and lead to increased adaptive capacities in countries that lack such capacities. Nature-based solutions and infrastructure interventions make the clearest contribution to achieving objectives and strengthening climate-resilience. These interventions also constitute a priority area within the German adaptation portfolio. When combined with informational/educational interventions, these interventions also showed increased potential for results. However, German DC also increasingly uses interventions with a substantially lower or at least uncertain effectiveness and impact,

including social/behavioural interventions and interventions for better responding to residual climate risks (see also Leppert et al., 2021).

The benchmark of German adaptation interventions contributing towards the objectives of “better responding to shocks and stressors”, “increasing adaptive capacities”, “enhancing the enabling environment” and “better responding to residual climate risks” is partially fulfilled.

This evaluation demonstrates clear and overwhelmingly positive contributions of German DC towards strengthening climate resilience and reducing vulnerability via the objectives of “better responding to shocks and stressors” and “increasing adaptive capacities”. For the objective of “enhancing the enabling environment”, on the other hand, there is uncertainty regarding the effectiveness and impact of the relevant contributions due to the limited and conflicting international evidence. The picture is similar for contributions towards better responding to residual climate risks. Because evaluations do not critically examine the issue in a systematic manner, there are knowledge gaps, particularly regarding unintended adaptation outcomes and impacts as well as interventions that lead to maladaptation.

German adaptation interventions partially fulfil the benchmark of contributing towards development changes in the strengthening of climate resilience, the reduction of vulnerability and the avoidance of maladaptation.

In light of this, the evaluation comes to the following recommendation:

Recommendation 2: The BMZ and the IKI Funding Programme should expand the funding for nature-based solutions and infrastructure interventions in order to

- help deal with shocks and stressors more effectively in particularly climate-vulnerable contexts
- and help increase adaptive capacities in countries where these capacities are low.

Implementation guidance for recommendation 2:

- There is additional positive impact potential in combining various interventions if they also include informational/educational interventions.
- Interventions with the objective of enhancing the enabling environment, in particular, could be examined using specific theories of change and indicators to establish their effectiveness and impact.
- The funding could also be expanded in particular in cooperation with other donors and (multilateral) organisations.

Based on the evaluation synthesis by Noltze et al. (2023) and an indicator analysis of 79 project evaluations covering a total of 113 adaptation interventions, the evaluation also examined the extent to which German DC considers dealing with climate risks in the monitoring and evaluation systems and thus establishes the basis for assessing effectiveness and impact.

The evaluation showed that only a few evaluations of German DC adaptation interventions explicitly deal with climate risks. In turn, most of the reports by GIZ and KfW do not describe the theory of change relating to the adaptation outcomes and impacts of the implemented interventions. In total, verifiable impact findings are available for only 16 percent of all adaptation interventions evaluated up to now (N=118) in terms of how they address climate risks. What’s more, only around 30 percent of the impact indicators used in the evaluations were found to be appropriate for assessing the effectiveness and impact. In terms of the learning and accountability function of evaluations, the lack of evidence of the effectiveness and impact of adaptation interventions presents a clear restriction. According to the first DEval meta-evaluation of the quality of GIZ and KfW project evaluations, this is a fundamental problem. In relation to the finding regarding an insufficient theory of change, however, it is also a specific challenge in the evaluation of adaptation interventions (see Noltze et al., 2018). Noltze et al. (2018) find that the majority of all evaluation reports across all sectors include a comprehensible presentation of the causal relationships to be examined; conversely, the present findings demonstrate that this is not the case for evaluations of adaptation interventions. The evaluations therefore exhibit a low level of adaptation-sensitivity overall.

The benchmark of considering climate risks in the monitoring and evaluation systems of German DC is partially fulfilled.

In light of this assessment, the evaluation comes to the following recommendation:

Recommendation 3: The BMZ and the IKI Funding Programme should strengthen the evidence-based programming of the adaptation portfolio in order to

- make the German adaptation portfolio more effective
- and thus contribute to strengthening climate resilience in the partner countries.

Implementation guidance for recommendation 3:

- The BMZ and the IKI Funding Programme could compel the implementing organisations to make adaptation interventions easier to evaluate and increase the quality of evaluation – by systematically including the vulnerability context and using adaptation-related theories of change, objectives and indicators.
- The evaluations of the implementing organisations could address unintended effects and the risk of maladaptation better than they have done up to now.
- To supplement evidence from project evaluations, the BMZ and the IKI Funding Programme could promote rigorous (accompanying) evaluations, especially in “evidence-scarce” areas of the portfolio.
- Together with the implementing organisations, the BMZ and the IKI Funding Programme could improve the framework conditions for systematic learning – also through cross-sectional analyses.

5.4 Transformative adaptation interventions

To answer the question of the extent to which German DC promotes transformative adaptation interventions, the evaluation examined the strategies and conceptual work of the BMZ, the IKI Funding Programme, GIZ and KfW in a desk study and conducted a theory-building workshop with those involved. As part of this process, the evaluation investigated the extent to which German DC pursues the objective of transformative adaptation and whether it has an internationally compatible understanding and uses appropriate, transformative interventions.

The results show that German DC has general objectives and an internationally compatible conceptual understanding of transformation. However, German DC lacks a uniform conceptual framework for transformative adaptation interventions and specific corresponding objectives. This has created a portfolio of transformative adaptation interventions that is difficult to record (e.g. in portfolio analyses), to coordinate (e.g. with other ministries) and to steer (using monitoring data) and that can only be assessed (via evaluations) to a limited degree. This complicates learning, designing interventions, reporting and accountability.

German DC pursues the objective of transformative adaptation policy and partially fulfils the benchmark of an internationally compatible conceptual understanding as the foundation for designing transformative adaptation interventions.

The results also show that German DC’s climate portfolio contains appropriate transformative interventions: Climate risk analyses, transformative country strategies and partnership approaches increase the relevance of transformative adaptation interventions; the approach of comprehensive risk management along with climate and development partnerships contribute towards fundamental, systemic change; emergency programmes, interventions from the fields of disaster management and humanitarian aid as well as partnership approaches are designed to ensure a quick, responsive and flexible implementation; partnership-based and donor-coordinated approaches can be scaled up to achieve transformative change; reform financing and climate-resilient infrastructure contribute towards sustainable transformation.

German DC partially uses appropriate transformative interventions.

There is an evidence gap regarding the extent to which these and other interventions actually contribute towards fundamental change. Transformation entails highly complex, multi-dimensional impact pathways. There is no consensus among the various conceptual frameworks on whether it is necessary to comprehensively address all dimensions of transformation or whether addressing individual dimensions is sufficient to achieve transformative change. These aspects are discussed internationally in academia and evaluations – not least due to imprecise objections and conceptual ambiguities, as well (Binet et al., 2021; IPCC, 2022a; McPherson et al., 2019; Sword-Daniels et al., 2020; Van den Berg et al., 2019; Vermeulen et al., 2018). In their large-scale cross-sectional analysis of over 1,600 studies on international adaptation interventions, Berrang-Ford et al. (2021) find barely any reliable evidence of transformative change processes.

It is thus important to continue developing innovative designs, objectives and indicators – while considering the interplay between the transformation dimensions and many interactions as well as multi-causal and non-linear connections. Monitoring and evaluating individual development changes using one-dimensional indicators falls short in this regard, partly because many of the intended changes only become evident after much time has passed. Rather, signals of change should be identified that indicate changes beyond the boundaries of one programme and that identify both intended and unintended changes (Savage and McPherson, 2020). Another focus here is dealing with future changes. This requires working with forecasts and simulated change options. Monitoring, evaluation, learning, cross-ministry exchange formats and knowledge management must be designed in a flexible, context-specific manner to ensure the impact-oriented implementation of transformative adaptation interventions. Piloting transformative interventions in cooperation with academia and accompanying research beyond the existing processes of governmental TC and FC can help to avoid unintended negative effects on the target groups. An error-tolerant culture should also be created for the design and implementation of these pilot interventions. This way, lessons learned from risks and unachieved results can be incorporated into the ongoing implementation of interventions via continuous adaptation (GEF, 2019; McPherson et al., 2019). These activities create innovation spaces for transformative adaptation interventions and make it possible to refine and integrate existing approaches as well as to develop new approaches.

In light of these assessments, the evaluation comes to the following recommendation:

Recommendation 4: The BMZ and the IKI Funding Programme should create innovation spaces for transformative adaptation interventions and provide financing in order to

- refine and integrate existing approaches
- and develop new approaches.

Implementation guidance for recommendation 4: With support from the BMZ and the IKI Funding Programme, GIZ and KfW could

- Develop innovative concepts, objectives and indicators;
- Design appropriate monitoring, evaluation and learning approaches and support cross-ministry exchange formats and knowledge management;
- Pilot transformative interventions in cooperation with academia/accompanying research;
- Help create an error-tolerant culture through more transparency and openness; and
- More consistently apply principals such as partnership and target group orientation.

5.5 Conflict-sensitive adaptation interventions

To determine the extent to which German DC interconnects adaptation interventions with the cross-cutting topic of conflict sensitivity, the evaluation assessed relevant strategy documents and conducted theory-building workshops with representatives from the BMZ, the IKI Funding Programme, implementing organisations and academia whose work focuses on the climate, peace and security. To this end, the

evaluation examined the extent to which German DC achieves its objective of designing conflict-sensitive adaptation interventions by avoiding outcomes and impacts that exacerbate conflict, realising co-benefits and ensuring the effectiveness of adaptation interventions in conflict contexts.

This evaluation reaches the conclusion that the interplay between the two topics has mainly followed a do-no-harm approach up to now. That means that conflict analyses are used to avoid DC intervention effects that exacerbate or trigger conflicts. At the same time, environmental and climate assessments are used to avoid negative impacts on mitigation and adaptation (for all DC interventions outside the climate field).

The consultations with stakeholders confirmed their high awareness of the topic. However, specific knowledge regarding potential negative impacts of adaptation interventions on peace and security has only partially been available up to now. This also applies to knowledge regarding channels through which the conflict context could limit the effectiveness and impact of adaptation interventions. There is also still little known about how to best enable co-benefits and synergies between the two thematic areas of adaptation to climate change and peace and security.

The benchmark of integrating the cross-cutting topic of conflict sensitivity into interventions for adapting to climate change is assessed to be barely fulfilled.

The developed theory of change outlines two impact pathways: It describes how adaptation interventions can avoid negative impacts on peace and conflict. It also shows the channels through which adaptation interventions can additionally contribute to peacebuilding. To promote peace, adaptation interventions should reduce poverty and avoid negatively affecting the welfare of groups beyond the target group. They should also minimise the horizontal inequality that can – also, but not exclusively – arise via selection of the target group.

The evaluation proves that the implementing organisations' adaptation interventions are less effective in conflict contexts than in peacetime, but also that interplay with peace and security interventions is beneficial. In the developed theory, the evaluation outlines channels through which the conflict context may limit the effectiveness and impact of adaptation interventions. The identified connections present starting points for the design and implementation of adaptation interventions in fragile contexts and interventions for peace and security in countries with a heightened climate risk. To promote adaptation in the most effective way possible, adaptation interventions in climate and war contexts should be designed to take account of the current situation and cost-benefit considerations for the target group, to work with limited social and human capital and to ensure acceptance of the interventions, such as by selecting conflict-sensitive project-executing agencies.

In light of these findings, the evaluation comes to the following recommendation:

Recommendation 5: In countries with a high escalation potential and high climate risk, GIZ and KfW should design conflict-sensitive adaptation interventions in order to

- ensure adaptation outcomes and impacts in conflict contexts,
- avoid outcomes and impacts that exacerbate conflict
- and contribute to peacebuilding.

Implementation guidance for recommendation 5:

- The BMZ could make designing conflict-sensitive adaptation interventions mandatory in countries with a high escalation potential and high climate risk;
- GIZ and KfW could integrate the conflict sensitivity assessment when considering options in adaptation interventions (CLA interventions);
- GIZ and KfW could integrate the climate assessment when considering options for action in peacebuilding and security interventions.

5.6 Contributions to the 2030 Agenda for Sustainable Development

Through its international engagement for adaptation to climate change, the Federal Government would like to support the social, economic and environmental transformation required to implement the 2030 Agenda (BMZ, 2021a). Against this backdrop, this synthesis report concludes the modular adaptation evaluation by examining the German DC portfolio's contributions towards implementing the 2030 Agenda. This summary takes up the Agenda's principle of universality, the adaptation portfolio's contributions towards the SDGs in interaction with economic, environmental and social development, and the principle of shared responsibility.

Universality

Overall, the adaptation portfolio of German DC follows a broad development approach. By strengthening climate resilience (SDG13), it aims to contribute towards increasing resilience in other areas such as poverty reduction (SDG1), food security (SDG2) or health and well-being (SDG3). It follows a broad sectoral and regional approach to achieve this objective. The increasing overall financial volume of the German adaptation portfolio is based mainly on grants and – in comparison to climate change mitigation interventions – only relies on market funds to a limited degree. The limited mobilisation of private-sector capital is problematic with a view to the increasing funding requirements in relation to the climate-relevant SDGs and the targets of the Paris Agreement. A large part of the German adaptation portfolio continues to be implemented via bilateral official development cooperation. However, recent years have seen a slight increase in the (financial) importance of multilateral engagement, while the share of the portfolio implemented via civil society has stagnated. In the big picture, the German adaptation portfolio lives up to the principle of universality of the 2030 Agenda in its breadth, but this also entails significant effort for coordination between the participating ministries and their implementing organisations. Potential challenges regarding coordination, complementarity and coherence between the individual ministries arise, particularly between the BMZ and the IKI Funding Programme. This is due to the lack of a common strategic framework for the Federal Government's international adaptation engagement (for more on this, see the portfolio and allocation analysis by Noltze and Rauschenbach, 2019).

Contributions to the SDGs

In terms of the contributions of adaptation interventions towards achieving the SDGs, the evaluation has mixed findings, including both areas of tension and synergies. For example, the macro-quantitative portfolio and allocation analysis finds that the probability of receiving German adaptation commitments is higher for climate vulnerable countries (SDG13) but not for poorer ones (SDG1; see Noltze and Rauschenbach, 2019). However, this tension is not necessarily seen at the micro level of individual interventions. For example, the evaluation module on responding to residual climate risks found that interventions for supporting climate-induced migration contribute towards reducing poverty among climate migrants and climate-vulnerable host populations (Leppert et al., 2021). However, the existing interventions for dealing with human mobility in the context of climate change is still not sufficiently geared towards sustainability; the portfolio is still under development. The geospatial impact evaluation of irrigation infrastructure interventions in Mali also has nuanced findings (Noltze et al., 2023). While it only finds weak poverty-reducing effects, it also finds significant contributions towards food security and the promotion of children's health. Similarly heterogeneous effects are apparent in relation to the contributions of German adaptation interventions towards gender equality (SDG 5, see Leppert et al., 2021) and peacebuilding (SDG 16, see this evaluation).

According to Leppert et al. (2021), risk preparedness instruments in particular have great potential to contribute towards achieving the SDGs. Overall, adaptation interventions clearly have great potential to contribute towards implementing the SDGs. In light of the insufficient mainstreaming of adaptation, however, beneficial opportunities can currently only be exploited to a limited degree and mainly within the more narrowly defined adaptation portfolio (CLA-2 and CLA-1 interventions). This evaluation sees further potential for the broader DC portfolio, such as in the design of conflict-sensitive adaptation interventions.

Shared responsibility

In the spirit of shared responsibility, the strategic guidelines of German DC include principles such as partnership and international division of labour; they are also apparent in the implementation of adaptation interventions. For example, the evaluation module that examined the effectiveness of adaptation interventions for promoting NDCs and NAP processes found that partnership-based approaches were a significant success factor (Noltze et al., 2023). On the other hand, the portfolio and allocation analysis showed that the partner countries' sectoral priorities have only a limited influence on the commitments and that Germany's adaptation funds mainly support those countries in which other donors are also quite active (Noltze and Rauschenbach, 2019). When it comes to responding to residual climate risks, the evaluation also shows that the range of available instruments especially the private-sector approaches, need to be more precisely tailored to the respective needs of the partners and target groups (see Leppert et al., 2021). The evidence-based programming of the international adaptation portfolio is another aspect of shared responsibility. Regarding this aspect, the evaluation finds no clear connection between the available evidence and the allocation of adaptation funds at the level of the overall portfolio (Noltze and Rauschenbach, 2019). With the portfolio's focus on improving institutional and regulatory frameworks, German DC relies on types of adaptation interventions whose effectiveness has not been confirmed by much evidence. Overall, the German adaptation portfolio meets its objective of shared responsibility. However, this objective should be implemented more consistently in practice.

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7. ANNEX

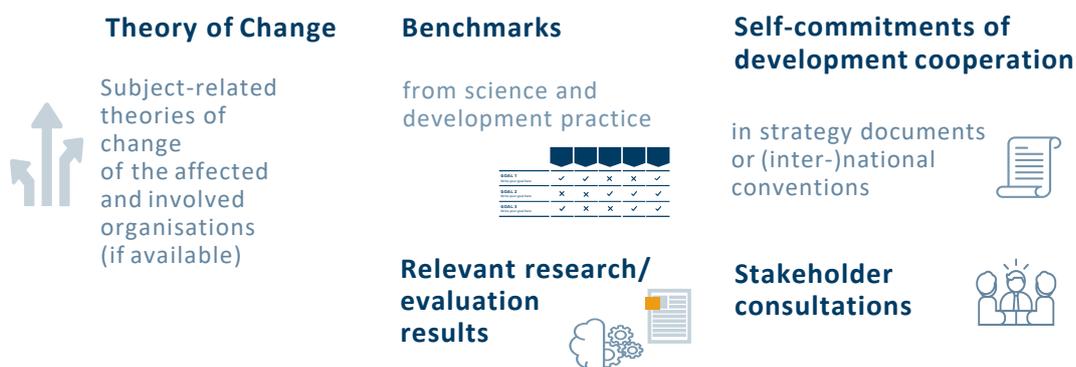
7.1 Rating scales in DEval evaluations

In DEval evaluations, findings are assessed based on evaluation questions and evaluation dimensions in line with the OECD evaluation criteria (see BMZ, 2020 and Section 1.4). Along the evaluation criteria, an evaluation subject is assessed on the basis of verifiable benchmarks. The benchmarks are evaluatory, ex ante judgements of the conditions under which the evaluation team considers that development interventions should be classified as appropriate and successful.

The rating scales are implemented based on the following steps:

- 1) Derivation of the benchmarks (for example from the theory of change) + operationalisation;
- 2) Operationalisation of the rating scales;
- 3) Data collection and analysis to determine the empirical values and assessment;
- 4) Overall assessment performed by compiling individual assessments along a six-point rating scale (see below).

Foundations for deriving benchmarks:



The six-point rating scale for DEval evaluations:

Categories	Explanation
Exceeded	The intervention clearly exceeds the benchmark for the applied evaluation criterion. Findings demonstrate a result well above the benchmark.
Fulfilled	The intervention meets the benchmark for the applied evaluation criterion. Findings demonstrate that the benchmark is met.
Mostly fulfilled	The intervention largely meets the benchmark for the applied evaluation criterion. Findings which demonstrate that the benchmark is met predominate.
Partially fulfilled	The intervention partially meets the benchmark for the applied evaluation criterion. The numbers of findings demonstrating that the benchmark is met, and those demonstrating it is not, are (more or less) equal.
Barely fulfilled	The intervention barely meets the benchmark for the applied evaluation criterion. Findings which demonstrate that the benchmark is not met predominate.
Missed	The intervention does not meet the benchmark for the applied evaluation criterion. Findings demonstrate that the benchmark is not met.

7.2 Evaluation matrix

Portfolio analysis: To what extent does adaptation-relevant ODA contribute to achieving the Federal Government's international climate funding objectives?

Benchmark	Indicators	Data basis	Analysis methods
The mitigation and adaptation commitments balanced from budget funds amount to at least EUR 4 billion per year by 2020.	German budget funds approved for CLA interventions from 2011 to 2020.	OECD-DAC CRS data 2011–2020	Analysis of commitments for adaptation and mitigation as a principal and significant objective over time.
German DC makes significant contributions towards adaptation to climate change via multilateral organisations.	Approximation of Germany's core contributions used for CLA interventions via multilateral organisations.	OECD DAC members' total use of the multilateral system (CRS) 2011–2020	Calculation of imputed multilateral contributions for Germany's climate funding to multilateral organisations (ENVIRONET-WP-Stat Task Team, 2015) and analysis of commitments for adaptation as a principal and significant objective
German DC supports SIDS in adapting to climate change, particularly through multilateral cooperation.	Commitments to small island states (SIDS) for CLA interventions of multilateral organisations receiving core contributions from Germany.	OECD-DAC CRS data 2011–2020; ND GAIN climate vulnerability index (exposure) and macro country characteristics from various data sets (see Table 5 in the Annex)	Various regression models for calculating the probability of receiving commitments (logit models) and the likely amount of commitments (tobit models) from multilateral organisations to SIDS in comparison to other vulnerable countries

Evaluation question 1: To what extent does German DC systematically consider climate risks?

Benchmark	Indicators	Data basis	Analysis methods
<p>German DC systematically assesses climate risks and potential approaches for avoiding negative impacts, increasing adaptive capacities and exploiting beneficial opportunities arising from climate change.</p>	<p>Implementation of climate assessment via preliminary assessment and – if adaptation-relevant – in-depth assessment.</p> <p>An estimation of adaptation-relevance is conducted.</p> <p>If adaptation-relevant: A risk classification is conducted.</p> <p>If adaptation-relevant: Options for action are demonstrated.</p>	<p>Assessment reports on interventions from the sample “adaptation-adjacent interventions”</p>	<p>Case analysis of adaptation mainstreaming (qualitative content analysis)</p>
<p>Interventions are designed to include options for action tailored to the identified climate risks.</p> <p>Objectives:</p> <p>1) Avoiding negative impacts,</p> <p>2) Increasing adaptive capacities and</p> <p>3) Exploiting beneficial opportunities arising from climate change.</p>	<p>Options for action are included in the programme proposal.</p> <p>OR</p> <p>There is an explanation for the lack of consideration of options for action or identified climate risks.</p>	<p>Project proposal on interventions from the sample “adaptation-adjacent interventions”</p>	<p>Case analysis of adaptation mainstreaming (qualitative content analysis)</p>
<p>The interventions implement options for action tailored to the identified climate risks.</p> <p>Objectives:</p> <p>1) Avoiding negative impacts,</p> <p>2) Increasing adaptive capacities and</p> <p>3) Exploiting beneficial opportunities arising from climate change.</p>	<p>The options for action are evident in the implemented activities.</p> <p>OR</p> <p>Options for action are evident in the reporting of objectives and indicators.</p> <p>OR</p> <p>There is an explanation for the lack of consideration of options for action.</p>	<p>Annual reporting and (if applicable) final reports on interventions from the sample “adaptation-adjacent interventions”</p>	<p>Case analysis of adaptation mainstreaming (qualitative content analysis)</p>

<p>The monitoring and evaluation systems of German DC take climate risks into account.</p>	<p>The project evaluations of German adaptation interventions take climate risks into account. The evaluations examine:</p> <ol style="list-style-type: none"> 1) The extent to which interventions are implemented in a vulnerability context; 2) The extent to which the interventions address the vulnerability context; 3) The extent to which theories of change exhibit a clear connection between the interventions and the vulnerability context. 	<p>Project evaluation reports on adaptation interventions (CLA-2 and CLA-1) by GIZ and KfW</p>	<p>Evaluation synthesis by Noltze et. al, 2023</p>
<p>The monitoring and evaluation systems of German DC use appropriate indicators that ensure the evaluation of effectiveness and impact.</p>	<p>The indicators used in the project evaluations</p> <ol style="list-style-type: none"> 1) are suitable for establishing connections between the climate vulnerability context (appropriateness), 2) are useful with regard to contributions at the respective outcome and impact level (relevance), 3) disclose their measuring units and reference values (comparability) and 4) can be verified (measurability). 	<p>Project evaluation reports on adaptation interventions (CLA-2 and CLA-1) by GIZ and KfW</p>	<p>Quality assessment of indicators</p>

Evaluation question 2: To what extent does German DC make effective and impactful contributions to climate change adaptation?

Benchmark	Indicators	Data basis	Analysis methods
<p>German DC adaptation interventions contribute towards achieving the objectives “better responding to shocks and stressors”, “increasing adaptive capacities”, “enhancing the enabling environment” and “better responding to residual climate risks”.</p>	<p>Shocks and stressors: 1) reduced exposure to the effects of climate change/lower climate risks</p> <p>Adaptive capacities:</p> <ol style="list-style-type: none"> 2a) social and 2b) economic development 3) Enhanced enabling environment: development of <ol style="list-style-type: none"> 3a) environmental, 3b) socio-economic and 3c) institutional systems 	<p>GIZ and KfW project evaluations, internationally available evidence from studies, evaluations and grey literature</p>	<p>Evaluation synthesis on effectiveness and impact</p>

<p>Adaptation interventions contribute in a verifiable or foreseeable manner towards development changes (“strengthening climate resilience”, “reducing vulnerability” and “avoiding maladaptation”).</p>	<p>By better responding to shocks and stressors, increasing adaptive capacities, enhancing the enabling environment and better responding to residual climate risks, the interventions contribute to 1) social, 2) economic and 3) environmental changes.</p>	<p>GIZ and KfW project evaluations, internationally available evidence from studies, evaluations and grey literature</p>	<p>Evaluation synthesis on effectiveness and impact</p>
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Evaluation question 3: To what extent does German DC promote transformative adaptation interventions?

Benchmark	Indicators	Data basis	Analysis methods
<p>German DC pursues the objective of transformative adaptation policy.</p>	<p>The strategies of the BMZ and the IKI Funding Programme explicitly name transformation as an objective; the objective is relevant and specific to adaptation.</p>	<p>BMZ core area strategy; BMUV 2030 integrated environmental programme; tendering guidelines of the IKI Funding Programme and the NAMA Facility; theory-building workshop</p>	<p>Desk study; document analysis; Theory-building workshop</p>
<p>German DC has an internationally compatible conceptual understanding of how to design transformative adaptation interventions.</p>	<p>The definitions of the BMZ and the IKI Funding Programme match those of the CIF and IPCC; the dimensions/characteristics of the CIF, GEF, AF and GCF match those of KfW and GIZ.</p>	<p>Guidelines of the ministries and implementing organisations; implementation examples; theory-building workshop; IPCC; international frameworks; evaluations by international stakeholders</p>	<p>Desk study; document analysis; theory-building workshop; evaluation synthesis</p>
<p>German DC uses appropriate, transformative interventions.</p>	<p>The dimensions of the CIF can be assigned via exemplary interventions of German and international DC.</p>	<p>Implementation examples; theory-building workshop; evaluations by international stakeholders</p>	<p>Desk study; document analysis; theory-building workshop; evaluation synthesis</p>

Evaluation question 4: To what extent does German DC ensure interplay between adaptation interventions and the cross-cutting topic of conflict sensitivity?

Benchmark	Indicators	Data basis	Analysis methods
German DC integrates the cross-cutting topic of conflict sensitivity into interventions for adapting to climate change.	The BMZ defines provisions for avoiding unintended negative interactions between climate change adaptation and peace/conflict and for realising co-benefits; these provisions are effectively implemented by the implementing organisations.	Strategy documents, workshop with participants from the BMZ, the IKI Funding Programme, GIZ and KfW.	Qualitative assessment of strategy documents, theory-building workshops with stakeholders and academics, literature research; statistical assessments (regression analyses)

7.3 Tables and illustrations

Table 5 Operationalisation of the dependent and independent variables of the portfolio analysis

	Indicators	Unit/scale:	Sources
Commitments, nominal	Total commitments for CLA-2 per multilateral German DC donor	Millions USD	OECD-DAC CRS data
	Total commitments for CLA-2 and CLA-1 per multilateral German DC donor	Millions USD	OECD-DAC CRS data
Commitments, percentage	Percentage of total commitments for CLA-2 per multilateral German DC donor	Percent	OECD-DAC CRS data
	Percentage of total commitments for CLA-2 and CLA-1 per multilateral German DC donor	Percent	OECD-DAC CRS data
SIDS	Small island developing states (SIDS)	Dummy variable: 1 = yes, 0 = no	UN (2021)
Recipient needs	ND-GAIN exposure	Scale of 0 to 1	Chen et al. (2015)
Control variables	GDP per capita	Millions USD	The World Bank (2022)
	Conflicts in recipient country	Dummy variable: 1 = yes, 0 = no	Pettersson et al. (2019)
	Climate risk index (CRI), inverted	Scale of 2 to 166	Eckstein et al. (2021)
	Population of the recipient country	Thousands of inhabitants	The World Bank (2022)
	Worldwide Governance Indicators (WGI)	Scale of -15 to 17	Graham et al. (2018)

Table 6 Influence of climate vulnerability and country status (SIDS) on the probability and likely amount of commitments of multilateral organisations via core contributions of German DC

	Adaptation commitments CLA-2 & CLA-1			Adaptation commitments CLA-2 only		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Logit models						
SIDS	-0.24	-0.44**	-0.18	-0.24	-0.49**	-0.03
Climate vulnerability (ND-GAIN exposure)	.	0.38***	0.33***	.	0.40***	0.38***
Climate risk index (inverted)	.	.	0.10	.	.	0.09
Worldwide Governance Indicators (WGI)	.	.	-0.33***	.	.	-0.42***
Population in thousands	.	.	0.44	.	.	0.03
GDP per capita (constant 2017 price)	.	.	0.14	.	.	0.11
Conflict status	.	.	-0.12	.	.	-0.17*
Observations	1,474	1,422	1,137	1,474	1,422	1,137
Pseudo R2	0.227	0.249	0.279	0.099	0.123	0.164
Tobit models						
SIDS	-12.94**	-18.38***	-9.03	-16.58*	-25.38**	-7.88
Climate vulnerability (ND-GAIN exposure)	.	9.29***	7.82**	.	14.60***	13.40**
GDP per capita (constant 2017 price)	.	.	5.67*	.	.	6.23
Worldwide Governance Indicators (WGI)	.	.	-10.95***	.	.	-18.08***
Climate risk index (inverted)	.	.	0.51	.	.	-0.61
Population in thousands	.	.	6.01*	.	.	8.04*
Conflict status	.	.	-1.67	.	.	-5.72
Observations	1,474	1,422	1,137	1,474	1,422	1,137
Pseudo R2	0.033	0.036	0.043	0.024	0.029	0.037

Including year-fixed effects. *p < 0.05, **p < 0.01, ***p < 0.001

Table 7 Overview of the safeguards of international organisations for considering climate risks (N=31)

Adaptation Fund (2016): *Environmental and Social Policy Statement*
African Development Bank (ADB): *Integrated Safeguards System (ISS)*
Agence Française de Développement (AFD): *Environmental and Social Framework*
Asian Development Bank (ADB, 2009): *Safeguard Policy Statement*
Asian Infrastructure Investment Bank (2017): *Environmental and Social Framework (ESF)*
Australian Agency for International Development/Department of Foreign Affairs and Trade (2019):
Environmental and social safeguard policy
Development Bank of Latin America (CAF): *Environmental and Social Safeguards for CAF/GEF projects*
Development Bank of Southern Africa (DBSA): *Environmental and Social Safeguard Standards*
European Bank of Reconstruction (EBRD, 2014): *Environmental and Social Policy*
European Investment Bank (EIB): *Environmental and Social Safeguards (eib.org)*
Finnish Ministry for Foreign Affairs: *TheFinland-IFC Blended Finance for Climate Program follows the IFC Performance Standards on Environmental and Social Sustainability.*

Food and Agricultural Organization of the United Nations (FAO): *Environmental and Social Management Guidelines*

Foreign, Commonwealth & Development Office: *The Smart Rules*

Forest Carbon Partnership Facility (2012): *Common Approach Environmental and Social Safeguards*

Global Environment Facility (GEF): *Agency Minimum Standards on Environmental and Social Safeguards (GEF Safeguards)*

Green Climate Fund (GCF): *Environmental and Social Policy*

Inter-American Development Bank (2019): *Environmental and Social Policy Framework*

International Fund for Agricultural Development: *Social, Environmental, Climate Assessment Procedure (SECAP)*

International Union for Conservation of Nature (IUCN): *Environmental and Social Management System (ESMS)*

International Finance Corporation (IFC): *IFC Performance Standards on Environmental and Social Sustainability*

Japan International Cooperation Agency (JICA, 2010): *Environmental and Social Considerations*

Norwegian Agency for Development Cooperation (NORAD, 2010): *Environmental and Social Sustainability and Climate Change Risk Management in: Assessment of Sustainability Elements/ Key Risk Factors – Practical Guide*

Sweden’s Government Agency for Development: *Sweden’s Environment Policy*

The Brazilian Biodiversity Fund: *Environmental and Social Safeguards Policy*

United States Agency for International Development (US AID): *Environmental procedures*

United Nations Environment Programme (UNEP): *Environmental, Social and Economic Sustainability Framework (ESSF)*

United Nations Industrial Development Organization (UNIDO, 2017): *UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP)*

United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UNREDD): *Cancun Safeguards*

West African Development Bank (BOAD): *Environmental and Social Management in the Financing of Projects*

World Wide Fund for Nature, United States (WWF US): *Environmental and Social Safeguards Integrated Policies and Procedures*

World Bank (2018): *Environmental and Social Framework (ESF)*

Table 8 Overview of evaluations of the safeguards of international organisations (N=5)

- Independent Evaluation of the Asian Development Bank (IE ADB, 2014): *Safeguards Operational Review ADB Processes, Portfolio, Country Systems, and Financial Intermediaries*
- Independent Development Evaluation of the African Development Bank (IDEV ADB, 2019): *Evaluation of the AfDB’s Integrated Safeguards System*
- Independent Evaluation Office of the Global Environment Facility (IEO GEF, 2018): *Review of the GEF Policy on Agency Minimum Standards on Environmental and Social Safeguards*
- Independent Evaluation Unit of the Green Climate Fund (IEU GCF, 2020): *Independent evaluation of the GCF’s Environmental and Social Safeguards and the Environmental and Social Management System (ESS2020)*
- Office of Evaluation and Oversight at the Inter-American Development Bank (OVE IADB, 2019): *Environmental and Social Safeguards Evaluation*

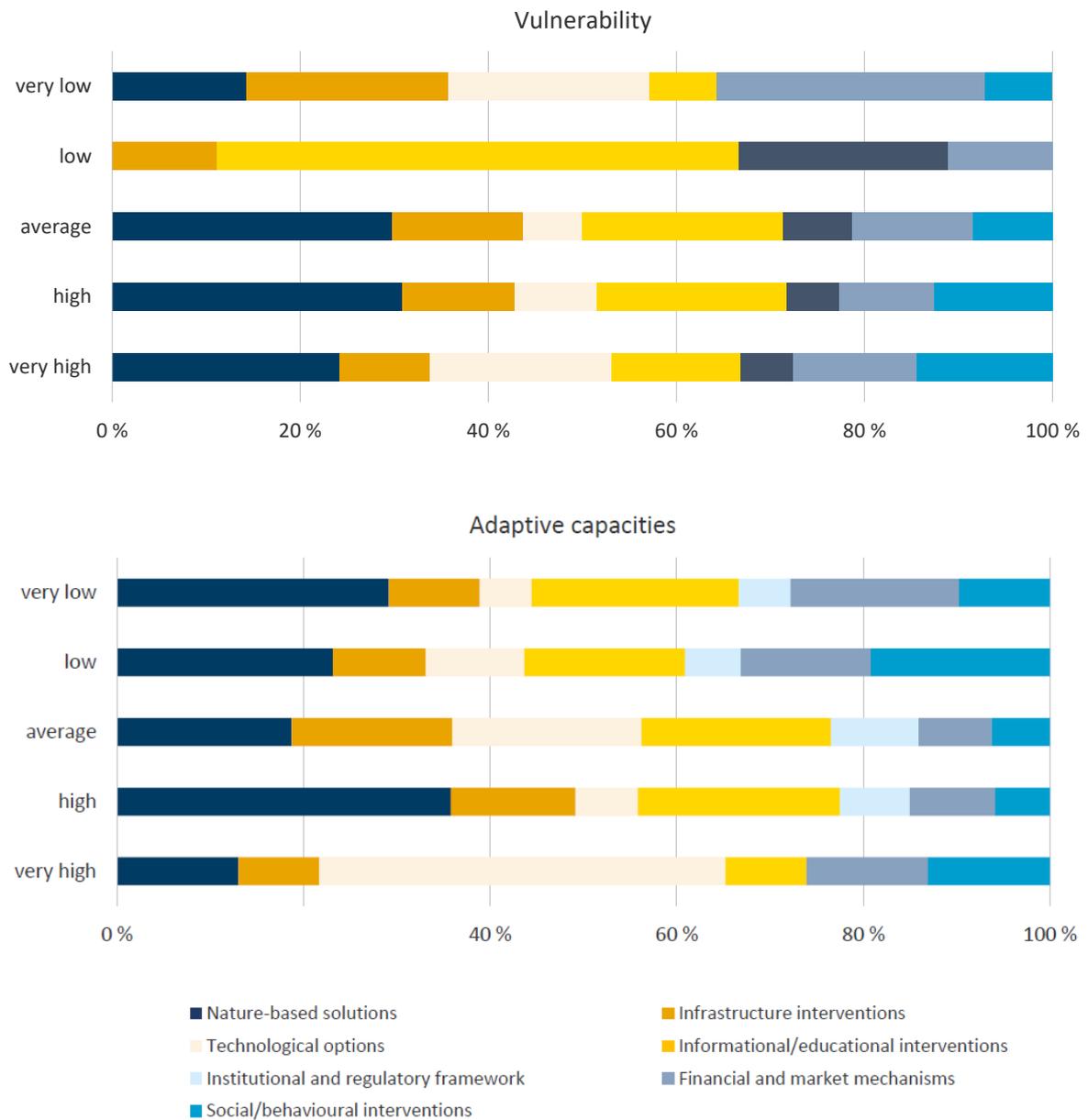
Table 9 Overview of the adaptation-adjacent interventions (N=23)

CRS number	Title	CRS entry	German stakeholders	Partner country	Objectives (based on internal documents or the websites of the respective implementing organisations)
201224682	Forest protection and climate change mitigation (REDD+)	2017	BMZ/GIZ	Colombia	Implementation of a national REDD+ strategy by relevant stakeholders at national and regional level with an inter-sectoral approach.
201821404	Deforestation-free and climate-friendly land use in Colombia (ProBosques)	2017	BMZ/GIZ	Colombia	Improving environmental protection, sustainable management of natural resources, forest and biodiversity protection and climate change mitigation in Colombia (still provisional). Project objective: Improving sustainable forest management in selected regions in Colombia.
201621846	Life skills and training for refugees and host communities	2014	BMZ/GIZ	Kenya	The interventions aim to improve economic livelihoods through education in the medium term. Project objective: IT-based approaches improve the ability of young refugees and local youths to take advantage of opportunities.
201635010	Study and Expert Fund Kenya	2019	BMZ/GIZ	Kenya	The short-term support for retaining the protective function of the Siana and Oloisukut conservancies.
200921023	Macro-economic advisory services in Rwanda	2016	BMZ/GIZ	Rwanda	Strengthening the capacity of the Rwandan Ministry of Finance and Economic Planning (MINECOFIN) for shaping economic and investment policy in Rwanda.
200721340	Environment and climate change	2015	BMZ/GIZ	Indonesia	Indonesian cities, industrial firms and the national government plan and implement new climate strategies and instruments.
201224856	Forest protection and climate change mitigation (FORCLIME II)	2015	BMZ/GIZ	Indonesia	Implementing strategies for forest protection and sustainable forest management, thereby reducing climate-damaging emissions from the forestry sector and improving the livelihoods of the rural poor population.

201521178	Policy advice for environment and climate change (PAKLIM)	2015	BMZ/GIZ	Indonesia	The climate-relevant ministries and sub-national authorities of the Indonesian Government have coordinated central policy instruments for implementing the Indonesian climate targets.
201521160	Forest protection and climate change mitigation in Indonesia (FORCLIME)	2015	BMZ/GIZ	Indonesia	Improving the legal and institutional frameworks in the areas of forest management and biodiversity conservation and reducing greenhouse gas emissions from the forestry sector
201521145	Social security programme in Indonesia	2015	BMZ/GIZ	Indonesia	More comprehensive and more effective safeguarding by the Indonesian Government against the life cycle risks faced by poor population groups and those at risk of poverty.
200922401	Resource conservation through municipal reforestation and forest management in Bangladesh.	2017	BMZ/GIZ	Bangladesh	Improving sustainable, participatory forest management.
201820703	Study and Expert Funds in Bangladesh	2017	BMZ/GIZ	Bangladesh	Not identifiable.
201721075	Risk management office in Somalia	2015	BMZ/GIZ	Somalia	Improving the prerequisites for reducing potential risks for GIZ employees and projects.
201335215	Study and Expert Funds in Somalia	2015	BMZ/GIZ	Somalia	Supporting the Somali Ministry of Planning in creating the national development plan with earmarked expertise.
09_I_117_ IND_G_ComSo	Marketing solar energy in major urban areas and industrial centres (ComSolar)	2016	IKI/GIZ	India	Developing and testing business models for commercialisation of solar energy in urban-industrial areas and developing a dissemination strategy that helps India achieve its ambitious objectives.
18_I_026_IND_G_NAMAs	Development and management of nationally appropriate mitigation actions (NAMAs) in India	2016	IKI/GIZ	India	The projects aims to support the Ministry of Environment, Forest and Climate Change (MoEFCC) in creating a NAMA framework at national level in the context of India's voluntary mitigation interventions and the relevant UNFCC decisions.

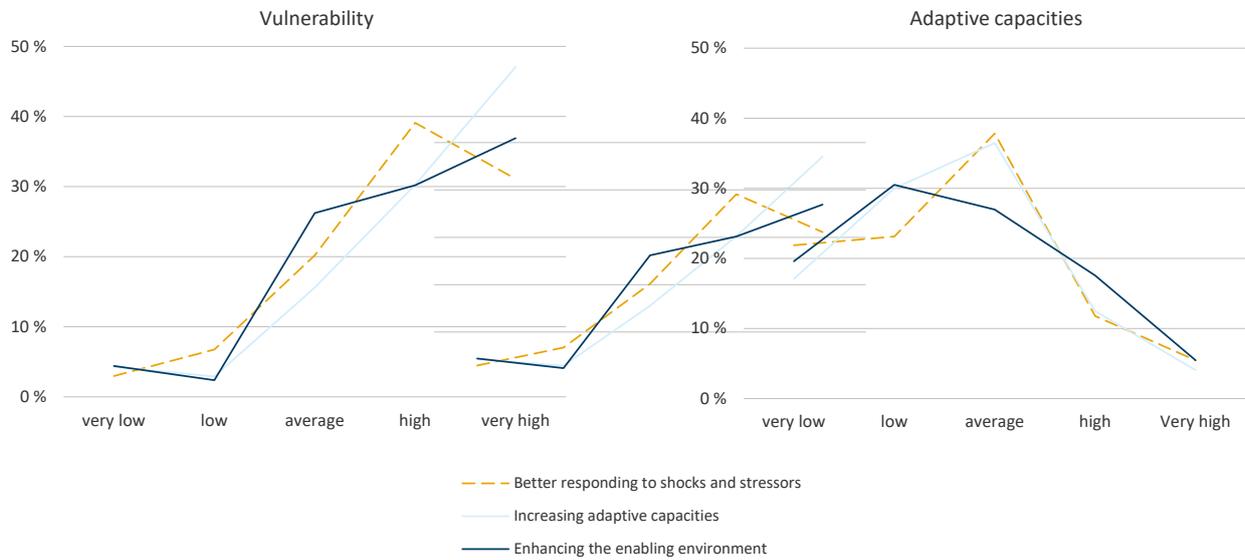
19_I_239_ Latin America	Natural resources and climate: Climate and environmental policy instruments for promoting low-emission and resource-efficient raw material production in developing and emerging countries.	2017	IKI/GIZ	Colombia and Chile	Refining the existing regulations for mitigating the environmental damage caused by raw material production and expanding the strategy for increasing resource efficiency and reducing greenhouse gas emissions.
13_III_045_ IDN_G_LAM	Locally appropriate mitigation actions in Indonesia	2015	IKI/GIZ	Indonesia	Expanding capacities for developing, implementing and monitoring NAMA initiatives for green growth.
215010129	Global REDD early movers programme (REM)	2017	BMZ/KfW	Colombia	Reducing greenhouse gas emissions caused by deforestation in the Colombian Amazon. Positive impacts should also be generated for beneficiaries at local level such as small farming communities or indigenous people.
201569144	Support for malnourished and undernourished children as well as population groups affected by drought in Ethiopia.	2016	BMZ/KfW	Ethiopia	Contribution towards mitigating the impacts of drought occurring in Ethiopia. Including contribution towards the fight against malnourishment and undernourishment in children, towards better healthcare for pastoral and rural population groups and towards securing long-term access to drinking water.
201868777	Programme for rebuilding infrastructure in the Sulawesi and Lombok regions affected by the earthquake/tsunami (PETRA)	2015	BMZ/KfW	Indonesia	Sustainably rebuilding physical, social and economic infrastructure in the Sulawesi and Lombok regions affected by the earthquake.
201768977	Sustainable water supply and sanitation (PAEPMA – Programme d’Alimentation en Eau Potable et Mesures d’Assainissement)	2016	BMZ/KfW	Mali	Support in expanding the information and control system for water resources.
201370212	Aavishkaar Social Entrepreneurship Fund	2016	BMZ/KfW	India	Provision of affordable basic resources of suitable quality and creation of fair, local employment and income opportunities for poor, economically disadvantaged population groups, particularly in structurally weak, rural regions in India.

Figure 16 Adaptation interventions according to the vulnerability and adaptive capacities of partner countries (as per ND-GAIN)



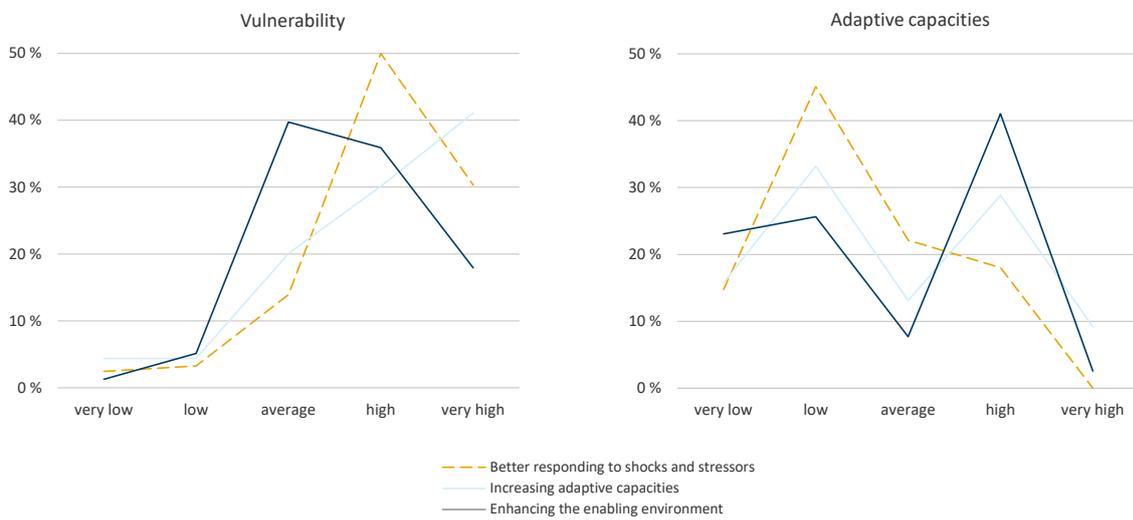
Source: DEval, own visualisation as per Doswald et al. (2020); Vulnerability: very low = <0.35, low = ≥ 0.35 to <0.40, average = ≥ 0.40 to 0.45, high = ≥ 0.45 to 0.50, very high = ≥ 0.50 ; Adaptive capacities: very low = ≥ 0.70 , low = ≥ 0.60 to <0.70, average = ≥ 0.50 to 0.60, high = ≥ 0.40 to 0.50, very high = <0.40.

Figure 17 Objectives according to the vulnerability and adaptive capacities of partner countries (as per ND-GAIN)

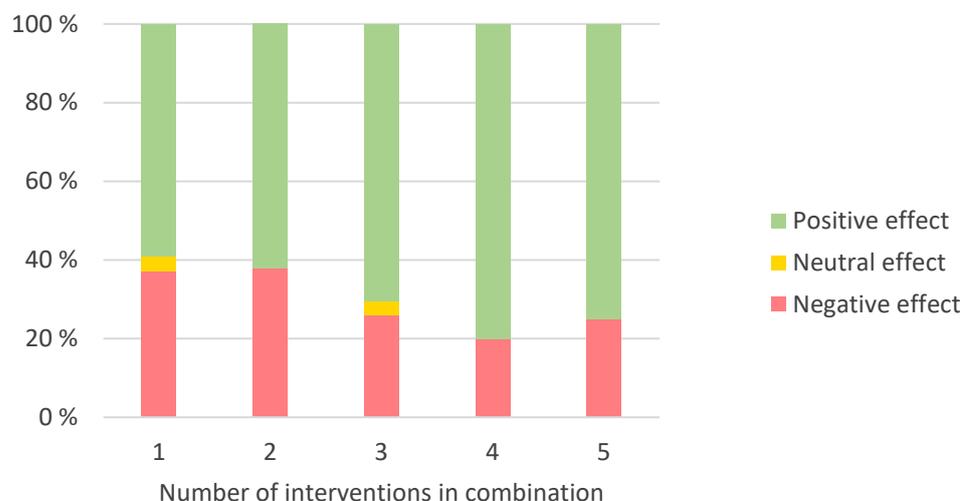


Source: DEval, own visualisation as per Doswald et al. (2020); Vulnerability: very low = <0.35, low = ≥0.35 to <0.40, average = ≥0.40 to 0.45, high = ≥0.45 to 0.50, very high = ≥0.50; Adaptive capacities: very low = ≥0.70, low = ≥0.60 to <0.70, average = ≥0.50 to 0.60, high = ≥0.40 to 0.50, very high = <0.40.

Figure 18 Positive impacts on objectives according to the vulnerability and adaptive capacities of partner countries (as per ND-GAIN)



Source: DEval, own visualisation as per the systematic review of studies on international adaptation interventions reduced to positive directions of effect; Vulnerability: very low = <0.35, low = ≥0.35 to <0.40, average = ≥0.40 to 0.45, high = ≥0.45 to 0.50, very high = ≥0.50; Adaptive capacities: very low = ≥0.70, low = ≥0.60 to <0.70, average = ≥0.50 to 0.60, high = ≥0.40 to 0.50, very high = <0.40.

Figure 19 Combinations of adaptation interventions and directions of effect

Source: DEval, own visualisation based on the systematic review of studies on international adaptation interventions.

Table 10 Overview of the conceptualisations and evaluations of international organisations regarding transformation (N=4)

- AF (2021): Technical Evaluation Reference Group (TERG) Resilience Analysis Framework.
- CIF (2019): Evaluation of Transformational Change in the CIF.
- CIF (2021): Transformational Change Learning Partnership (TCLP). Concepts brief.
- GCF (2020): Paradigm Shift in Adaptation? A brief on the IEU's approach.
- GCF (2021): Independent evaluation of the adaptation portfolio and approach of the Green Climate Fund.
- GEF (2018): Evaluation of GEF Support for Transformational Change.
- GEF (2021): Achieving transformation through GEF investments. Information brief.
- GEF (2020): Safeguarding our Global Commons: A Systems Change Lab to Monitor, Learn from, and Advance Transformational Change.

7.4 Overview of the recommendations of the modular adaptation evaluation

The modular evaluation of interventions for climate change adaptation comprises a total of four evaluation modules. Each module concludes with an evaluation report and contains its own recommendations. The evaluation makes a total of 17 recommendations across all modules. The following overview presents the recommendations for each evaluation report and assigns them to individual evaluation criteria and SDGs.

Recommendations of the portfolio and allocation analysis (evaluation module 1, see Noltze and Rauschenbach, 2019):

No.	Recommendation	Evaluation criteria	SDGs
1	BMZ should examine the causes of stagnating developments of the portfolio relating to civil society engagement and develop interventions in consultation with civil society to achieve an appropriate increase in the proportion of funds implemented through the civil society channel.	Relevance	13, 17
2	BMZ should continue to support the partner countries in the implementation of NDCs and take these into account even more than previously throughout the process of establishing climate change adaptation priorities in the individual partner countries.	Relevance	13
3	Against the background of international agreements that support countries particularly vulnerable to climate change and Small Island Developing States, BMZ should consider the partner countries' respective climate vulnerability when allocating adaptation funds so as to attach even greater importance to climate vulnerability as a factor in allocation decisions in the field of climate change adaptation in future.	Relevance	13
4	Within the framework of the "Development Policy 2030" strategy, BMZ should address the aspect of donor concentration in the field of climate change adaptation and – considering questions of donor complementarity – advocate for adequate international cooperation.	Relevance, coherence	13, 17

Recommendations of the evaluation in the sectors "Agriculture, water, environmental protection, Nationally Determined Contributions and National Adaptation Plans" ("evaluation module 2", see Noltze et al., 2023):

No.	Recommendation	Evaluation criteria	SDGs
1	The BMZ should review the use of policy-based financing to promote NDCs and NAP processes and – taking account of the results of the review – make greater use of it in order to achieve the objective of expanding direct support for NDCs and NAP processes and contribute to increasing ambitions in the partner countries in the context of the Paris Agreement.	Effectiveness	13
2	The BMZ should increase the funding for bilateral interventions in LDCs and incorporate the bilateral partner countries into the exchange of knowledge and experience of the global NDCP and NAP GN initiatives in order to achieve the objective of expanding direct support for NDCs and NAP processes and thus promote comprehensive interventions to deal with climate risks.	Effectiveness	13, 17

Recommendations of the evaluation on “Instruments for managing residual climate risks” (“evaluation module 3”, see Leppert et al., 2023):

No.	Recommendation	Evaluation criteria	SDGs
1	The BMZ should work to ensure that GIZ and KfW align the use of instruments more systematically with climate risks (hazards, exposure and vulnerability), taking the limits to adaptation into account.	Relevance	13
2	The GIZ and KfW should align risk finance instruments (risk pooling and third-party risk finance) more closely with the priorities of the partner countries, and the needs of target groups that are relevant for achieving development objectives.	Relevance	13
3	The BMZ should further develop its existing approach to comprehensive risk management in order to achieve a stronger results orientation in selecting instruments and ensuring interplay between them. Building on this, the GIZ and KfW should operationalise this approach in the design and implementation of interventions.	Relevance, effectiveness	13
4	The BMZ should expand its portfolio for managing human mobility in the context of climate change as an important component of transformative risk management. It should also harness possible synergies with its migration portfolio. In light of current forecasts for climate risks, approaches to human mobility in the context of climate change that are sustainable in the long term should be (further) developed. To this end, approaches from migration interventions with a specific focus on climate change as a cause of mobility and migration can be used and further developed.	Relevance, effectiveness	13, 10
5	The BMZ should expand the portfolio of German development cooperation in the area of residual climate risks in terms of financial resources, the number of interventions and the instruments used. In cooperation with partner countries and other development cooperation actors, the BMZ should ensure that reliable findings on the effectiveness and impact of various instruments are generated and that the instruments used are selected on the basis of these findings.	Effectiveness, impact	13
6	In order to take better account of the 2030 Agenda principle of 'leaving no one behind', the BMZ should issue directives to ensure a stronger focus on impact among target groups and final beneficiaries, especially vulnerable and marginalised groups. The GIZ and KfW should align their interventions for residual climate risk management accordingly.	Effectiveness, impact	13, 10

Recommendations of this synthesis report:

No.	Recommendation	Evaluation criteria	SDGs
1	GIZ and KfW should effectively mainstream adaptation in order to increase the effectiveness and impact of the German DC portfolio on climate resilience in the partner countries by 1) avoiding negative impacts, 2) better responding to residual climate risks, 3) increasing adaptive capacities and 4) exploiting beneficial opportunities.	Effectiveness	13
2	The BMZ and the IKI Funding Programme should expand the funding for nature-based solutions and infrastructure interventions in order to help deal with shocks and stressors more effectively in particularly climate-vulnerable contexts and help increase adaptive capacities in countries where these capacities are low.	Effectiveness, impact	13
3	The BMZ and the IKI Funding Programme should strengthen the evidence-based programming of the adaptation portfolio in order to make the German adaptation portfolio more effective and thus contribute to strengthening climate resilience in the partner countries.	Effectiveness, impact	13
4	The BMZ and the IKI Funding Programme should create innovation spaces for transformative adaptation interventions and provide financing in order to refine and integrate existing approaches and develop new approaches.	Relevance	13, 10
5	In countries with a high escalation potential and high climate risk, GIZ and KfW should design conflict-sensitive adaptation interventions in order to ensure adaptation outcomes and impacts in conflict contexts, avoid outcomes and impacts that exacerbate conflict and contribute to peacebuilding.	Relevance, effectiveness, impact	13, 16, 10

7.5 Evaluation schedule

This synthesis report concludes the modular DEval evaluation of interventions for climate change adaptation in German DC. The overall evaluation began with a conception phase for the various modules (for more on this, see the portfolio and allocation analysis by Noltze and Rauschenbach, 2019; the instrument evaluation on responding to residual climate risks by Leppert et al., 2021; and the evaluation on interventions in the agriculture, water and environmental protection sectors by Noltze et al., 2023) in December 2018. Like the other modules, the synthesis report also went through inception, data-collection, analysis, synthesis and reporting phases.

Time frame	Tasks/phases
1/2019 – 3/2019	Conception phase
3/2019	Reference group meeting
7/2021 – 9/2021	Inception phase
10/2021	Reference group meeting
10/2021 – 12/2021	Data-collection phase
1/2022 – 4/2022	Analysis and synthesis phase
5/2022	Reference group meeting
6/2022 – 11/2022	Reporting phase
5/2023	Publication

7.6 Evaluation team and contributors

Core team	Role	CRedit-Statement ¹⁶
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Alexandra Köngeter	Evaluator	Conceptualisation, data curation, formal analysis, investigation, methodology, software, visualisation
Dr Isabel Mank	Evaluator	Data curation, formal analysis, investigation, methodology, software, validation, visualisation
Kevin Moull	Evaluator	Conceptualisation, data curation, formal analysis, investigation, methodology, software, visualisation
Dr Mascha Rauschenbach	Evaluator	Conceptualisation, data curation, formal analysis, investigation, methodology, software, validation, visualisation, writing – original draft
Sylvia Vogt	Project Administrator	

¹⁶ The CRedit statement (Contributor Roles Taxonomy, <https://credit.niso.org/>) indicates the roles of the authors of this evaluation report in the evaluation. The CRedit taxonomy distinguishes between 14 different roles to show the specific contribution of the individual authors.

Contributors	Role
Dr John Colvin	External consultant (Emerald Network)
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Dr Kate Lonsdale	External consultant (University of Leeds)
Dr Nina von Uexkull	External peer reviewer (Uppsala University)
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Georg Kühltau	Student employee
Ines Reinstädler	Student employee
Manuel Tran	Student employee
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Responsible	Role
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