# CONNECTIONS THAT MATTER:

## How the quality of governance boosts climate action

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## How the quality of governance boosts climate action

**A systematic scoping review of the literature**

July 2024

# CONTENTS

# ACKNOWLEDGEMENTS

# ABBREVIATIONS

| | |
|---|---|
| **ANZ** | Australia and New Zealand |
| **CBOs** | Community Based Organizations |
| **CO2** | Carbon Dioxide |
| **CSA** | Central and Southern Asia |
| **DDR** | Disaster Risk Reduction |
| **ENA** | Europe and North America |
| **ESEA** | Eastern and South-Eastern Asia |
| **GDP** | Gross Domestic Product |
| **GHG** | Greenhouse Gasses |
| **GPCG** | Global Policy Centre for Governance |
| **HLPF** | High-Level Political Forum |
| **ICT** | Information and Communications Technologies |
| **IDOS** | German Institute of Development and Sustainability |
| **IGS** | Independent Group of Scientists |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **LAC** | Latin America and the Caribbean |
| **NAPAs** | National Adaptation Programmes of Action |
| **NAWA** | North Africa and Western Asia |
| **NGO** | Non-governmental organization |
| **NORAD** | Norwegian Agency for Development Cooperation |
| **SDG** | Sustainable Development Goal |
| **SIDS** | Small Island Development States |
| **SSA** | Sub-Saharan Africa |
| **UN** | United Nations |
| **UNDESA** | United Nations Department of Economic and Social Affairs |
| **UNDP** | United Nations Development Programme |
| **UNECOSOC** | United Nations Economic and Social Commission |
| **UNGA** | United Nations General Assembly |
| **VNR** | Voluntary National Review |
| **WGIs** | Worldwide Governance Indicators |
| **WoS** | Web of Science |

# FOREWORD

"We are at a moment of truth" – UN Secretary-General, Antonio Guterres asserted in his special address on climate action.[1] He called for global leaders to understand that "we need maximum ambition, maximum acceleration, maximum cooperation – in a word maximum action".

To meet this ambition, it is not enough to do a lot, we must also *do the right things in the right ways* to succeed. This report helps to identify how focussing on SDG 16 may allow governments to do the right things in the right way. It shows convincing evidence that working decisively for inclusive, accountable and effective governance systems does not represent a detour (as it may seem), as we scramble for climate response. Seeking inclusive, accountable and effective governance constitutes nothing less than a turbocharged strategy for effective and legitimate response – a pathway to maximum action.

As the world has crossed the midpoint of the 2030 Agenda and conducted the first Global Stocktake of the Paris Agreement, only 17% of all SDG targets are on track and none of the SDG 13 (climate action) targets have made significant progress. At the same time, we face possibly the last opportunity for countries to get back on track towards a 1.5ºC pathway. In raising the ambition of national climate pledges ahead of the 10th Anniversary of the Paris Agreement, strong governance and inclusivity approaches (SDG 16) are prerequisites for success. However, SDG 16 is showing a particularly negative trend. Without urgent action on improving the way our governance systems respond to the challenge of climate change, neither the climate nor the governance targets will be met by 2030.

This is a time of unprecedented compounding of global crises. It is also a time when many countries are experiencing democratic backsliding, low levels of trust in public institutions and in each other. It is a time of polarisation and information pollution, as also pointed out in the Human Development Report 2023/2024. UNDP's Peoples' Climate Vote 2024 further revealed that four out of five people globally want their governments to take stronger action to tackle the climate crisis. Yet as public demand surges, trust in the institutions responsible for climate action is eroding:[2] In many countries, people no longer believe that their governments or international institutions can find sustainable solutions for worldwide climate change issues. This report provides a steer in how to work towards countering this narrative.

This study offers aggregated empirical insight from across the globe about how inclusive, effective and accountable governance systems produce positive effects on climate action. By far our clearest results were

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[1] Stated on the World Environment Day (June 5, 2024) by UN Secretary-General Antonio Guterres.

[2] Ipsos. Global Trustworthiness Index 2023; and 2024 Edelman Trust Barometer.

on participation and inclusion: there is particularly strong evidence showing that meaningful and inclusive stakeholder engagement yields not just additional knowledge but fosters trust, ownership and cooperation, which advance the acceptance and legitimacy of climate action efforts, thereby making them more effective.

We hope that this report galvanizes development actors and stakeholders to invest in SDG 16 and the strengthening of governance systems, and to better identify pathways that raise the ambition and effectiveness of climate action.

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# EXECUTIVE SUMMARY

Inclusive, accountable and effective governance is key to achieving sustainable development, which is why the SDGs include SDG 16 with a dedicated focus on peace, justice and strong institutions that comprises several governance components. Despite their systemic importance, recent studies on SDG interlinkages have either excluded or provided limited coverage of SDG 16 targets in their analyses. At the same time, there is a substantial body of research indicating that institutional quality, state capacity and inclusive governance matter for climate change mitigation as well as for strengthening resilience and adaptive capacity to climate change (SDG 13).

In preparation for the 2024 UN High-Level Political Forum (HLPF), where both SDG 16 and SDG 13 are under thematic review, UNDP's Global Policy Centre for Governance (GPCG) and the German Institute of Development and Sustainability (IDOS) commissioned this study on the effects of SDG 16 on SDG 13.[3] Designed as a systematic scoping review of literature, it seeks to answer the research question, "How does progress on SDG 16 affect progress on SDG 13?".

The study reviewed a subset of the academic literature[4] relating to the enabling or constraining effects of core governance aspects of SDG 16. It analyses whether the three sets of governance issues (entry clusters) (i) accountability, transparency and rule of law; (ii) effective institutions; and (iii) inclusion and participation, impact the achievement of SDG 13, namely adaptation and mitigation (impact clusters).

The review finds that each entry cluster has enabling effects for climate change policy and planning and highlights **three important pathways** that link beneficial impacts between governance and climate action.

**Pathway 1: Adoption of ambitious policies.** Increased participation and inclusion play an important role for building public awareness, creating concern and consensus, addressing conflicts and opposition, establishing political support and ownership, raising policy ambition and legitimacy, and promoting behavioural change and adoption of adaptive climate strategies. Increased participation and involvement may be enhanced through inclusive institutions, well-designed participation processes and skilled, motivated civil servants. Effective institutions also play an important role here, particularly the capacity to mobilize stakeholder engagement.

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**Pathway 2: Effective design and implementation of climate policies.** Key enablers of this outcome include an effective legal framework, which includes particular features: statutory short-term and long-term targets (for mitigation), an independent advisory body, clear accountability structures, an iterative approach to adaptation planning, and mandatory regular reporting. Such a framework promotes political consensus, predictability, use of evidence and clear roles and responsibilities. Similarly, access to information provides critical knowledge on mitigation and adaptation options, preferences and trade-offs which can improve climate planning, while accountability and transparency increases the credibility of policies (e.g., emissions trading schemes) as well as the propensity of government to adopt adaptation or disaster risk reduction (DRR) strategies. Effective institutions also play a critical role, through policy making capacities (e.g., foresight, integration, mainstreaming), coordination (of financial and technical support, investment, actors and competing priorities), and competence (capacity to deliver institutional functions, self-organize, and conceive, develop, revise and execute policies and allocate resources). Furthermore, political continuity throughout the planning process is important for the adoption and implementation of policies. Creating a national climate change authority and national climate change legislation are seen as ways to improve institutional coordination and oversight. A strong mandate, support and funding from higher levels of government are pointed out as key for effective local climate action.

**Pathway 3: Effective oversight and enforcement of policies and regulations.** Here, inclusive and competent institutions along with rule of law and control of corruption are considered vital. Control of corruption improves the effectiveness of climate policies by addressing policy capture and influence of vested interests and enabling better allocation of resources, oversight of regulations, and enforcement. An effective legal framework for climate action and a national institution dedicated to climate change also enhances oversight and enforcement of policy commitments. Competent institutions as well as public concern are further important for effective enforcement of policies and regulations.

By mapping the existing evidence and shedding light on specific causal linkages and pathways, the study offers an approach for accessing the complexity of interlinkages between SDGs 16 and 13 and deriving comprehensive and evidence-based impact logics for climate action programming. The report shows the complex interrelationships between governance attributes and climate actions, which cannot be captured through focusing on individual factors in interventions and programmes fostering climate action only. Instead, it is important to take a systems approach to identify reinforcing positive feedback loops. When developing theories of change for addressing climate change, governmental actors need to consider full pathways that also incorporate governance institutions and measures that may not necessarily be prioritised or of foremost concern.

# 1. BACKGROUND

In adopting the 2030 Agenda (UNGA, 2015), countries acknowledged the integrated nature and indivisibility of the Sustainable Development Goals (SDGs). The SDGs are characterised by complex interlinkages across economic, social and environmental targets and successful implementation will require understanding these interactions to foster policy coherence, maximize synergies and minimize trade-offs in efforts to achieve the goals and targets (Stafford-Smith et al., 2018, McGowan et al., 2019, Breuer et al., 2019, Bennich et al., 2023). A broad range of recent studies have developed and applied different methods to evaluate interlinkages between the SDGs (International Council for Science, 2017, Institute for Global Environmental Strategies, 2017, Pham-Truffert et al., 2020, Allen et al., 2019, Miola et al., 2019, Allen et al., 2023). Given the very broad scope of the SDGs, these have tended to focus on a reduced set of priority targets of research interest.

Recognising that inclusive, accountable and effective governance is a critical means to achieve sustainable development, the SDGs include SDG 16 on peace, justice and strong institutions which comprises 12 targets and 24 global indicators. This includes several governance targets and concepts which are seen as key enablers for all SDGs (UNDESA, 2019). Despite their systemic importance, recent global studies on SDG interlinkages have either excluded or provided limited coverage of SDG 16 targets in their analyses (International Council for Science, 2017, Pham-Truffert et al., 2020, IGS, 2019). To begin to fill these knowledge gaps, UNDP's Global Policy Centre for Governance (GPCG) and the German Institute of Development and Sustainability (IDOS)[5] have undertaken two previous studies on interlinkages between SDG 16 and SDGs 1 (no poverty) and 10 (reduced inequalities), which were published in May 2022, and a study on interlinkages between SDG 16 and SDG 14 (life below water), which was published in March 2023. The studies synthesized empirical evidence on interlinkages between these goals and explored causal dynamics and pathways for impact. The studies recommended that the research be expanded, for example by exploring interlinkages between SDG 16 and other priority goals.

To inform the 2024 UN High-Level Political Forum (HLPF) where both SDG 16 and SDG 13 (climate action) are under thematic review, GPCG and IDOS commissioned the current study on the **effects of SDG 16 on**

**SDG 13**. SDG 13 has been at the core and is a driver of sustainability conferences since at least 1992 (Rio Conference). The relevance of mitigating and adapting to climate change is uncontested, being a part of the 2030 Agenda and the centre of the Paris Agreement. Discussions and analyses on how to achieve better and more climate action focus either on climate mitigation and/or adaptation.

There is a substantial body of research indicating that institutional quality, state capacity and inclusive governance matter for both mitigation and adaptation. However, the evidence is quite fragmented because it focuses either on a small number of cases or on one specific element of governance/SDG 16 (for example, corruption or participation). Furthermore, studies focus on global environmental governance or the adoption of global policies on the national and local level but do not analyse governance preconditions systematically. Studies also have a range of objectives and analytical foci, with only a section of the literature providing new evidence on the enabling or constraining effects of selected governance aspects on adaptation, mitigation and/or strengthening resilience.

In the SDGs interlinkages literature, there have been studies on the impacts of climate change on the achievement of all SDGs (including SDG 16) (Fuso Nerini et al., 2019), however there has not yet been a specific study on the effects of SDG 16 targets on SDG 13 targets. There is an important need to bring together research on the effects of **country level governance** on specific aspects of SDG 13 to support SDGs implementation and the Paris Agenda. This knowledge could also feed into broader global climate scenario research (e.g., for the Intergovernmental Panel on Climate Change (IPCC) reports) that have a substantial impact on policy making, where institutional feasibility challenges are depicted as a main concern (IPCC, 2022a).

To synthesize the evidence on interlinkages between the governance aspects of SDG 16 and SDG 13, the current study used a **systematic scoping review** approach that was guided by the methods developed in the previous studies and informed by good practice guidelines for evidence-based literature reviews in international development and policy research (ODI, 2013, Waddington et al., 2012). The study design was also informed by GPCG, IDOS and UNDP subject matter experts. The review was undertaken over the period February to June 2024 by a team of reviewers from UNDP and IDOS. This report presents

the findings from the review. **Section 2** first outlines the scope and methods applied, including the query protocol and approach for evaluating interlinkages. **Section 3** then presents an overview of the results from the review, including a synthesis of the interlinkages identified in the literature. **Section 4** interprets and discusses the results, highlighting key findings from the individual studies on enabling and constraining effects. S**ection 5** summarises information in the literature on the potential causal relationships and dynamics that underpin enabling effects. Finally, **Section 6** provides key findings, study limitations, policy recommendations and areas for future research.

# 2.  RESEARCH DESIGN

Methodological approaches to evaluate interlinkages vary from qualitative methods based on literature review and expert opinion through to quantitative analysis of statistical correlation or dynamic modelling (Allen et al., 2021). Among these approaches, systematic literature reviews provide a well-suited method for synthesising the current evidence base on a targeted set of SDGs interactions.

The research was undertaken in several stages. Initial steps included defining the overall research question, defining the scale and directionality of the impacts being evaluated, identifying priority SDG targets or concepts of interest for the analysis, and defining the protocol for the review including inclusion and exclusion criteria. Key decisions regarding the study design— including on the scope, scale, methods for clustering and keywords—were made through a documented consultative process involving subject matter experts from across key teams at UNDP and IDOS.

## 2.1    Study research question

Many previous assessments of interlinkages between the SDGs rely on the evaluation of SDG target-to-target interlinkages; a common evaluation question is: *"if progress is made on target x (entry target), how does this influence progress on target y (impact target)?"* (Weitz et al., 2017, International Council for Science, 2017). However, reviewing target-to-target interactions can be challenging, as SDG targets are not neatly delineated and often overlap; sometimes, multiple targets address the same issue (e.g. aspects of corruption are included in several SDG 16 targets), other times a single target addresses multiple issues (e.g., SDG 16.3 covers a vast array of issues around the rule of law as well as access to justice).

Therefore, the research team decided – consistent with the previous SDG 16 interlinkages studies[6] – to group together closely related concepts from each of the goals into entry and impact clusters

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(see Sections 2.3 and 2.4 below). Instead of target-to-target interlinkages, the study thus evaluates cluster-to-cluster interlinkages. As in the previous studies, this review focused on the effects of SDG 16 on other goals, in this case SDG 13. This does not imply that effects in the reverse direction do not exist or are less important. **Against this background, the overall research question for the review was:** *"What is the evidence that progress (or lack thereof) on selected governance aspects of SDG 16 (accountability/transparency, participation/inclusion and effectiveness) affect the achievement of selected aspects of SDG 13 (adaptation and mitigation)?"*

## 2.2     Scale of the analysis

For this study, the scale of analysis for SDG 16 focused on the country level and targets addressing global governance[7] were excluded from the analytical framework and clusters. Similarly, for the SDG 13 targets, the focus was primarily on national/sub-national governance and aspects under national jurisdiction. This facilitated the identification of actionable evidence for policymakers and has provided analytical focus for the report. However, it also means the methodological choice to omit critical targets of SDG 16 was made, and as such the analysis is not holistic across the goal. It should be considered to explore the option of conducting similar research on the global indicators.

## 2.3     Priority SDG 16 and SDG 13 targets and concepts

SDG 16 is an amalgam of targets covering dimensions relating to peace, justice and strong institutions. To address the overlap in concepts across targets, the previous interlinkages studies in this series have adopted a clustering approach for the SDG 16 entry targets which first required prioritisation of concepts and targets within the context of the review. With the shift in scope for this study to focus on implications for climate action (SDG 13), the priority targets for SDG 16 were reviewed by UNDP/IDOS experts. This resulted in the selection of priority targets and concepts relating to the institutional dimension of SDG 16, namely: participation and inclusion (16.7; 16.9), accountability and rule of law (16.6, 16.3), transparency (16.6, 16.10, 16.5), and effectiveness (16.6) **(Table 1)**.

[7] For example, 16.8 on participation in institutions of global governance.

**TABLE 1.** Priority SDG 16 Entry Targets and Concepts

> **16.3** Promote **the rule of law** at the national and international levels and ensure equal access to justice for all
>
> **16.5** Substantially reduce **corruption and bribery** in all their forms
>
> **16.6** Develop effective, **accountable and transparent** institutions at all levels
>
> **16.7** Ensure responsive, **inclusive, participatory** and representative decision-making at all levels
>
> **16.10** Ensure public **access to information** and protect fundamental freedoms, in accordance with national legislation and international agreements

Priority targets and concepts relating to SDG 13 were also reviewed and selected by UNDP/IDOS experts as identified in **Table 2.** SDG 13 includes five targets addressing climate resilience/adaptive capacity (13.1), climate (mitigation) policy and planning (13.2), education/awareness/capacity (13.3), international financial commitments (13a) and international mechanisms for capacity building (13b). The first three numbered targets were considered of critical importance for the review as they address priority aspects of national climate action relating to both adaptation and mitigation, including adaptive capacity/resilience, climate change policies/plans/strategies, and education and awareness. As the two means of implementation targets (13a and 13b) address aspects of international cooperation on finance and capacity building, they were considered beyond the scope of the analysis given the primary focus on national implementation.

**TABLE 2.** SDG 13 targets for inclusion in the review

> **13.1** **Strengthen resilience and adaptive capacity** to climate-related hazards and natural disasters in all countries
>
> **13.2** Integrate **climate change measures** into **national policies, strategies and planning**
>
> **13.3** Improve **education, awareness-raising and human and institutional capacity** on **climate change mitigation, adaptation, impact reduction** and **early warning**

**2.4** Approach for clustering priority SDG 16 and SDG 13 targets and concepts

Based on these priority SDG 16 and SDG 13 targets and concepts, the approach used for clustering is summarised in **Figure 1**. This clustering approach was necessary given the overlap of concepts

among the targets which prevented a clear-cut target-to-target analysis. The framework in **Figure 1** builds upon the clustering approach used in the previous studies with two notable adaptations. Firstly, the addition of a cluster related to effective institutions (16.6). Secondly, the amalgamation of the accountability/rule of law cluster and the transparency cluster. This resulted in three SDG 16 entry clusters: **1. Increased Accountability, Transparency and Rule of Law (16.3, 16.5, 16.6, 16.10); 2. Increased Participation and Inclusion (16.7); and 3. Increased Governance Effectiveness/Effective Institutions (16.6).** These revisions to the clustering approach for SDG 16 were made to incorporate a state capacity cluster which is considered important in the context of both climate change mitigation and adaptation (IPCC, 2022b, IPCC, 2022a) and to bring the overall clustering approach in line with the Economic and Social Council (ECOSOC) principles of effective governance for sustainable development (UNECOSOC, 2018) which identify headline principles of 'effectiveness', 'accountability' (including transparency), and 'inclusiveness'.

For the SDG 13 impact clusters, the clustering approach was structured around climate adaptation and climate mitigation. Relevant concepts from the three targets (13.1, 13.2 and 13.3) were allocated to the mitigation and adaptation clusters to address overlap between key concepts and issues across multiple targets. This resulted in two SDG 13 impact clusters: **1. Strengthening Resilience and Adaptive Capacity to Climate Change (13.1, 13.2, 13.3); and 2. Strengthening Climate Change Mitigation Actions and Capacity (13.2, 13.3).**

**FIGURE 1.** Conceptual framework for clustering: SDG 16 entry and SDG 13 impact clusters
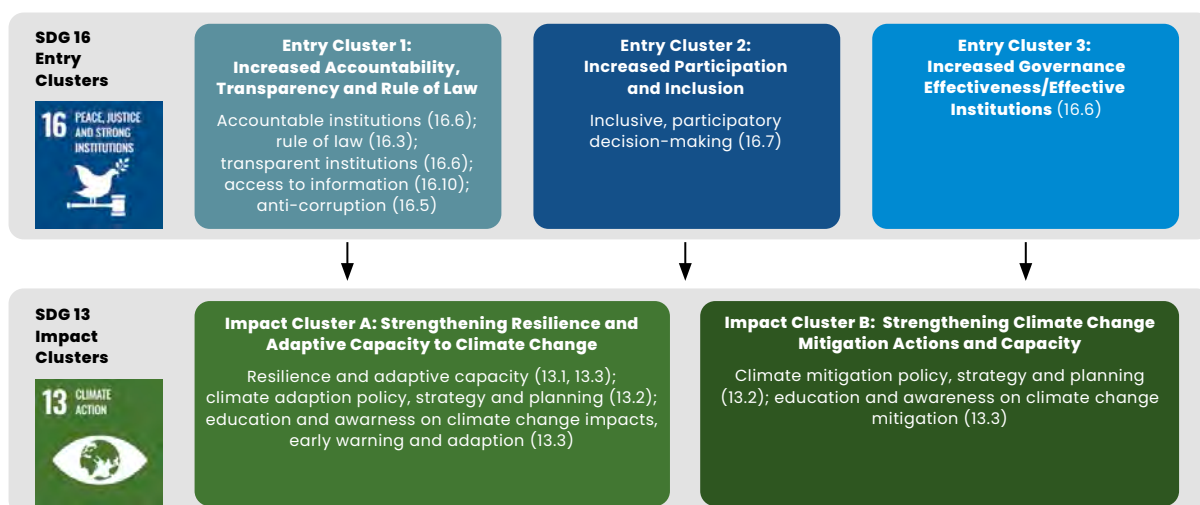
## 2.5 Approach for evaluating interlinkages

In terms of assessing interlinkages, previous studies exploring target-to-target interactions have used a qualitative evaluation framework to characterise these interactions (e.g., as synergies or trade-offs) (Pham-Truffert et al., 2020, Miola et al., 2019). A common approach has applied the seven-point scale developed by the International Council for Science (2017) to characterise interlinkages as negative or trade-offs (constraining, counteracting, cancelling), positive or synergies (enabling, reinforcing, indivisible), or neutral. For the previous UNDP GPCG/IDOS studies, a simple evaluation approach was used to classify interlinkages from an entry cluster to an impact cluster as positive (synergy/enabling), negative (trade-off/constraining), neutral (no impact), or inconclusive (impact unclear). Given the diversity of the literature and evidence base and the subjectivity of assigning scores, the same approach was used in the current study.

**The guiding question for the evaluation of interlinkages became:**

*"Based on the evidence in the paper, does an increase/improvement in entry cluster X*
*have an enabling/constraining/neutral/inconclusive impact on impact cluster Y?"*

## 2.6 Approach for sourcing literature – query protocol and criteria

Once the priority targets and approach for clustering were finalised, a query protocol based on a standardised set of inclusion and exclusion criteria and query terms and conditions was developed and used to identify relevant literature in the Web of Science (WoS) academic literature database[8]. Key terms included the priority concepts relating to SDGs 16 and 13 which were further developed to capture important keywords and synonyms **(Table 3)**.
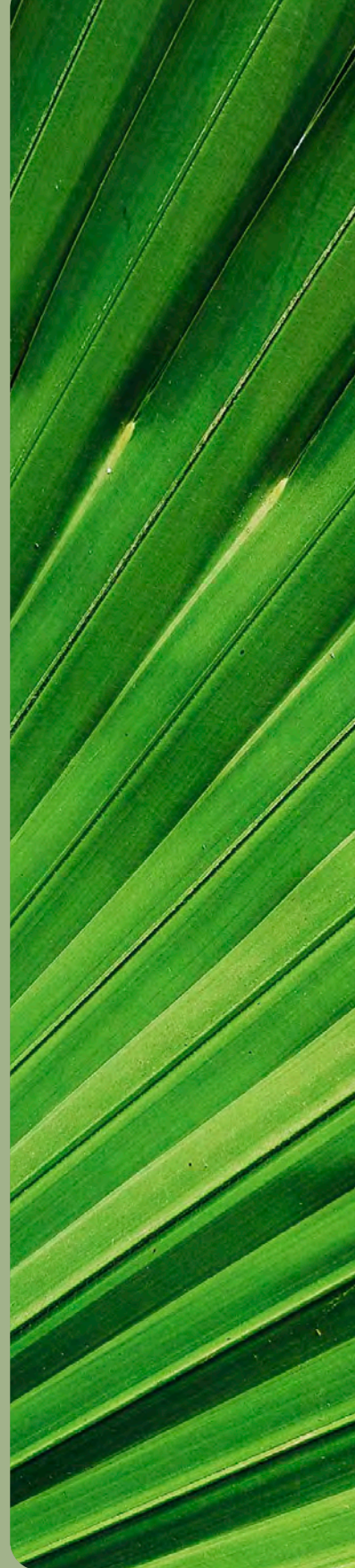
**TABLE3.** Potential query terms for use in the protocol

| Key Concepts/Clusters | Query terms |
|---|---|
| 1. Accountability | "accountable institutions" OR "accountability" OR "accountable governance" OR "accountability mechanism*" OR "dispute resolution" OR |
| 2. Rule of law | "rule of law" OR "independent judiciary" OR "judicial independence" OR "regulat* enforcement" OR "legal enforcement" OR "access to justice" OR "criminal justice" OR "implementation of agreement*" OR "agreement implementation" OR "trust in government" OR |
| 3. Transparency | "transparent institutions" OR "transparency" OR "access to information" OR "freedom of information" OR "right to information" OR "open government data" OR "transparent governance" OR |
| 4. Participation and inclusion | "inclusive decision making" OR "participatory decision making" OR "participatory decision-making" OR "representative decision making" OR "representative decision-making" OR "responsive decision-making" OR "responsive decision making" OR "inclusive institutions" OR "participatory institutions" OR "political inclusion" OR "public participation" OR "public consultation" OR "public engagement" OR "participatory governance" OR "inclusive governance" OR "civic engagement" OR "democratic governance" OR "stakeholder engagement" OR |
| 5. Control of corruption | anti-corruption OR "corruption control" OR "control* corruption" OR "control of corruption" OR "combat* corruption" OR "fight* corruption" OR "curb* corruption" OR "bribery" OR "money laundering" OR "public integrity" OR "illicit financial flows" |
| 6. Effectiveness | "govern* effectiveness" OR "effective institution*" OR "institution* effectiveness" OR "effective govern*" OR "institutional coordination" OR institutional co-ordination" OR "institutional competence" OR "competent institution*" OR "budget performance" |
| | **AND** |
| 1. Adaptation/resilience | adaptation NEAR/5 (plan* OR strateg* OR policy OR knowledge OR awareness OR education OR capacity) OR resilience OR "adaptive capacity" OR "adaptation policy" OR "adapt* strategy" OR "adapt* plan*" OR "adapt* education" OR "adapt* measure*" OR "adapt* knowledge" OR "adapt* awareness" OR vulnerability OR "impact reduction" OR "deaths from natural disasters" OR "awareness of impacts" OR "risk reduction" OR "early warning" OR "climate resilient development") |
| 2. Mitigation | mitigation NEAR/5 (plan* OR strateg* OR policy OR knowledge OR awareness OR education OR capacity) OR "climate policy" OR "climate plan" OR "climate action" OR "climate strategy" OR "emission* reduction" OR "reduce emission*" OR "greenhouse gas emission*" OR "nationally determined contribution" OR NDC OR *low emission development strat*" OR "low-emission development strateg*" OR "climate compatible development" OR "green economy" |
| | **AND** |
| Additional key terms (government) | institution* OR "public sector" OR government* OR "public administration" OR governance OR "public policy" |
| Additional key terms (climate change) | "climate change" |

The primary method of resource retrieval was based on an academic literature database search using a query combining the terms in Table 3. To ensure that the scope of the literature was manageable and relevant, only peer-reviewed articles published since 2015 (i.e., since the adoption of the SDGs) were included. Articles were required to include at least one query term corresponding to the SDG 16 entry clusters, plus at least one query term corresponding to the SDG 13 impact clusters, plus at least one relating to the additional scoping terms. The protocol selected papers with the keywords in their title, abstract or keywords (TS) and using Boolean operators (AND, OR, NEAR). The WoS database was used, as it includes 24,000+ journals across 254 subject disciplines and is curated by expert in-house editors to include only journals that demonstrate high levels of editorial rigor and best practice.

The final WoS query was conducted in March 2024 and returned a total of 803 articles. These were subsequently screened for relevance and prioritized for review based on a set of screening criteria that aimed to identify articles of greater relevance based on their title, keywords and abstract. Higher priority articles were those that explicitly included key terms from the entry and impact clusters in their title and keywords, included quantitative evidence and directly corresponded to the core research question for the study (i.e., they provided evidence on the effects of selected governance attributes on climate change adaptation and mitigation). Based on the screening process which included both automated and manual screening, articles were coded as of high, moderate, low or no relevance for the study. Articles screened into the low or no relevance categories were excluded from further review. The results from the screening were reviewed for consistency by a single author. Based on the screening exercise, a total of 78 papers were initially selected for more detailed review. During the review process, 16 articles were disregarded due to a lack of relevance (e.g., they were not at the desired scale of analysis or did not provide new evidence relating to the research question). In total, 62 articles were included in the detailed review of interlinkages summarised below.

# 3. SUMMARY OF THE LITERATURE ON SDG 16 AND SDG 13 INTERLINKAGES

## 3.1 Overview of literature characteristics

Of the studies reviewed, 30 (48%) were considered qualitative analyses (mostly drawing on single or comparative case studies), while 14 (23%) were quantitative, and 18 (29%) were mixed methods. These studies identified a total of 78 interlinkages between the entry and impact clusters, with a similar breakdown of qualitative, quantitative, and mixed methods **(Figure 2)**.

**FIGURE 2.** Proportion of articles and interlinkages supported y quantitative, qualitative and mixed methods.
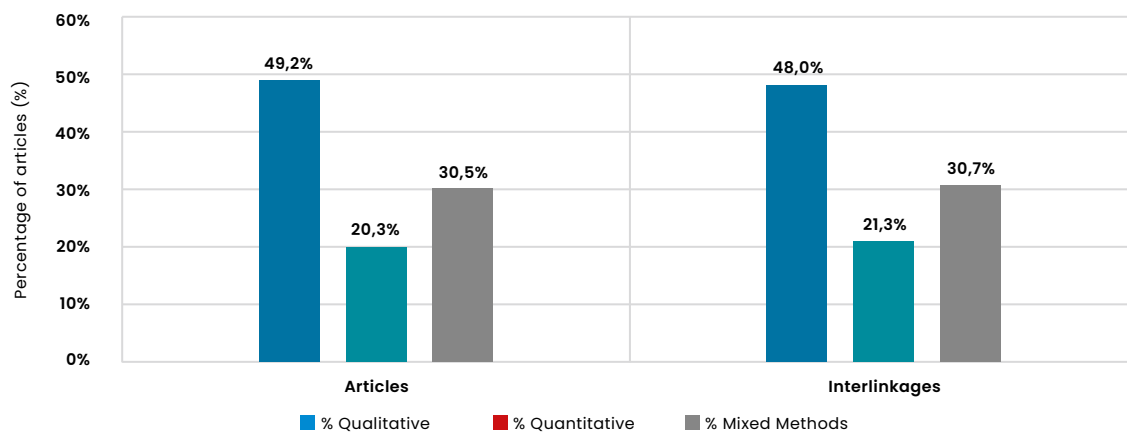


In terms of the level of the analysis, most studies (66%) included in the review focused on the sub-national (48%) or national (17%) levels, while the remainder (35%) were multi-country studies that ranged from including 2 countries to 179 countries **(Figure 3)**.

**FIGURE 3.** Proportion of articles at different levels/scale of analysis
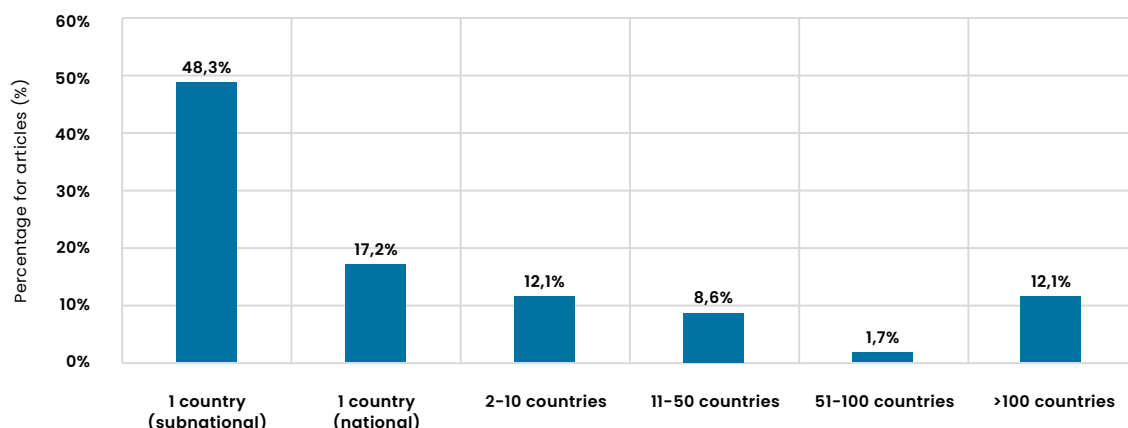


In terms of the geographic scope, there was a reasonable spread of articles across the different world regions.[9]  However, a larger proportion of studies were from Europe and North America (ENA, 29%) and comparatively fewer studies from North Africa and Western Asia (NAWA, <2%) (Figure 4). A share of 21% of studies were considered global in scope, which were mainly review articles or large multi-country quantitative analyses.

**FIGURE 4.** Geographic region of analysis (% of articles) (SSA: Sub-Saharan Africa; LAC: Latin America and the Caribbean; ESEA: Eastern and South-Eastern Asia; CSA: Central and Southern Asia; ENA: Europe and North America; NAWA: North Africa and Western Asia; ANZ: Australia and New Zealand).

**FIGURE 5.** Number of enabling, constraining and inconclusive interlinkages identified between the three primary entry clusters and two impact clusters. 1. Increased Accountability, Transparency and Rule of Law; 2. Increased Participation and Inclusion; 3. Increased Effective Institutions; A. Strengthening Resilience and Adaptive Capacity to Climate Change; B. Strengthening Climate Change Mitigation Actions and Capacity
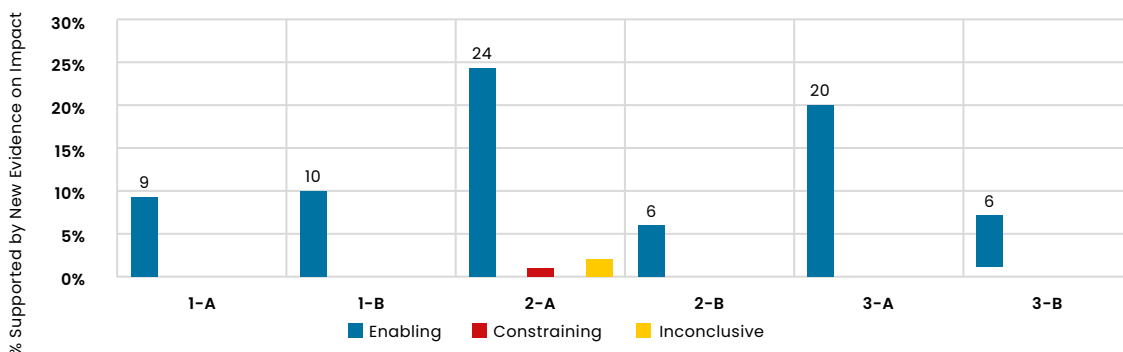


## 3.2 Evaluation of interlinkages between entry and impact clusters

The review identified a total of 78 interlinkages between the 3 entry and impact clusters, of which 75 were considered enabling interlinkages, 2 were inconclusive, and 1 was constraining. The majority of enabling interlinkages were identified from entry cluster **2. Increased Participation and Inclusion** (30 enabling interlinkages or 40%), followed by **3. Increased Effective Institutions** (26 interlinkages or 35%) and **1. Increased Accountability, Transparency and Rule of Law** (19 interlinkages or 25%) **(Figure 5)**. The largest number of interlinkages were identified between increased participation and inclusion and climate adaptation (2-A, 35%) and effective institutions and climate adaptation (3-A, 26%). The three constraining and inconclusive interlinkages were associated with entry cluster 2 on participation and inclusion and impact cluster A on climate change adaptation (an explanation of these enabling and constraining interlinkages is provided in **Section 4**).

## 3.3 Evaluation of interlinkages at the cluster and sub-cluster levels

Based on the analytical framework illustrated in **Figure 1**, the entry and impact clusters encompassed multiple different concepts from the SDG targets which can also be categorised into 'sub-clusters'. For example, entry cluster 1 included 'accountable institutions' (SDG target 16.6), 'rule of law' (SDG target 16.3), 'transparent institutions' (SDG target 16.6), 'access to information' (SDG target 16.10) and 'anti-corruption' (SDG target 16.5), while impact cluster A addresses 'adaptive capacity' (SDG targets 13.1, 13.2) and 'adaptation planning' (SDG target 13.2). Where relevant, interlinkages identified in the literature were also coded to these different sub-clusters to provide a more detailed analysis.

During the review process, it was also noted that common terms re-occurred across the studies in relation to the entry and impact clusters. For example, for entry cluster 3, these included aspects identified in the ECOSOC principles of effective governance for sustainable development (UNECOSOC,

2018), including institutional 'collaboration/coordination', 'policymaking', and 'competence' as well as studies that simply used the more generic terms of 'government effectiveness' or 'institutional effectiveness' (e.g., studies that used the Worldwide Governance Indicators (WGIs)). Several studies for impact cluster A evaluated the effects of governance on mortality rates or the number of people affected by disasters as well as specifically for disaster risk reduction plans and interventions, while several studies for impact cluster B evaluated the effects of governance on the actual reduction of greenhouse gas emissions. Additional sub-clusters were therefore used to code these interlinkages, including for the different institutional terms ('coordination', 'policymaking', 'competence', 'effectiveness') as well as 'disaster risk reduction' (or DRR) and 'emissions reduction'.

The more detailed breakdown of interlinkages between the different clusters and sub-clusters is provided in **Figure 6** which presents an alluvial diagram where the width of the 'flows' corresponds to the number of enabling interlinkages identified. In most cases, the interlinkages also correspond to an individual article, so the flows can be roughly interpreted as the number of articles.

For the first entry cluster on increased accountability, transparency and rule of law, there were 19 enabling interlinkages identified in total, which strengthened all six impact sub-clusters, most of which were from the entry cluster categories on access to information (9), rule of law (4) and control of corruption (3) **(Figure 6)**. Rule of law strengthened greenhouse gas emissions reduction (2) as well as adaptation planning (1) and mitigation planning (1), while control of corruption strengthened mitigation planning (2) and emissions reduction (1). Access to information was particularly important for adaptive capacity (7) and mitigation capacity (2). Accountability had a single enabling link to reduced greenhouse gas emissions while transparency supported mitigation planning (1) and mitigation capacity (1).

The largest number of enabling interlinkages in the literature corresponded to entry cluster 2 (30 interlinkages), most of which were from participation in three impact sub-clusters on adaptation planning (14), adaptation capacity (6), and mitigation planning (4) **(Figure 6)**. The entry sub-cluster on inclusion had fewer enabling interlinkages (5) which strengthened adaptation planning (2), disaster risk reduction (1), mitigation planning (1) and mitigation capacity (1).

Finally, entry cluster 3 also had many enabling interlinkages (26) that were evenly spread across four entry sub-clusters **(Figure 6)**. The sub-cluster on policymaking strengthened both adaptation planning (3) and mitigation planning (2), while institutional competence strengthened adaptive capacity (3) and mitigation capacity (2), as well as DRR (2). The sub-cluster on institutional coordination strengthened adaptation planning (4), adaptive capacity (2) and mitigation planning (1), while the more generic

category on effective institutions enabled disaster risk reduction (3), adaptive capacity (2), adaptation planning (1) and mitigation planning (1).
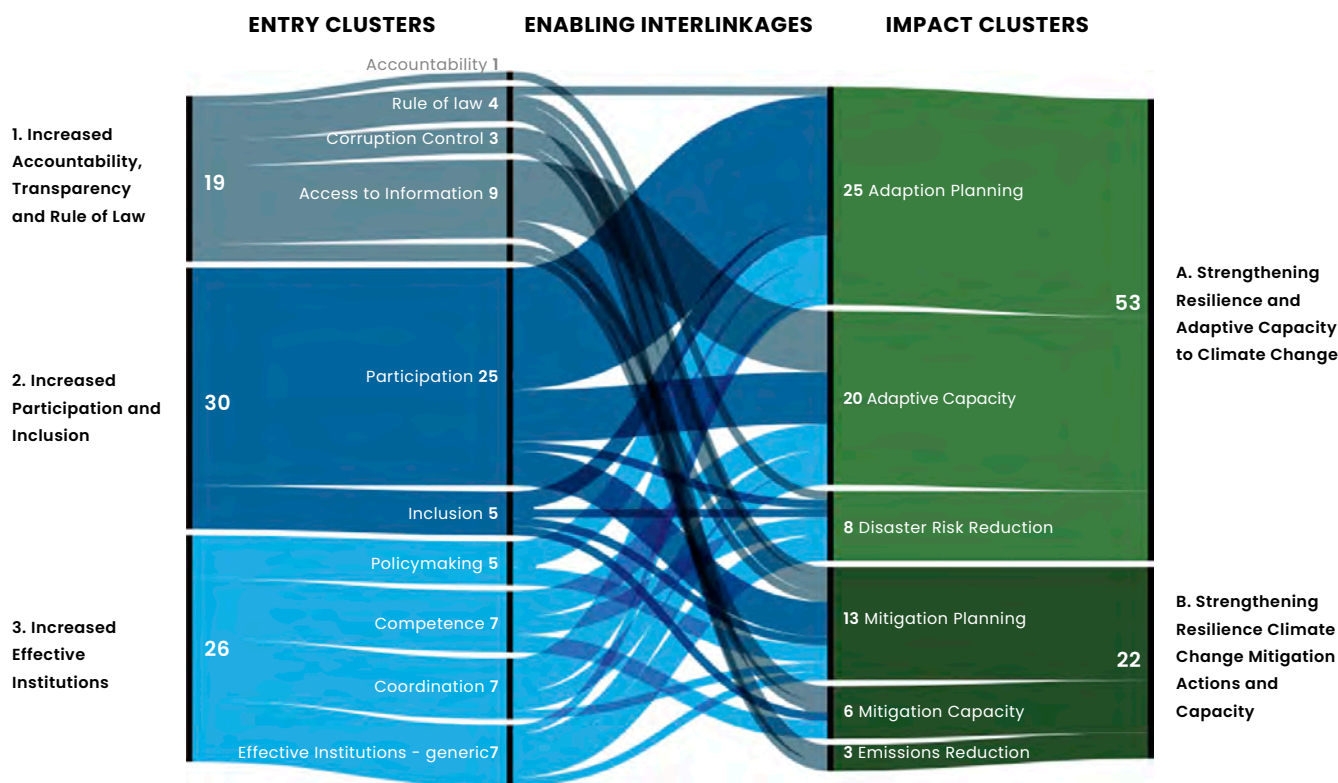


**FIGURE 7.** Alluvial chart of enabling interlinkages between the entry clusters and sub-clusters (left) and the impact clusters and sub-clusters (right). Width of the flows (and numbers inserted) represent the number of positive/enabling interlinkages identified in the literature.

### 3.4    Evaluation of the strength of evidence

All the studies reviewed were from peer-reviewed journals to ensure academic rigour. However, not all articles were considered comparable in terms of the quantity and quality of evidence. Although it is beyond the scope of this study to critically evaluate the various methods used in each article, it was feasible to extract general information on the nature of the evidence provided (quantitative or qualitative), the size of the country samples used in the analyses, and whether the study provided new evidence on the impacts of enabling interlinkages on climate change outcomes. In addition, reviewers coded each paper based on their subjective impression of the overall quality of the paper (as high, moderate, low) in terms of its methods and the evidence supporting findings. Overall, around half of the studies used qualitative methods which were primarily sub-national or national studies in a single country or comparative studies across a small number of countries (<5). The remaining studies used quantitative or mixed methods and included a range of sub-national, national, and multi-country studies, of which close to half analysed many countries (from 35 to 179). **Figure 7** provides a summary

of the number of enabling interlinkages identified in the literature between the different entry clusters (1, 2, 3) and impact clusters (A, B) (x-axis). In addition, it shows the percentage of these interlinkages that are supported by quantitative and mixed methods (y-axis) as well as the average number of countries included in the studies that evaluated these interlinkages (bubble size).

Overall, this highlights that studies on climate change mitigation (impact cluster B) tended to use larger multiple country analyses compared with studies on climate change adaptation (impact cluster A), the latter of which tended to be sub-national case studies within single or a few countries (1-A, 2-A, 3-A). There was generally a good mix of both qualitative and quantitative/mixed methods used across all the three entry clusters, though with a greater share of qualitative studies (~80%) for the interlinkages between entry cluster 3 (effective institutions) and impact cluster B (climate mitigation). This suggests that the evidence supporting the interlinkages identified in the literature is quite well balanced across approaches and methods.

In terms of the subjective ratings from the reviewers on the quality of papers, most papers (88%) were evaluated generally as of high or moderate quality. For the seven studies rated as lower quality, two studies provided 'inconclusive' evidence on interlinkages (and excluded from the synthesis of enabling interlinkages in **Figure 6**). For the remaining five studies that identified enabling interlinkages, each corresponded to a different entry/impact cluster connection (1-A, 2-A, 3-A, 2-B, 3-B). This highlights that the higher quality evidence supporting the assessment of enabling interlinkages was evenly distributed across the different clusters.

**FIGURE 8.** Evidence for enabling interlinkages between entry and impact clusters. 1. Increased Accountability, Transparency and Rule of Law; 2. Increased Participation and Inclusion; 3. Increased Effective Institutions; A. Strengthening Resilience and Adaptive Capacity to Climate Change; B. Strengthening Climate Change Mitigation Actions and Capacity
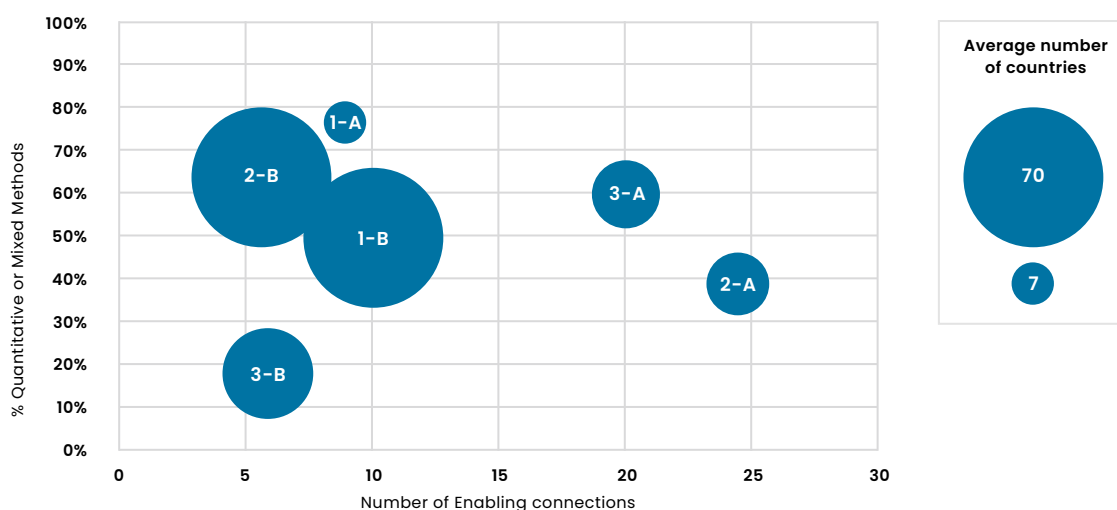
# 4. Findings from the literature on enabling and constraining interlinkages

The results from the review show that many studies have been published since 2015 identifying enabling effects of the three governance entry clusters from SDG 16 on the two impact clusters associated with SDG 13. This includes a reasonable balance of qualitative and quantitative articles covering a broad range of countries from different world regions, ranging from subnational to multi-country/global studies and addressing all global regions. Overall, enabling interlinkages were identified between all entry and impact clusters, though evidence in the sample of literature reviewed was stronger for the enabling effects of '2. Increased Participation and Inclusion' and '3. Increased Effective Institutions on impact cluster 'A. Strengthening Resilience and Adaptive Capacity to Climate Change'.

At the sub-cluster level, the largest number of enabling interlinkages were identified to come from entry sub-clusters on participation (25), access to information (9), and several of the institutional aspects on competence (7), coordination (7) and effectiveness (7). Enabling effects were more commonly identified for the impact sub-clusters on climate change adaptation planning (25 interlinkages), adaptive capacity (20 interlinkages) and mitigation planning (13 interlinkages). The geographic focus and the country sample sizes varied across the different studies. However, the enabling effects are supported by studies from all regions, though with a bias towards Europe and North America.

It is also useful to understand the key mechanisms and pathways for the enabling (or constraining) effects identified in the literature and potential policy recommendations for leveraging enabling effects. Although many articles provided evidence of enabling effects, explanations on the causal relationships and pathways that produce these effects were not always explored or discussed. As such, it is challenging to unpack these relationships and gain a clear and complete understanding of causality. Despite this gap, many studies did attempt to explain and interpret their findings, drawing on outcomes from their research or sometimes from existing literature. This sheds light on some potential causal relationships and pathways for enabling (or constraining) effects from SDG

16 clusters through to SDG 13 clusters. This section first synthesises and discusses key findings in the literature on the enabling and constraining effects and relationships. Information on key causal relationships is then synthesised from the literature in **Section 5** and summarised in the form of a systems map or 'causal diagram'.

## 4.1 Increased accountability, transparency, and rule of law

A total of 19 different studies identified the enabling effects of increased accountability, transparency and rule of law on the two impact clusters. The studies covered a range of global regions (Europe and North America, Latin America and the Caribbean, Sub-Saharan Africa, Eastern and South-Eastern Asia, Central and Southern Asia and Global), and with a fairly even split between climate change adaptation (impact cluster A, 9 enabling interlinkages) and climate change mitigation (impact cluster B, 10 enabling interlinkages).

### 4.1.1 Accountability, transparency, and rule of law effects on strengthening resilience and adaptive capacity to climate change

A selection of nine primarily quantitative and mixed methods studies provided evidence of enabling interlinkages between increased accountability, transparency and rule of law (entry cluster 1) and improved resilience and adaptive capacity (impact cluster A). This comprised a mix of subnational, national, and multi-country studies covering three regions (Europe and North America, Sub-Saharan Africa, Central and Southern Asia) and one global study.

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Most of the studies (7) identified enabling effects of **access to information** on adaptive capacity using mainly quantitative and mixed methods (apart from one qualitative study). The majority of these focused on adaptive capacity of farmers in rural areas. For example, Afkhami et al. (2022) evaluate dimensions of farmers' adaptive capacity in Iran, determining that 'information and awareness' is an important factor, including awareness of vulnerabilities to climate change. Similarly, Fahad and Wang (2018) investigate the adaptation measures utilized by farm households in Pakistan to cope with the adverse shocks of climatic disasters, finding that access to information and knowledge improves climate adaptation. Makate et al. (2019) analyse factors explaining the adoption of adaptation innovations (e.g., conservation agriculture, drought tolerant maize, improved legumes) for a large sample of smallholder famers in Malawi and Zimbabwe, finding that adoption is mostly explained by access to key resources including information (as well as credit and income) along with their level of education and size of land owned by the farmer. Another study (Thinda et al., 2020) in South Africa found that institutional factors such as access to climate change information influenced the adoption of climate change adaptation strategies among beneficiaries of land reform. All these studies also found that access to agricultural extension services[10] was critical for improving access to information, and that the provision of such extension services provided an important policy measure.

Thinda et al. (2020) also find that farmers receive climate and agricultural information through various means including radio, television and mobile phones, and that access to ICT was considered significant for the adoption of climate change adaptation strategies. This information helps farmers to choose strategies that enable them to adapt to changes in climate conditions. Another study(Faruk and Maharjan, 2022) on determinants of adaptive capacity of farmers in Bangladesh found that access to information was important for farmers' decisions to participate in community-based organizations (CBOs), which in turn significantly increased the adoption of flood adaptation strategies. The authors suggest that those who receive information about CBOs from leading NGOs, friends or relatives may be more motivated to participate in CBOs. Access to information was also found to be important for increasing adaptive capacities for diversified flood risk management strategies in response to climate change in Germany and The Netherlands (Cosoveanu et al., 2019), as well as the adaptive capacity of local communities in the USA in response to water shortages (Conrad et al., 2023). In the case of the latter, increased information was made available through the installation of real-time water monitoring systems.

The remaining two studies identified positive enabling effects of **accountability and rule of law** on Disaster Risk Reduction (DRR) and adaptation planning. Firstly, Wanner (2020) systematically assesses factors associated with national disaster risk reduction across 45 countries and find that increased

[10] Agricultural extension services include advice, information, and other support services to farmers to enable them to improve productivity and farming practices.

accountability is associated with a reduced number of people affected by disasters. The authors explain that this relationship stems from affected populations assigning responsibility for the damage caused by disasters on incumbent governments, and thus in countries with higher levels of accountability (including independent media as a monitor of government), politicians adopt more national DRR measures following significant disaster events.

Secondly, Averchenkova et al. (2021) assess the importance of a strategic legal framework for action against climate change including both adaptation and mitigation (the UK Climate Change Act), finding that a strong legal framework with statutory targets, processes and institutions is an important tool for effective climate change action and governance making it more predictable, more structured and more evidence based. In relation to adaptation, this includes through an independent advisory body, clear accountability and iterative approach to adaptation planning, and mandatory regular reporting on progress. The study found the key impact of the legislation has been on the long-term predictability and the signalling effect on the 'direction of travel' of climate policy which has also helped to preserve political consensus. Another outcome was that the Act had fundamentally changed the framing of climate policy and facilitated a more fact-based debate as it introduced detailed monitoring and reporting processes as well as allocating statutory responsibilities and timelines to minsters and government officials.

### 4.1.2    Accountability, transparency and rule of law effects on strengthening climate change mitigation actions and capacity

A selection of 10 studies using quantitative (5), qualitative (4) and mixed methods (1) provided evidence of enabling interlinkages between increased accountability, transparency, and rule of law (entry cluster 1) and strengthened climate change mitigation actions and capacity (impact cluster B). This comprised primarily national and multi-country studies covering several regions (Europe and North America, Central and Southern Asia, Latin America and the Caribbean, Eastern and South-Eastern Asia) as well as multiple global studies (5).

Three of these identified enabling effects were from the **control of corruption**, including two global studies (Alasaly et al., 2023, Lindvall and Karlsson, 2024) which assessed factors that affect climate policy performance. The analysis by Alasaly et al. (2023) of

159 countries finds the control of corruption (using the WGIs dataset) enhances the effectiveness of climate change policies on reducing carbon dioxide emissions. This is significant as it suggests that the effectiveness of climate change policies in reducing emissions is dependent on the capacity to ensure that resources are allocated properly, and that enforcement is not impeded by corruption (including through better oversight and regulations to meet climate goals). This suggests that governance is an important moderating factor in the effectiveness of climate policies in reducing emissions because nations that have higher levels of control over corruption may have better oversight and regulations to meet their climate goals.

The comprehensive review by Lindvall and Karlsson (2024) evaluates quantitative evidence from 74 studies with global coverage on the relationship between governance and policy performance, finding that democracies suffering from corruption and weak state institutions fail to implement climate policies effectively even if they have ambitious targets. This failure to translate ambitious policies into emissions reductions is because public authorities seem incapacitated to properly execute and enforce adopted environmental laws and regulations. The authors note that **corruption and policy capture** are often caused by fossil fuel interests particularly in rentier states. Based on the reviewed studies, combating corruption and building up institutional capacity should be priorities for speeding up the low-carbon transformation. The study by Hamid et al. (2023) of factors affecting CO2 emissions in India over several decades also found corruption to be statistically significant and that a 1% increase in corruption led to slightly higher carbon emissions (0.12%). The authors suggest that this is because corruption can penetrate most departments, from legislation to law enforcement.

Three studies also identified enabling effects from **rule of law**. One global study (Homer, 2022) of 150 countries over three decades found that regulatory quality (using the WGIs dataset) plays a role in reducing emissions intensity of GDP through greater energy efficiency but at some cost to economic growth (emissions decline due to both drivers). A second global study (Eskander and Fankhauser, 2020) of 133 countries using the Climate Change Laws of the World dataset found that climate legislation has a statistically significant effect on reducing GHG emissions (especially emissions intensity) in the short- and long-term (and has offset a third of CO2 emissions growth since 1999). The results underline the importance of a solid legal framework in tackling climate change, the crucial role of parliaments (emission reductions have been driven by legislative acts much more than by executive orders), and the importance of disciplined implementation (the impact of climate laws is substantially higher in countries with a strong rule of law, where legal provisions are more likely to be followed). Overall, climate change laws codify a country's policy ambitions, but the impact on emissions depends substantively on the strength of the law and the rigour with which

it is implemented. This includes differences in scope and ambition, with some having whole-of-economy scope and others specifically targeting energy supply and/or demand. The third study by Averchenkova et al. (2021) finds that a strong legal framework (UK Climate Change Act) with statutory targets, processes and institutions is an important tool for effective climate change mitigation (by increasing predictability, enhancing use of evidence, signalling direction of travel of climate policy, assigning responsibilities, mandating regular reporting on progress).

The final four studies identified enabling effects from increased **access to information** and increased **transparency**. Firstly, Pizarro-Irizar et al. (2020) find that increasing stakeholder access to information on mitigation options and costs for society helps to reduce the risks for mitigation policy implementation by revealing stakeholder preferences for different trade-offs (which can help overcome social resistance). This can be achieved by linking modelling of pathways to decision-making including explicit information on trade-offs. The second review paper(Aganaba-Jeanty and Huggins, 2019) finds that increased access to information on emissions provided by publicly available satellite technology can promote state answerability for commitments under the Paris Agreement. Satellite-enabled measurements of atmospheric GHG concentrations contribute to transparency (where data is independent, replicable, accessible, and comparable) which can then be disseminated to promote answerability for state emissions. While Bustamante et al. (2018) highlights experience in Brazil in national carbon accounting whereby the establishment of a National Emissions Registry System has increased transparency and improved monitoring of Brazil's commitments under the Paris Agreement. Finally, Deane et al. (2017) underscore that transparency is crucial for the success of emissions trading schemes, using China's pilot scheme as a case study. The authors suggest that transparency is important for the functioning of any carbon market as it ensures the effectiveness of climate mitigation efforts and enhances their credibility, public acceptance and predictability in a commercial environment, which is vital for investors and other market participants. It also places pressure on authorities and regulated entities to respect and apply climate policy/emissions laws and regulations.

## 4.2    Increased participation and inclusion

There were a comparatively large number of studies identifying interlinkages associated with increased participation and inclusion (31 studies) in both impact clusters. The studies covered a range of regions (Europe and North America, Australia and New Zealand, Latin America and the Caribbean, Sub-Saharan Africa, Eastern and South-Eastern Asia, Central and Southern Asia, Oceania) as well as global studies (7), though with most identifying enabling interlinkages associated with climate change adaptation (impact cluster A, 24 enabling interlinkages) compared with climate change

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mitigation (impact cluster B, 6 enabling interlinkages). The studies also identified one constraining and two inconclusive interlinkages.

### 4.2.1 Increased participation and inclusion effects on strengthening resilience and adaptive capacity to climate change

The largest number of studies (27) identified interlinkages from participation and inclusion to strengthened climate change adaptation. This included mainly qualitative studies (17) as well as mixed method studies (8) and two quantitative studies. These covered multiple global regions (ENA, ANZ, SSA, ESEA, CSA, LAC, Oceania) and were primarily single-country and sub-national studies (17), but also included several national (4) and large multi-country studies (5). The studies identified 24 enabling connections as well as two inclusive and one constraining interlinkage.

The majority of the enabling effects were identified from increased **participation** (21), along with one constraining and two inconclusive interlinkages. Most of these interlinkages corresponded to adaptation planning (14 enabling, 1 constraining, 1 inconclusive). Righter and Chang (2023) evaluate Municipal Climate Change Action Plans in 20 coastal communities in Canada, and find that public participation throughout the planning process is a significant determinant of successful implementation. However, this is more important when priorities involve public-facing changes (e.g., land-use decisions) than municipal assets and operations. Similarly, studies in Australia (Schlosberg et al., 2017), Austria (Prutsch et al., 2018), Brazil (Marengo et al., 2017), the Czech Republic (Lorencová et al., 2021), New Zealand (Lawrence et al., 2019), Nigeria (Badru et al., 2023) and the USA (Foss, 2018, Fu et al., 2019) all find that stakeholder engagement or public participation enable climate change adaptation planning in their various contexts. For example, participatory approaches were important in supporting urban climate change adaptation planning in Czech cities, by enabling consensus building which supports implementation of innovative adaptation measures (Lorencová et al., 2021). Barriers to adaptation included limited knowledge, limited political power and cooperation between involved governmental departments, as well as limited cooperation between public stakeholders and local government and limited financial resources (Lorencová et al., 2021).

Foss (2018) evaluate climate action in politically conservative cities, finding that public participation processes also need to be carefully designed to reach different segments of the community with committed leaders, which can help overcome key barriers to climate planning (lack of public awareness and opposition from private property owners) and build political support and improve legitimacy and learning. Fu et al. (2019) find that coastal vulnerability assessments in the USA that were undertaken collaboratively were of a higher quality. Prutsch et al. (2018) find that stakeholder

participation in national adaptation planning had noteworthy effects in terms of raising awareness, facilitating exchange and consensus, and improving the contents of the strategy (but did not increase the commitment for implementation).

Multi-country studies also had similar findings. In a study of Germany and Sweden, Wamsler (2017) find that public participation in adaptation planning fosters a more transformative adaptation process and identify four factors that influence the level of stakeholder involvement (skilled and motivated civil servants, pre-existing institutional structures for intersectoral cooperation, institutional power structures, and pre-existing cooperation or contestation with external stakeholders). A review by Khatibi et al. (2021) of 78 studies finds that most studies conclude that higher levels of participation (collaborate, empower) generally produce better adaptation policies and outcomes; however lower forms of public participation (inform, consult, involve) are more prevalent. The review finds public awareness and knowledge of climate action is an important driver for their engagement, and that this public engagement is necessary to build knowledge, awareness, and capacity for behavioural change and is also important in legitimizing government policy and decisions (especially for controversial issues such as climate change).

Cattino and Reckien (2021) also find that participation has a positive impact on the transformative potential of adaptation (and the ambition for mitigation), partly because the public has a much higher ambition for adaptation than decision-makers. Hernandez et al. (2018) suggest that climate adaptation planning requires deep engagement with social actors from the beginning of the process until the monitoring of results, as it brings potential benefits such as ownership of policies, better decisions in terms of sustainability, the inclusion of community values, governmental credibility and faster implementation. Le and Tran (2023) study 52 local plans for green infrastructure and flood mitigation and find that cities are more likely to produce higher quality plans when there are more opportunities for public participation in the planning process.

However, in an analysis of 50 National Adaptation Programmes of Action (NAPAs), Holler et al. (2020) found little support for the relationship between greater participation and improved vulnerability assessments (inconclusive interlinkage). In their study of current forms of citizen involvement in Swedish municipalities, Wamsler et al. (2020) found that under current conditions citizen engagement was hindering adaptation planning outcomes (constraining interlinkage). Key barriers to citizen support included a lack of municipal capacity to encourage constructive involvement, a lack of adequate mechanisms for more positive involvement, and a lack of awareness.

Six studies also identified enabling interlinkages from participation to adaptive capacity while one was inconclusive. Le et al. (2023) find that lack of community participation undermines local roles and adaptive capacity in Viet Nam. In a study of water management in the USA and Spain, Ballester and Mott Lacroix (2016) found that engagement increased adaptive capacity by increasing knowledge and stakeholder willingness to be involved in management and creating lasting community groups. In another study in the USA, Arnold et al. (2021) public participation (using a deliberation and analysis model) resulted in an increase in adaptive capacity (including knowledge about climate change and local efforts, collaboration and confidence to plan and implement changes). Key barriers to adaptive capacity were identified as a lack of public awareness, a lack of (or difficulty understanding) climate information, a lack of leadership and limited coordination and competing priorities(Arnold et al., 2021).

In a study of water governance in Mexico, Lopez Porras et al. (2019) find that strengthening mechanisms and processes for stakeholder engagement in water governance improves adaptive capacity by increasing social awareness and acceptability of trade-offs and reducing conflict and corruption over water access. Focusing on a participatory scenario process in Mali, Totin et al. (2018) find that it led to some limited improvements in adaptive capacity through positive changes in learning and networking (but limited influence on systems understanding). They suggest that individual scenario planning exercises are unlikely to generate sufficient learning and reflection and instead should form one component of more extensive and deliberate stakeholder engagement, learning and evaluation processes.

Lesnikowski et al. (2023) analyse 217 adaptation policies from 147 countries and find that participation positively predicts the inclusion of specific measures within national policies to build adaptive capacity among equity-deserving groups. Studying ecosystem-based disaster risk reduction in Myanmar, Ghana and Japan, Takeuchi et al. (2016) find that multi-stakeholder participation is important for DRR because the maintenance and recovery of ecosystems requires the participation of communities. However, a smaller study by Mugari and Nethengwe (2022) of 14 integrated development plans in South Africa found that while plans encouraged participation, the association between participation and policy outcomes remained unclear (inconclusive interlinkage).

Finally, three studies identified enabling interlinkages from inclusion. Examining two case studies from different urban contexts in South Africa, Ziervogel (2019) suggests that inclusive governance helps

to build transformative capacity for adaptation planning and implementation. This is strengthened when local government: (1) recognizes the everyday reality of the urban poor and works with them to identify priorities for transformative change, (2) supports sustained intermediaries who are urban poor themselves and (3) draws on diverse modes of governance to find new ways to engage different actors and experiment with inclusive adaptation planning and practice. Fischer (2021) find that adaptation planning in India has improved because of ongoing inclusive planning processes, leading to interventions that are well-aligned with local needs and contexts. Finally, Persson and Povitkina (2017) evaluate the effects of governance on natural disasters in 127 countries, finding that only countries that experience both high quality of government and benefits of inclusive democracies have significantly fewer people affected by natural disasters. They conclude that while the degree of democracy[11] shapes how decision making is done in a polity and to some extent determines how broad the circle of interests represented in the government is, institutional quality determines whether the decisions in fact get implemented and reach the public. Democracy and institutional quality can thus be considered complementary to each other in their effect on public goods provision.

### 4.2.2 Increased participation and inclusion effects on strengthening climate change mitigation actions and capacity

A more limited set of six studies identified interlinkages from **participation and inclusion** to strengthened climate change mitigation (impact cluster B). This included two qualitative, two quantitative and two mixed methods studies including a mix of sub-national, national and multi-country studies across two regions (Europe and North America, Eastern and South-Eastern Asia) as well as three global studies.

Four studies identified enabling interlinkages from increased participation to mitigation planning. A study on Japan's energy transition by Ohta (2020) suggests that climate policies need to consider diverse interests and objectives of multiple stakeholders through engagement between the public and policymakers. The study by Bernauer et al. (2016) in China finds that increased involvement of CSOs could help the government adopt and implement more ambitious climate policies and contribute to enhancing public support for them. They also show that civil society participation improves people's assessment of transparency and representational quality of climate governance (two key facets of input or procedural legitimacy). The global analysis by Cattino and Reckien (2021) finds that public participation has a positive impact on both the transformative potential of adaptation and the ambition for mitigation (but is stronger for adaptation). This is because the public has a slightly higher ambition for mitigation than decision-makers. Overall, meaningful engagement and empowerment, especially of the most vulnerable in society, leads to more feasible, legitimate, acceptable, equitable

and just climate adaptation and mitigation. Finally, Foss (2018) finds that carefully designed public participation processes can help overcome key barriers to climate planning (lack of public awareness and opposition from private property owners) and build political support.

Finally, two studies identified the enabling effects of inclusion, including the global review by Lindvall and Karlsson (2024) of quantitative evidence from 74 studies, which shows that inclusive democracies tend to generate better climate policies, but the link to declining $CO_2$ emissions is weak. Most studies suggest that citizens can use democracy (e.g., through their ability to participate in advocacy, and the sensitivity of democracies to international criticism) to alleviate the carbon impact of economic growth in high-income countries with low corruption. In developing countries with rapid growth, on the other hand, democratic qualities[12] do not seem to have any noteworthy effect on reducing growth-generated emissions.

Another global study by Dannenberg et al. (2023) of over 150 countries evaluates "naming and shaming" as a strategy for enforcing the Paris Agreement and find that country support for naming and shaming is higher in countries with more effective and democratic institutions. They also found that naming and shaming is more effective in democracies with higher public concern and higher institutional quality. Where such mechanisms are not successful at boosting ambition, cooperation and enforcement, countries may instead turn more toward external and punitive mechanisms, like carbon border adjustments and other "sticks" that can impose penalties along with subsidies ("carrots") to reward local firms that invest in new technologies and business practices. The authors conclude that there is considerable and growing evidence that the real world of climate policy action is evolving in that direction.

### 4.3    Increased effectiveness of governance and institutions

Finally, there were 26 studies that identified enabling interlinkages associated with increased effectiveness of institutions, which enabled both impact clusters. In terms of the entry clusters, there was a balanced coverage of interlinkages for the four sub-clusters of policymaking, coordination, competence and effectiveness, though most enabling effects supported climate change adaptation (impact cluster A, 20 enabling interlinkages) compared with climate change mitigation (impact cluster B, 6 enabling interlinkages). The studies covered most regions (Europe and North America, Australia and New Zealand, Latin America and the Caribbean, Sub-Saharan Africa, Eastern and South-Eastern Asia, North Africa and Western Asia, Central and Southern Asia), as well as five global studies.

[12] The diverse studies use a range of different democracy indexes as variables in their analyses, such as Polity, Freedom House and V-Dem. These indexes measure democracy by the quality of electoral systems, political participation, level of equal access to resources, power, and freedoms across various groups within a society, strength and independence of judiciary and institutions, freedom of media, civil society and respect of the freedom of speech and association and other relevant aspects of civil liberties and human rights.

### 4.3.1 Increased effectiveness of governance and institutions effects on strengthening resilience and adaptive capacity to climate change

There were 20 studies identifying enabling interlinkages for climate adaptation (impact cluster B), of which 8 enabled adaptation planning, 7 enabled adaptive capacity, and 5 enabled disaster risk reduction. This included seven qualitative, five quantitative, and eight mixed methods studies which were mostly sub-national single country studies (12) as well as two national studies and six multi-country studies of which four had global coverage. Studies addressed most regions (Europe and North America, Australia and New Zealand, Latin America and the Caribbean, Sub-Saharan Africa, Eastern and South-Eastern Asia, and Central and Southern Asia).

Five studies identified enabling effects from competent institutions (3 adaptive capacity, 2 DRR). The study by Roy et al. (2021) on adaptation pathways in Bangladesh found that improving the efficiency and effectiveness of local governments and institutions is crucial for enhancing livelihood resilience. In the study, important aspects of government effectiveness included institutional function, self-organization capacity, and effective delivery of extension services. The study by Afkhami et al. (2022) on farmers' adaptive capacity in rural areas in Iran found that the quality of water governance and management had the highest impact on increasing adaptive capacity. Collaborative leadership was also found to be important for increasing adaptive capacities for diversified flood risk management strategies in response to climate change in Germany and The Netherlands (Cosoveanu et al., 2019). Similarly, a study of local government in Portugal by Burnside-Lawry and Carvalho (2016) found that strong political leadership has been important for local disaster risk reduction. Finally, the study by Persson and Povitkina (2017) of governance of natural disasters in 127 countries, finds that only countries that experience both high quality of government and benefits of democracy have a significantly fewer number of people affected by natural disasters. Institutional quality ultimately determines whether democratic decisions get implemented.

Six studies identified enabling effects from coordination to adaptation planning (4) and adaptive capacity (2). A study of 60 municipalities in the USA by Dilling et al. (2017) found that institutional coordination across municipalities, state and federal entities was an important influence on climate change adaptation decisions and enabled cities to put in place policies to address climate hazards. The authors conclude that their findings align with other studies suggesting that it is not realistic for cities to 'go it alone' in implementing adaptation, and a strong mandate, support and funding from higher levels of government are often needed to support local action.

A study on climate adaptation and mitigation policies in Nepal by Shrestha and Dhakal (2019) suggests that developing a national institution dedicated to climate change and improved institutional coordination increases synergies and minimises trade-offs between mitigation and adaptation. Creating a national authority provides high-level policy and strategic oversight, coordinates financial and technical support to climate change-related programs and projects, and secures benefits from climate change-related international negotiations and decisions. The most prominent barrier to harnessing synergies was identified as inadequate institutional coordination among the various institutions that are responsible for formulating sectoral policies related to climate change.

Horizontal coordination was also considered important in supporting urban climate change adaptation planning in Czech cities(Lorencová et al., 2021). A study in China by Lei et al. (2015 found that vertical and horizontal coordination are essential for enabling adaptive governance of disasters in coastal areas. Owusu-Ansah et al. (2019) also find that institutional conflicts and overlaps undermine local resilience in Ghana. The authors identified that improved institutional coordination and collaboration would help to mitigate flood vulnerabilities, along with other measures (e.g., flood-proofing buildings, improving drains, channelizing portions of the river from within the township, flood vulnerability maps, early flood warning and evacuation systems, and mandatory property insurance policies). The study by Valdivieso et al. (2021) of 345 municipalities in Chile finds evidence that investment in resilient infrastructure is associated with robust institutional arrangements (operational rules and planning, integration, flexibility).

Three studies identified **policymaking** as an enabler of adaptation planning. The study by Righter and Chang (2023) of Municipal Climate Change Action Plans in 20 coastal communities in Canada finds that political continuity throughout the planning process is a significant determinant of successful implementation. Primary barriers to adaptation included lack of leadership, conflicting values and beliefs, lack of information or resources, and political turnover (Righter and Chang, 2023). Political continuity can be connected to leadership, commitment and institutional capacity for implementing climate change policies; i.e., high political turnover presents a barrier to municipal adaptation through lost continuity, while lower turnover can maintain political continuity in a way that positively affects adaptation planning. Fu et al. (2019) find that coastal vulnerability assessments in the USA are of a higher quality where policy integration and mainstreaming is used in adaptation planning. Finally, the study by Lawrence et al. (2019) on dynamic adaptive pathways planning in New Zealand found that such approaches and robust decision-making tools help coastal communities move towards a long-term viewpoint that considers a wider range of adaptation actions needed for transitioning to more transformational change in response to sea level rise.

Finally, six studies identified enabling interlinkages more generally from **effective institutions** for disaster risk reduction (3), adaptive capacity (2) and adaptation planning (1). Three global studies assessed the relationship between government effectiveness and impacts from natural disasters, finding that increased government effectiveness (using the WGIs dataset) is associated with a lower number of people affected by disasters in 45 countries (Wanner, 2020), lower tropical cyclone mortality in 67 countries (Tennant and Gilmore, 2020), and a reduced number of people killed and affected by natural disasters in 35 Small Island Development States (SIDS)(Sjöstedt and Povitkina, 2017). These results lend support for general theories of how effective institutions can moderate vulnerability and foster resilience to a range of shocks and stressors (Tennant and Gilmore, 2020) and play an important role in determining a system's ability to adapt to climate change and severe weather events (Sjöstedt and Povitkina, 2017). For example, tropical cyclones are more deadly when they impact areas with weaker public services due to limited local institutional capacity or the failure of national programs to be inclusive of all vulnerable populations (Tennant and Gilmore, 2020).

A study of 38 countries in Sub-Saharan Africa determined that government effectiveness (using the WGIs dataset) was a critical factor for reducing vulnerability to droughts. This was associated with improved long-term plans and policies which may enhance the capacity to develop, revise, and execute drought policies. A study on Tanzania(Ojoyi et al., 2015) found that effective institutional frameworks, livelihood diversification and afforestation programs have positive implications for the management of vulnerable ecosystems and represent key interventions. Van Well et al. (2018) study resilience in four Nordic countries and find that effective territorial governance strengthens resilience to natural hazards. They conclude that effective governance requires institutional capabilities to coordinate the actions of actors and institutions, leadership, policy integration, mobilization of stakeholder participation and cooperation between public and private sector.

### 4.3.2 Increased effectiveness of governance and institutions effects on strengthening climate change mitigation actions and capacity

The final six studies identified enabling interlinkages between effective institutions and mitigation planning (4) and mitigation capacity (2), including five qualitative studies, one quantitative and one mixed method. These were mainly single country studies across several regions (Europe and North America, Latin America and the Caribbean, Eastern and South-Eastern Asia, North Africa and Western Asia, and Central and Southern Asia) and one global study.

Two studies identified enabling effects from competent institutions to mitigation capacity. Firstly, the study by Murun et al. (2023) of six countries in ESEA identifies that institutional improvements can

improve climate change reporting in developing countries. The authors identify practical solutions for improved reporting: improving human resources, improving data and information, and improving roles and responsibilities. Secondly, the global study by Dannenberg et al. (2023) of over 150 countries finds that naming and shaming is likely more effective in democracies[13] with higher institutional quality and higher public concern.

In relation to improved institutional coordination, the study on climate adaptation and mitigation policies in Nepal by Shrestha and Dhakal (2019) suggests that developing a national institution dedicated to climate change and improved institutional coordination increases synergies and minimises trade-offs between mitigation and adaptation. Creating a national authority provides high-level policy and strategic oversight, coordinates financial and technical support to climate change-related programs and projects, and secures benefits from climate change-related international negotiations and decisions.

Regarding policymaking, the local study by Hernandez et al. (2018) in Spain finds that policy integration and mainstreaming of mitigation and adaptation is important for climate policy and governance. The study on Japan's energy transition by Ohta (2020) suggests that climate policies should be anticipatory and informed by foresight (which according to the authors was not the case in Japan). The authors conclude that since energy transitions to mitigate climate change involve policy decisions under various uncertainties in socio-economic and technological developments, policymakers should be flexible and imaginative to draw multiple future scenarios, including preparing for the worst to reduce damages and trade-offs.

The study by Mohammed et al. (2023) in Qatar explores how hydrocarbon-dependent rentier states can undertake a low-carbon transition. They suggest that key attributes of a successful transition appear to be a robust institutional framework with **effective governance**, monitoring and evaluation to provide incentives and constraints that can shape the desired socio-technical transition pathway (as well as strong political will, sustained financial support, long-term strategic policies). In addition to policies, the authors found that the state must build the capacity of policy officials, bureaucrats and administrators to conceive, implement and govern the low-emissions pathway in Qatar.

# 5. UNPACKING THE CAUSAL DYNAMICS BETWEEN SDG 16 AND SDG 13

The studies reviewed identify a complex array of causal relationships and dynamics between the SDG 16 entry clusters and the SDG 13 impact clusters. These are often indirect or complemented by a range of other enablers and drivers. **Figure 8** attempts to capture the relationships identified from the literature in a systems map or causal diagram. To interpret the diagram, all black arrows (+) represent a positive polarity or enabling effect, which can be read as "Increasing and/or improving variable x results in an increase and/or improvement in variable y". In contrast, red arrows (-) represent a negative polarity and should be read as "Increasing/improving variable x results in a decrease/decline in variable y".

All the linkages identified are backed by the literature reviewed in previous sections. Although this results in a very complex systems diagram, it is still unlikely to be complete in terms of capturing all the important factors and complex dynamics at play. Nevertheless, it does include some key dynamics and pathways identified in the literature, which can assist in developing an understanding of the overall theory of change and potential intervention points. The intention with these diagrams is an attempt at dynamic systems analysis that will allow development actors to understand which sub-systems to target interventions and in ways that can reinforce positive feedback loops. Further development and refinement could be undertaken using subject-matter expertise and knowledge, or there could be a broader review of the literature to bring in additional SDG targets or important missing attributes.

The systems diagram was developed in three stages. It commenced with the literature on entry cluster '2. Increased Participation and Inclusion' (dark blue), given that this represented the largest share of the literature reviewed. To this, additional attributes from the literature on '1. Increased Transparency and Control of Corruption' (grey) were added. Finally, attributes relating to '3. Increased Effective Institutions' (light blue) were added, including a range of important capacities that are influential for other entry clusters. Note that all the entry and impact clusters are included in the diagram and highlighted with coloured shading. The colours and shading of variables in the diagram reflect those used in the conceptual framework for the analysis **(Figure 1)**. There was some overlap between the relationships and pathways identified in the literature for each cluster. Important pathways to impact relate to

increasing the adoption of ambitious (feasible, acceptable, equitable, just and transformative) policies, improving the effective design and implementation of climate policies, and enhanced oversight and enforcement of policy commitments, amongst others. A broad range of factors influence these measures and are themselves affected by improvements in increased participation, accountability and institutional effectiveness. The capacity aspects of institutional effectiveness also have various entry points in the diagram, as they influence policy and planning as well as other governance aspects such as public participation. To reduce complexity in the diagram, several variables are therefore listed in different locations (as identified in the diagram using square brackets []). A brief description of the key relationships drawn from the literature is provided here.

Regarding **1. Increased accountability, transparency and rule of law**, the studies reviewed identified enabling effects for both impact clusters along with a range of potential intermediary or causal pathways for these effects. Studies found that access to information increased adaptive capacity by increasing awareness of vulnerabilities to climate change, improving knowledge of adaptive strategies and technologies, and encouraging participation in community-based organizations. Important sources of information included radio, television, mobile phones, ICT, and monitoring systems. Extension services are crucial for improving access to information.

Access to information on mitigation options included through modelling, pathways and scenarios which provide information on trade-offs and stakeholder preferences. Access to satellite-enabled measurement of emissions and national emissions registries supported state transparency and accountability. Transparency of emissions trading schemes ensures that they are credible and predictable for investors and that authorities respect and apply regulations.

Accountable governments (including through independent media as a monitor of government) were considered more likely to adopt national DRR plans and measures because affected populations generally assign responsibility for disasters on incumbent governments. An effective legal framework was identified as an important enabler for both climate change adaptation and mitigation planning by increasing predictability, enhancing use of evidence, signalling the direction of travel of climate policy, clearly assigning responsibilities, and mandating regular reporting on progress. Regulatory quality and strong rule of law are important to ensure legal provisions are more likely to be followed. The control of corruption also improves the effectiveness of climate change policies through better allocation of resources, effective enforcement, and better oversight of regulations. Where corruption is prevalent, ambitious climate policies do not translate into emissions reductions because the state is incapacitated to properly execute and enforce laws due to policy capture and influence.

Regarding 2. **Increased Participation and Inclusion**, the literature identified a range of barriers to adaptation planning and adaptive capacity, some of which were overcome through public participation and stakeholder engagement. Barriers included a lack of public awareness, limited knowledge and information or difficulty understanding climate information, a lack of leadership, limited coordination and competing priorities, conflicting values and beliefs, opposition, lack of resources and political turnover.

Participatory approaches strengthen adaptation planning by raising awareness, facilitating exchange, building consensus and political support, improving legitimacy and learning, increasing capacity for behavioural change, improving the quality of vulnerability assessments or the contents of strategies, and producing better adaptation policies and more feasible, acceptable, equitable and just policies and outcomes. It is important for legitimizing government policy and decisions (especially for controversial issues such as climate change) and has transformative potential as it increases policy ambition and ownership and promotes faster implementation. Factors that influence the level of stakeholder involvement include skilled and motivated civil servants, pre-existing institutional structures for intersectoral cooperation, pre-existing cooperation or contestation with external stakeholders, and public awareness and knowledge of climate change. Poorly designed participation processes hinder adaptation planning outcomes, which can result from a lack of municipal capacity to encourage constructive involvement, a lack of adequate mechanisms for more positive involvement, and a lack of awareness.

Stakeholder engagement increases adaptive capacity by increasing knowledge about climate change and local responses, increasing stakeholder willingness to be involved in management, creating lasting community groups and networks, increasing confidence to implement changes, increasing social awareness and acceptability of trade-offs, and reducing conflict and corruption. Multi-stakeholder participation is important for DRR because the maintenance and recovery of ecosystems requires the participation of communities. Inclusive governance leads to interventions that are well-aligned with local needs and contexts and contributes to adaptive capacity and planning, which can reduce people affected by natural disasters when combined with strong institutions.

Meaningful participation also enables mitigation as it helps governments to adopt and implement more ambitious climate policies and enhances political support, improves transparency and representational quality, and leads to more feasible, legitimate, acceptable, equitable and just climate mitigation. Inclusive institutions increase support for and effectiveness of enforcement (e.g., naming and shaming), particularly where public concern and institutional quality are high, and reduce the carbon intensity of economic growth in countries with low corruption.

Finally, the literature on **3. Increase effectiveness of governance and institutions** identified various enabling effects and relationships for both impact clusters. Competent institutions are important for adaptive capacity, including the efficiency and effectiveness of governments, collaborative leadership, institutional function, self-organization capacity, and effective delivery of services. Strong political leadership is important for disaster risk reduction, while high quality of government reduces the number of people affected by disasters and ultimately determines whether democratic decisions get implemented. More competent institutions (including improvements in human resources, data and information, and roles and responsibilities) enhance climate change mitigation reporting. Higher institutional quality also enables naming and shaming as an enforcement mechanism for mitigation commitments.

Both vertical and horizontal coordination are important for adaptation planning and adaptive capacity, while institutional conflicts and overlaps undermine resilience. Vertical coordination is important for adaptation by cities as a strong mandate, support and funding from higher levels of government are needed to support local action. Improved horizontal coordination across institutions responsible for sectoral policy promotes adaptation and harnesses synergies. Establishing a national institution dedicated to climate change (both mitigation and adaptation) improves institutional coordination, increases synergies, and minimises trade-offs between mitigation and adaptation, as it provides

high-level policy and strategic oversight, and coordinates financial and technical support to climate change-related programs and projects. Institutional coordination including integration, operational rules and flexibility also enables investment in resilient infrastructure.

Effective policymaking also supports adaptation planning. Political continuity throughout the planning process is important for successful implementation, and is associated with leadership, commitment and institutional capacity for implementing climate change policies. Policy mainstreaming and integration improves climate (mitigation and adaptation) policy, while adaptive pathways and robust decision approaches promote a long-term viewpoint and a wider range of adaptation actions which enables more transformational adaptation. The use of anticipatory governance (foresight and scenarios) improves energy transition planning.

Government effectiveness reduces the number of people killed or affected by disasters due to improved institutional capacity and national programs and reduces vulnerability to droughts due to improved long-term plans and policies and capacity to develop, revise and execute policies. Effective institutions support the management of vulnerable ecosystems, moderate vulnerability and foster resilience to shocks and stressors, and play an important role in determining a system's ability to adapt to climate change. Effective governance includes institutional capacities to lead and coordinate actions and actors, integrate policies and mobilize stakeholder participation and cooperation. Effective institutions and governance help to guide low-carbon transitions including state capacities to conceive, implement and govern the low-emissions pathway.

**FIGURE 8.** Systems Diagram: Identified causal pathways from SDG 16 Entry Clusters to SDG 13 Impact Clusters, as identified in the literature reviewed. 1. Increased Accountability, Transparency and Rule of Law; DARK BLUE = 2. Increased Participation and Inclusion; LIGHT BLUE = 3. Increased Effective Institutions. Black arrows indicate positive/enabling connections while red arrows indicate negative or constraining interactions. Variables in square brackets [] are repeated elsewhere in the diagram.

**1. Increased Accountability, Transparency and Rule of Law**

[Capacity to deliver institutional functions and services]

[Capacity to mobilise stakeholder engagement]

Control of corruption

[Creation of national institution dedicated to climate change]

[Effective legal framework for adaption and mitigation]

Policy capture and influence by vested interests

Satelite measurement of GHG concentrations

Skilled and motivated civil servants

Well designed participation processes

Oversight and enforcement of policies and regulations

Independend media monitoring

Extension services

Inclusive institutions

Rule of law

Occurence of disasters

Accountable govenments

National emissions registries

Access to radio, television, mobile phones and ICT

**2. Increased Participation and Inclusion**

Regulatory quality

Responsibility of government to respond effectively to disasters

Transparency and accountability of states for their emissions

Respect for regulations by authorities

Access to information

Public awareness and understanding of climate change impacts and responses

[Corruption]

[Adaption of ambitious policies]

[Effective legal framework for adaption and mitigation]

Transparency of emissions trading schemes

Exchange, learning and consensus

Alignment of interventions with local needs and contexts

Effective allocation of resources

[Political consensus]

Participation in community groups and networks

Public concern and social acceptance of trade-offs

Conflict and opposition

Regular reporting on progress

Predictability of climate policy

Use evidence in climate policy

Knowledge of adaptive strategies and technologies

Adaptive behaviour change

Political support for ambitious adaption and mitigation action

[Political consensus]

Pressure to increase enforcement and support for naming and shaming

Clarity of assigned responsibilities

Credibility and predictability of carbon markets for investors

Stakeholder ownership and willingnes to engage in management

Policy legitimacy

Policy ambition

Knowledge of mitigation options, trade-offs and stakeholder preferences

Adoption of adaptive and DRR strategies

Quality of vulnerability assessments and adaptation strategies

[Political continuity]

[Capacity to deliver institutional functions and services]

Broader consideration of options

Use of pathways, foresight scenario approaches

Participation of communities in maintenance and recovery of ecosystems

[Adoption of ambitious (acceptable, equitable, just and transformative) policies]

Long-term planning

Disaster risk reduction

[Capacity to develop, revise and execute policies]

Policy and strategic oversight

Effective design and implementation of climate policies

**A: Strengthening Resilience and Adaptive Capacity to Climate Change**

**B: Strengthening Climate Change Mitigation Actions and Capacity**

Investment in resilient infrastructure

Coordination of actors and competing priorities

People affected by disasters

Coordination of financial and technical support

Policy integration and mainstreaming (harnessing synergies, managing trade-offs)

[Political continuity]

[Capacity to deliver institutional functions and services]

Greenhouse gas emissions

[Creation of national institution dedicated to climate change]

[Capacity to develop, revise and execute policies]

[Corruption]

Collaborative leadership

Competence of institutions

Institutional coordination

Capacity to self-organise

**3. Increased Effective Institutions**

[Capacity to mobilise stakeholder engagement]

Stromg madate, support and funding from higher levels of government

– (red arrow)

+ (black arrow)

37

# 6. MAIN FINDINGS, POLICY IMPLICATIONS, AND LIMITATIONS

## 6.1 Overall findings

This study has systematically reviewed a subset of the academic literature and evidence relating to the enabling or constraining effects of key governance aspects of SDG 16 on the achievement of SDG 13. It contributes to the literature on SDG interlinkages and responds to the limited coverage of SDG 16 targets in recent studies on SDG interlinkages. It also responds to recommendations from the previous UNDP and IDOS studies to expand the research to additional priority goals. The results highlight that many studies have been published since 2015 identifying primarily enabling effects of the three governance entry clusters from SDG 16 on the two impact clusters associated with SDG 13 at national and subnational scales. A range of causal linkages and pathways are also identified that may deliver these synergistic effects.

The findings confirm that good governance, strong and effective institutions as well as participation are important for climate change mitigation and adaptation. By combining insights from a range of disciplines (political science, environmental science, sociology, law and economics) the results present the multifaceted impacts of governance and the ways in which good governance, institutions and participation can support climate goals.

Overall, enabling interlinkages were identified between all analysed targets, though evidence in the sample of literature reviewed was stronger for the enabling effects of "Increased Participation and Inclusion" and "Increased Effective Institutions" on "Strengthening Resilience and Adaptive Capacity to Climate Change". In the context of the SDGs framework, these correspond primarily to SDG target 16.7 on inclusive, participatory decision making and 16.6 on effective institutions, with impacts on target 13.1 on resilience and adaptive capacity and 13.2 on adaptation policy and planning.

At the sub-level, the largest number of enabling interlinkages were identified to come from participation (25), access to information (9), and several of the institutional

aspects on competence (7), coordination (7) and effectiveness (7). Enabling effects were more commonly identified for climate change adaptation planning (25 interlinkages), adaptive capacity (20 interlinkages) and mitigation planning (13 interlinkages). There was a good balance of quantitative and qualitative studies covering a broad range of countries from different world regions, ranging from subnational through to multi-country/global studies and addressing all global regions, however with some bias towards European and North American countries. This may limit somewhat the relevance of the study findings for all regions. There are several other important limitations and caveats to the research, which are important to acknowledge and are discussed below.

## 6.2    Key pathways and areas for further research

Important pathways that deliver beneficial impacts from governance on climate change were identified from the literature and synthesised in the systems diagram (see again **Figure 8**). These suggest how the beneficial effects of governance attributes manifest as improved climate change adaptation and mitigation. These can be summarised as three primary pathways to impact which are associated with a complementary mix of enabling effects of the identified governance attributes on climate adaptation and mitigation. These three pathways suggest priority leverage points through which the enabling effects of governance on climate change action can be harnessed.

**The first pathway relates to the adoption of ambitious policies** (**Figure 9**; main pathway to impact is highlighted in yellow). Here, increased participation and inclusion (entry cluster 2) play an important role, by building public awareness and consensus, increasing public concern about climate change and acceptance of trade-offs, addressing conflicts and opposition, building political support and ownership, raising policy ambition and policy legitimacy, and ultimately increasing the adoption of ambitious policies which enable climate change adaptation (impact cluster 1) and mitigation (impact cluster 2). Increased public awareness and understanding of climate change impacts and responses also increases the quality of vulnerability assessments and strategies which enables the adoption of more ambitious policies. Increased effective institutions (entry cluster 3) also contributes to the adoption of ambitious policies through political continuity. Increased accountability, transparency and rule of law also plays an enabling role through the control of corruption which reduces the influence of vested interests, conflict and opposition which enables political support for more ambitious action. Increased rule of law also promotes an effective legal framework which enables political consensus and political support from ambitious policies.

**FIGURE 9.** Pathway 1: The adoption of ambitious climate change policies and links to the entry and impact clusters. Main pathway highlighted in yellow. Three entry clusters and three two impact clusters are also highlighted (blue/green). Reinforcing feedback highlighted in grey. Black arrows represent positive/enabling effects and red arrows represent negative/constraining effects.
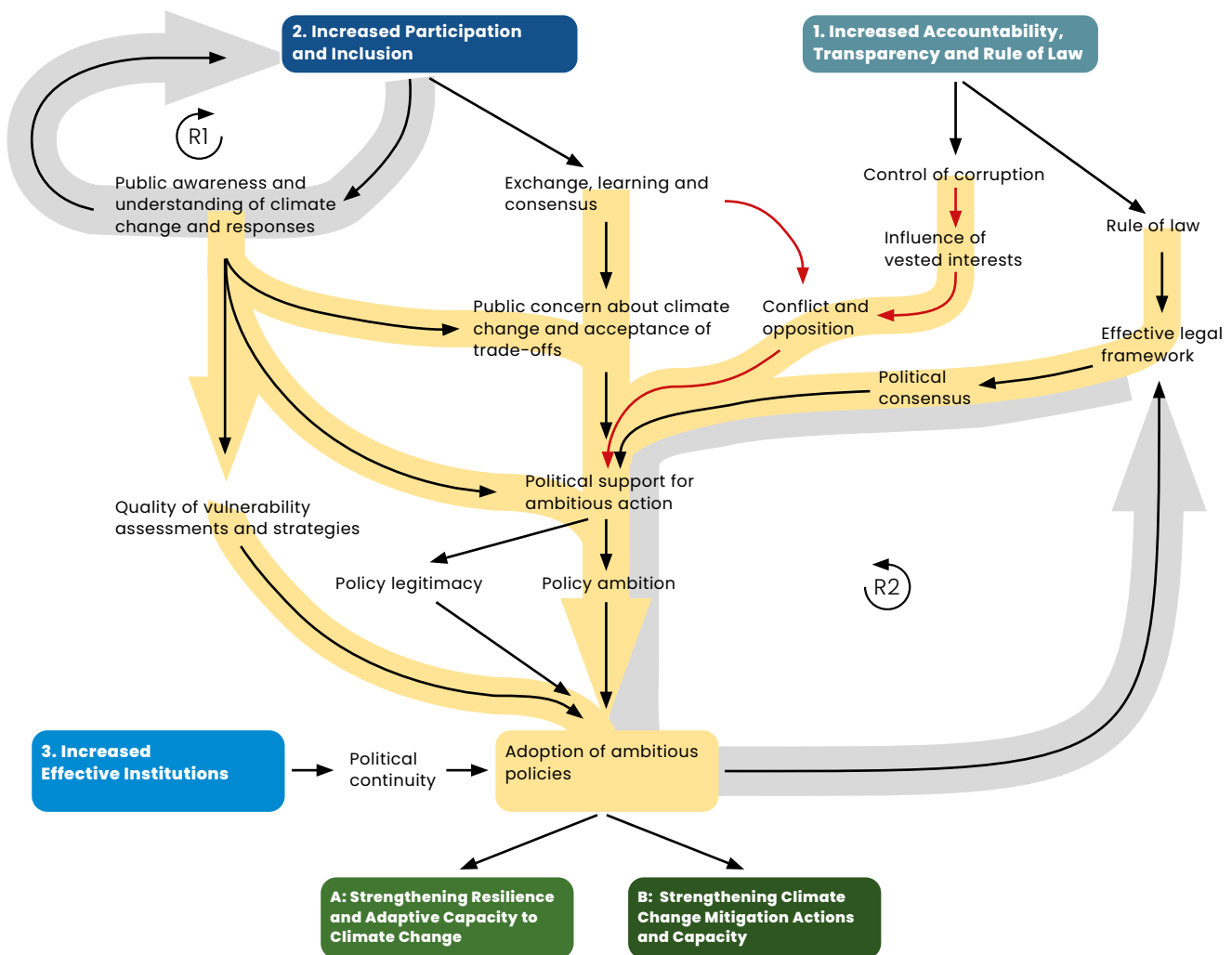
Two reinforcing feedback are also identified in **Figure 9** (↻). Firstly, increased participation leads to increased public awareness and understanding of climate change, which in turn enables increased participation and more meaningful engagement (R1). Secondly, the adoption of ambitious policies also enables a more effective legal framework, which promotes political consensus and support for ambitious action and in turn promotes the adoption of ambitious policies (R2). This suggests that actions to increase participation and to create effective legal frameworks could generate positive feedback effects that reinforce the adoption of ambitious policies. As evidenced in the larger systems map (Figure 8), increased participation and inclusion can be enhanced through inclusive institutions, well-designed participation processes and skilled and motivated civil servants. Effective institutions (entry cluster 3) also play an important enabling role here, particularly through the capacity to mobilize stakeholder engagement.

**A second important pathway to impact relates to the effective design and implementation of climate policies, which has many interconnecting factors** (**Figure 10**, pathway to impact highlighted in yellow), with enabling effects from increased accountability, transparency and rule of law (entry cluster 1) and increased effective institutions (entry cluster 3). For entry cluster 1, key enablers include an effective legal framework which promotes regular reporting on progress, the use of evidence in climate policy, political consensus, predictability of climate policy, and clear roles and responsibilities. Based on the literature, important features for the design of an effective legal framework include statutory short-term and long-term targets (for mitigation), an independent advisory body, clear accountability, an iterative approach to adaptation planning, and mandatory regular reporting. In addition, access to information provides crucial knowledge on mitigation and adaptation options, stakeholder preferences and trade-offs which can improve climate planning, while accountability and transparency also increases the credibility of policies (e.g., emissions trading schemes) as well as the propensity of government to adopt adaptation or DRR strategies. These in turn support the more effective design and implementation of climate policies which contributes to both climate change adaptation (impact cluster 1) and mitigation (impact cluster 2).

Effective institutions also play an important role through policy capacities (e.g., policy integration and mainstreaming, long-term planning and foresight, political continuity), institutional coordination (of financial and technical support, investment, actors and competing priorities), and aspects of institutional competence, including the capacity to deliver institutional functions and services and collaborative leadership which support political continuity. Creating a national climate change institution and national climate change legislation were identified in the literature as ways to improve institutional coordination and oversight. A strong mandate, support and funding from higher levels of government was also considered vital. All these factors in turn enable more effective design and implementation of climate policies which strengthen both climate change adaptation and mitigation.

**FIGURE 10.** Pathway 2: The effective design and implementation of climate policies and links to the entry and impact clusters. Main pathways highlighted in yellow. Three entry clusters and three two impact clusters are also highlighted (blue/green). Black arrows represent positive/enabling effects and red arrows represent negative/constraining effects.
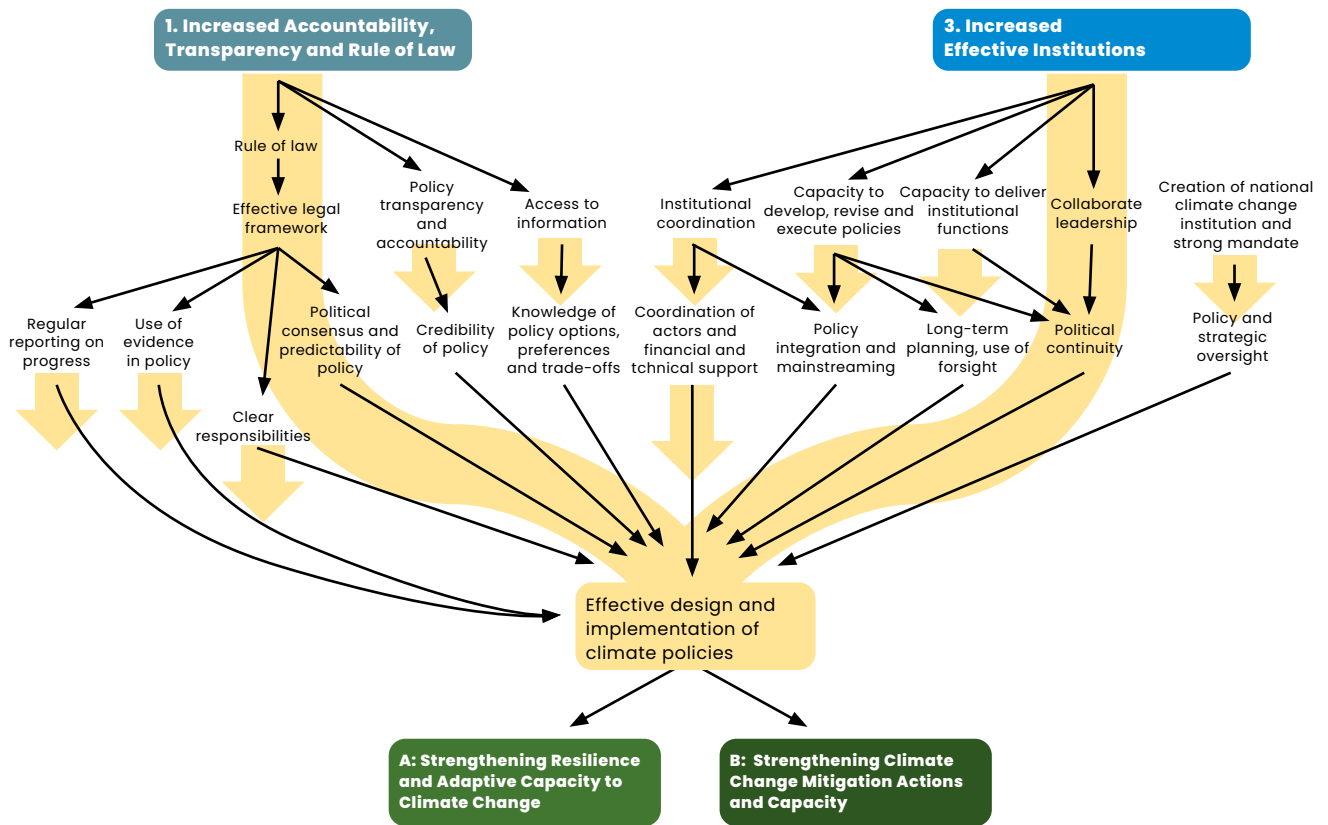


**The third important pathway to impact is associated with effective oversight and enforcement of policies and regulations** (**Figure 11**, pathway to impact highlighted in yellow), which is associated with all three entry clusters. Control of corruption enables the effective allocation of resources by reducing the influence of vested interests and enabling better oversight and enforcement of policies and regulations. An effective legal framework and a national institution dedicated to climate change also enhance oversight and enforcement of policy commitments and regulations. Inclusive and competent institutions, as well as public awareness and concern about climate change, are also important as they increase support for effective enforcement, which in turn increases oversight and enforcement of policies. The enhancement of oversight and enforcement of policies enables the effective allocation of resources which in turn supports both climate change adaptation (impact cluster 1) and climate change mitigation (impact cluster 2).

There are also two feedback identified in **Figure 11** (⟳) and labelled as R1 and B1. The reinforcing feedback R1 (highlighted in grey) shows that oversight and enforcement of policies reduces corruption

and weakens the influence of vested interests which in turn improves oversight and enforcement. This suggests that efforts to improve oversight and enforcement (as noted above and depicted in Figure 11) could generate a reinforcing effect that strengthens enforcement over time as the influence of corruption and vested interests declines. The balancing feedback B1 (also highlighted in grey) shows that as corruption declines, public pressure and support for increasing enforcement also diminishes. This balancing feedback would weaken the enabling effect from increased participation and inclusive institutions over time.

**FIGURE 11.** Pathway 3: The effective of oversight and enforcement of climate policies and links to the entry and impact clusters. Main pathways highlighted in yellow. Three entry clusters and three two impact clusters are also highlighted (blue/green). Reinforcing feedback highlighted in grey. Black arrows represent positive/enabling effects and red arrows represent negative/constraining effects.
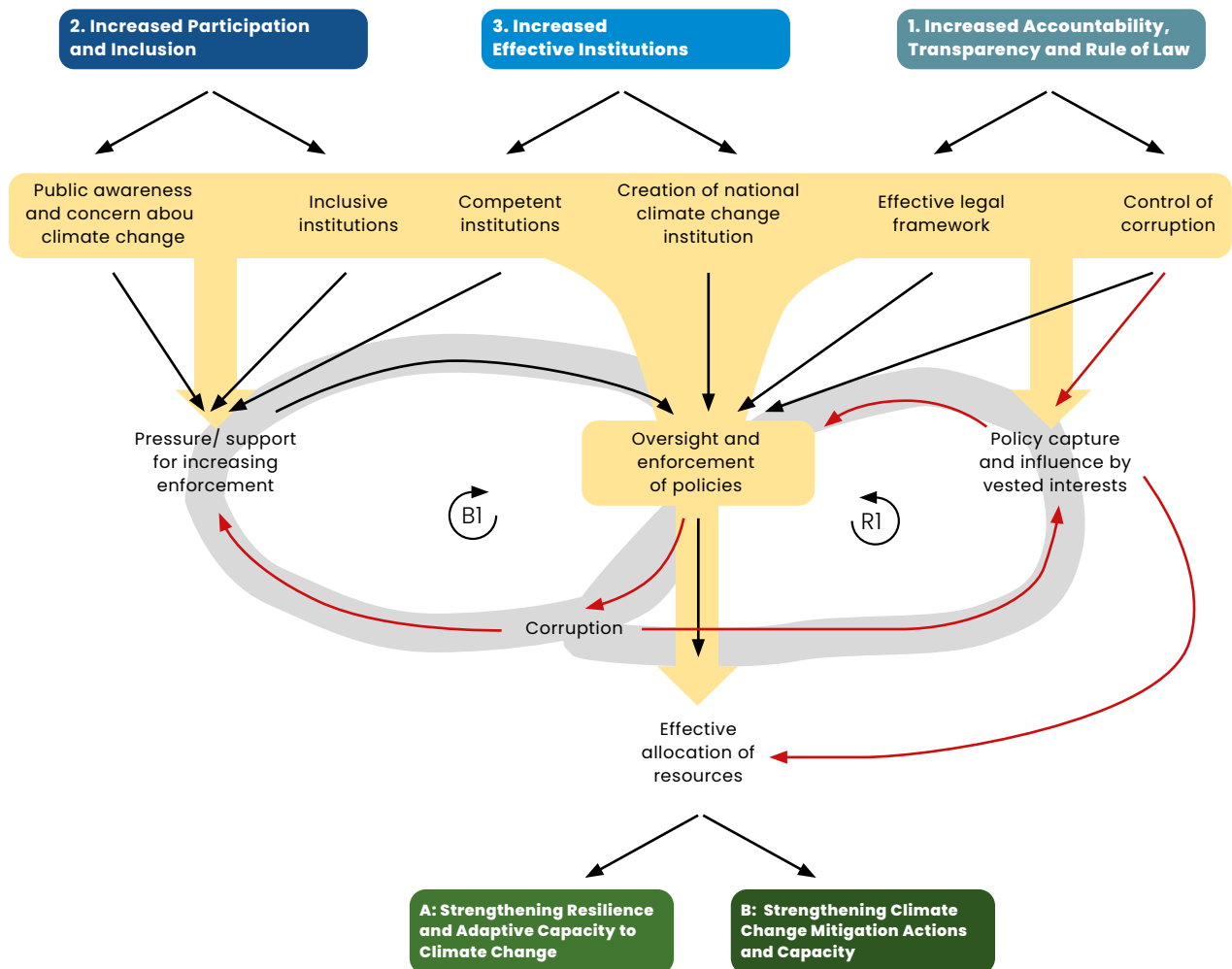


However, it is important to note that while the review has identified causal pathways by collating evidence from many studies across regions, exactly how these effects play out will depend substantially on the context. As such, there is no specific blueprint that can be applied to all countries or contexts.

Further, the elaboration of important pathways to impact and feedback effects is unlikely to be complete given the complexity of the relationships between the governance entry clusters and climate change impact clusters. Given the likelihood of missing variables and feedback, the results provide a preliminary presentation of underlying causal links and pathways which can contribute to future holistic theory building. The use of clusters to group targets from SDG 16 and SDG 13 facilitates future research to investigate the study's preliminary findings on enabling and constraining effects in different contexts. The systems maps and diagrams of relationships also provide an intuitive tool that could be further developed through consultations with subject matter experts.

Despite these caveats, it is clear from the evidence reviewed that the three governance clusters each deliver enabling effects for climate change policy and planning and that they are also complementary. Indeed, in some cases, the absence of multiple governance aspects undermines their beneficial effects, for example where inclusive and democratic institutions also require effective control of corruption to deliver emissions reductions.

## 6.3    Study limitations

There are several study limitations that need to be considered alongside the study's findings. Firstly, in the study the strength of evidence was considered greater where there was a larger number of studies. This should be interpreted with some caution as the number of studies may be simply a reflection of research effort which may create a 'streetlight effect' – i.e., particular topics have received greater attention (and funding) from the research community. For example, the review found a larger number of articles that identified enabling effects of increased participation which may be an artefact of greater research effort on this topic rather than signifying a stronger enabling effect compared to other factors. While some topics received more attention than others, a common theme across many papers was the importance of combining all three governance attributes, which together deliver mutually reinforcing enabling effects for climate change.

A key challenge experienced during the study design as well as the review of the literature was that concepts included in SDGs 16 and 13 were sometimes vague or overlapping and were interpreted in different ways in different studies. This lack of clarity is also apparent in the way that concepts overlap across different targets in the SDGs framework, and pragmatic choices were made early in the study design to ensure both conceptual clarity and a manageable scope for the review. Of principle interest were key governance principles relating to participation and inclusion, accountability and transparency, and effective institutions and their effects on various aspects of climate change action. However, it is acknowledged that relationships between these issues are highly complex and incorporate a myriad

of factors that are likely to correspond with many other goals and targets within the SDGs framework. Efforts were made during the study design and implementation to ensure consistent interpretation and coding of concepts and interlinkages. In addition, a comprehensive final revision of the review results was conducted by the lead reviewer and core review team prior to the synthesis to ensure consistency.

It is further acknowledged that the decision to consider literature published since 2015 also potentially excludes a large body of relevant literature published prior to this date. While this is likely to have excluded some relevant literature, it was important to ensure a pragmatic scope for the review and to focus primarily on literature published since the adoption of the SDGs framework which is central to this analysis. Further, while comprehensive, the key words and exclusion criteria used to identify relevant literature may also have inadvertently excluded some relevant studies published since 2015. However, the final set of 62 papers included in the review are largely considered of high quality and relevance for the research question as they provided empirical evidence to support the review findings on the beneficial effects of governance attributes for climate change action from a broad range of contexts.

In the context of research on SDGs interlinkages, the identification of enabling/constraining effects along with potential causal pathways to impact associated with these effects represents an important advancement. While conventional SDG interlinkages assessments often identify enabling and constraining effects, they pay less attention to the underlying causal links and pathways to impact. The approach in this study (and previous reports in this series) has been to advance knowledge on these critical relationships and dynamics, including through the synthesis of evidence on these relationships and the systems diagram which identifies potential pathways to impact. This approach recognises that important interlinkages, trade-offs and synergies are associated with underlying systems within which the SDGs targets are situated. This systems-based approach could be further developed and applied more broadly to advance future interlinkages studies, and could include engagement of experts to expand on and validate key pathways and feedback.

There are two final points to be made about the scope of this study. In terms of the participation and inclusion cluster, the study did not explicitly examine the engagement, impact and rights of different population groups (e.g., women and other marginalized gender groups, youth, Indigenous peoples) regarding climate action. Instead, we focused on participation and inclusion without breaking engagement down into specific population groups. This is not to diminish that young people around the world have been and are the driving force in mobilizing and engaging in climate action. Women are also key to climate action and are driving climate solutions at all levels – as farmers, workers, consumers, household managers, activists, leaders, and entrepreneurs. The significance and potential of Indigenous peoples'

practices have also been strongly recognized by the development and scientific community (see, e.g., Magni, 2017; Makondo and Thomas, 2018) as key approaches to developing and implementing countries' national climate action plans recognizing the multifaceted role of Indigenous knowledges and practices in stewarding the environment and combatting climate change and its impacts.

Finally, the area of climate security is also beyond the scope of this study, which refers to the impacts of the climate crisis on peace and security, particularly in fragile and conflict-affected settings. This review focused explicitly on the effects of SDG 16 on SDG 13. It did neither distinguish specific contexts such as fragility nor did it look at the reversed causality, leading from climate change to its impacts on the risk of increasing social tensions and instability.

## 6.4 Policy recommendations

The findings of this study have policy implications. Our study offers an approach to understand the complexity of interlinkages. By mapping existing evidence, it sheds light on relevant causal pathways within complex systems. The following recommendations highlight leverage points and priority areas for effective climate action by governments, bilateral donors and international organizations as well as civil society. While our recommendations give an orientation on how governance pathways matter in policymaking for climate mitigation and adaptation, there is no one size fits all approach for practitioner. Effective design and implementation of governance pathways needs to be decided in the respective country context.

**Governments and societies can make use of leverage points in policy designs more effectively.** The Global Sustainable Development Report (IGS, 2019) identified governance as a key leverage point for achieving the SDGs. To tackle climate change, specific leverage points of governance stand out. (a) Raising public awareness and understanding of climate change and responses is an important starting point, which requires not only information campaigns by governments but also a free media and active civil society. (b) Collaborative leadership and institutional coordination are important. At the same time, inclusive and competent institutions, as well as effective legal frameworks, are needed as they contribute to increased oversight and enforcement of policies. (c) As in other areas, control of corruption is key. This is particularly important since investments in climate adaptation should increase further if the results of the most recent IPCC report (IPCC, 2022a) are considered.

**Governments need to develop more integrated governance approaches in their systems to accelerate achievement of Agenda 2030.** Individual governance reforms in line with the pathways identified here are important. To make them lasting and effective, the relationships and interactions be-

tween governance bodies such as implementation agencies in different sectors is key. Reforms of individual governance instruments need thus to be fit for and integrated in the system. It is important to invest in overall systems (whole-of-government approaches), to strengthen reinforcing feedback loops and to prevent constraining ones. Policies' theories of change need to consider full causal pathways that also incorporate governance programmes and measures that were not necessarily previously associated with climate action. The three pathways identified here may be valuable in guiding policymakers and practitioners in deriving comprehensive and evidence-based theories of change for climate action programming bridging established sectoral silos. The latter is particularly relevant for accelerating the implementation of the SDGs by leveraging synergies between them. Thus, as scholars (Breuer et al., 2023a; Breuer et al., 2023b) have previously argued, reforms must cut across sectors and integrate them.

**Democratic governance systems are foundational.** Many of the recommendations will only be tangible and implementable if the overall system of a country is open to them. An independent media and a social and political context that guards individual freedoms are important pre-conditions. As the Human Development Report 2023/24 (UNDP, 2024) emphasized, the role of agency – the ability of people to act as agents of change and determine their own future – is central to achieve collective action. Closing agency gaps requires strategies based on institutions that are people-centred (with emphasis in achieving human development and human security), co-owned (reflecting a fair distribution of power) and future oriented (putting in place mechanisms to navigate an uncertain and volatile world).

**UN member states strengthen reporting on governance pathways and institutions in Voluntary National Reviews (VNR) and Global Assessment reports of goals.** Current reporting to track progress on SDG achievement and further accelerate the implementation of the 2030 Agenda should focus more on SDG 16 as an enabler. This reporting should address governance components and mechanisms more specifically, instead of being too general or outcome focused. This would help identify beneficial leverage points of governance and pathways, which connects to the stated aim of VNRs to strengthen policies and institutions of governments for the implementation of the SDGs.

**Inclusive knowledge creation to foster SDGs.** Research on climate action has a clear bias towards European and North American countries. This is problematic, particularly in view of the high level of affectedness and vulnerability to climate change in many countries where most of the world lives. Hence, strengthening monitoring and research capacities across countries and regions is highly important to create knowledge that informs local reforms on governing climate adaptation and mitigation.

**Scaling up interlinkage studies of SDGs to increase synergies and tackle trade-offs between the goals and their targets.** Moreover, the further development of the system-based approach used in this study once more regarding the high relevance for policy makers and research of potential results. For example, a more comprehensive future interlinkages study that considers multiple SDGs might be able to identify new causal pathways and reinforcing feedback loops spanning several SDGs, which could provide further guidance for practitioners.

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