

LEARNING FROM PRACTICE: A PROTOCOL FOR MEASURING ADAPTATION OUTCOMES IN THE CGIAR CLIMATE CHANGE RESEARCH PORTFOLIO, 2012–2023



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CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land, and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector. We would like to thank all Funders who support this research through their contributions to the [CGIAR Trust Fund](#).

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Abstract

The Sixth Assessment of the Intergovernmental Panel on Climate Change reflected concern for the limited lessons that have been learned about effectiveness and impact from years of formal adaptation actions and policies. This article seeks to fill that gap by examining ten years of CGIAR research into climate change adaptation (2012–2023) to identify lessons about adaptation effectiveness learned from implemented adaptation actions and policies. Using a Large Language Model, we screened and categorized all climate change-related articles from the CGIAR repository of climate change related articles and then identified those reflecting empirical studies of adaptation. We then used the LLM to identify the adaptation benefits (reduced exposure, reduced sensitivity, increased adaptive capacity) intended by the actions/policies reflected in each study, the degree to which the actions/policies delivered those benefits, and who received those benefits. With this organization of the data in hand, we then describe which actions and policies deliver each kind of benefit and where they are most successful in doing so.



BACKGROUND AND RATIONALE

The evidence for the efficacy and impact of climate change adaptation activities remains limited. While academic literature scans, such as that of Berrang-Ford, et al (2021), provide an understanding of academic research into adaptation outcomes, such scans provide a very limited view of adaptation practice and outcomes. Academic research focused on such work is case based, but the cases are not randomly sampled, and these cases are not necessarily representative of project and policy outcomes, instead reflecting the interests of the individual researchers. At the same time, there is a substantial database of adaptation outcomes in the project experience and documents associated with donor, implementer, and donor-adjacent research organizations like the CGIAR (Nalau, et al 2024).

This research takes a first step toward filling this gap by examining the last ten years of the CGIAR's adaptation-relevant research outputs. First, this research will characterize the CGIAR's adaptation research portfolio in terms of the topics covered. These include modelling efforts relevant to or intended to inform adaptation planning, adaptation policy analysis, efforts to understand how key crops will respond to expected changes in climate, and empirical studies of implemented "planned" adaptation interventions and "autonomous" adaptation efforts. Second, the research will examine those empirical studies of adaptation actions to identify the adaptation benefits (Carr and Nalau, 2023) either intended or delivered, how they were delivered, and to what extent they were effectively delivered.

RELEVANCE OF THE THEMATIC AREA REVIEW

A central concern for adaptation policy and practice is the effective, impactful use of scarce adaptation resources. The CGIAR has conducted extensive research into climate change adaptation, ranging from vulnerability analyses to developing tools to assist in planning for future climate conditions to empirically analyzing the outcomes of adaptation actions and policies. This last category of research is of value in improving our understanding of what works in adaptation. To learn from this body of work and move the adaptation community of practice forward with regard to learning and effectiveness, it is important to organize and analyze these place- and project-specific lessons such that we can capture previously-invisible lessons about what works in specific places or specific ecologies, as well as cross-context lessons that might inform adaptation thinking more broadly.

To learn from this reserve of knowledge, we must organize the information about adaptation actions and policies in a manner that reflects their outcomes. Carr and Nalau (2023) argue that the adaptation community of practice has, thus far, failed to effectively assess adaptation effectiveness – whether in terms of portfolios ranging from the organization to the country to the globe or in terms of specific actions in specific places – because adaptation lacks a clear, coherent goal against which to measure outcomes. However, by defining adaptation as an effort to reduce the vulnerability of people and places to the impacts of climate change while increasing people's ability to take advantage of emerging opportunities, Carr and Nalau argue that we can classify adaptation benefits into one of three categories:

1. **Exposure Benefits:** An intervention, policy, or action provides an exposure benefit if it lowers the frequency and/or magnitude of impacts on a person, population, or system targeted by the project.
2. **Sensitivity Benefits:** An intervention, policy, or action provides a sensitivity benefit if it reduces the impact of a climate-related event on a person, population, or system that is, the event still occurs with the same/greater frequency and magnitude, but the person, population, or system is not as affected by the event as before the intervention.
3. **Adaptive Capacity Benefits:** An intervention, policy, or action provides an adaptive capacity benefit if it increases the ability of a person, population, or system to manage climate impacts or realize an opportunity emerging from climate change, including by transforming how and where they live. This can happen even if that population, person, or resource remains exposed to and very sensitive to a climate impact, though typically increasing adaptive capacity facilitates productive efforts to lower exposure and sensitivity.

An intervention, policy, or action can deliver more than one adaptation benefit. By clearly identifying the adaptation benefit that was intended or delivered through a specific action or policy, we can assess which actions are most effective in delivering specific benefits. This will also allow the development of understandings of which actions are most effective in particular geographies or in the context of specific activities, allowing for the identification of locally-specific good practices as well as more general guidance on how to best bring about different kinds of adaptation benefits.

RESEARCH QUESTIONS

- As represented in its refereed research outputs, what does the adaptation portfolio of the CGIAR look like in terms of research themes and emphases?
- Within those empirical studies of implemented/experienced adaptation actions:
 - What adaptation benefits were intended to be delivered/realized?
 - What adaptation benefits were delivered/realized?
 - For each type of adaptation benefit realized, what were the most effective actions/interventions for realizing that benefit?
 - This analysis will, to the extent possible, look for lessons within specific geographies and agroecologies as well as across contexts

METHODOLOGY

This review draws from a database of 2850 articles on the topic of climate change published by CGIAR researchers between January 2012 to December 2023. To generate a database to allow for thematic area analysis of climate research in the CGIAR, a subset of 2850 papers was created through a bibliographic search of the CGSpace climate research literature database.

Practically: use of a case-insensitive, regular expression search of the title, abstract, and keyword fields in the primary (Rayyan screened) database to extract DOIs for articles matching the search terms for adaptation to climate change

Technically: `$ xsv search -i -s 'Title,Abstract,Keywords' 'adaptation to climate change' 2024-10-18-output-used-in-review.csv | xsv select DOI | sed '1s/DOI/doi/' | tee data/does-thematic-analysis-adaptation.csv | xsv count`

Step One: Inclusion/Exclusion to identify adaptation-relevant literature

To obtain the fraction of this database relevant to climate change adaptation, we used a Large Language Model (LLM), Open AI 4o, informed by a set of prompts. We ran these prompts four times, each of the first three times testing a subset of articles (100 inclusions and 100 exclusions) to determine the accuracy of the output and identify opportunities to improve the output. By the fourth run, the prompts below produced accurate inclusion/exclusion decisions 98% of the time when a subset of inclusion and exclusion results were manually checked:

- You will be provided with the Title, Abstract, and Keywords of a research article related to Adaptation in Climate Change. Your task is to classify the article as either Inclusion or Exclusion based on the definition and rules provided below.
- Definition of Adaptation in Climate Change:
 - Adaptation in climate change refers to the process of changing how we live, work, and manage the environment to address the effects of climate change. This includes actions to avoid the impacts of climate change (e.g. building flood defenses), reduce the harm caused by climate change (e.g., or introducing drought resistant seeds), to improve the capacity of people and organizations to address the impacts of climate change (e.g. introducing new farming techniques) or to take advantage of new opportunities (e.g., growing crops in newly suitable areas).
 - For humans, this means adjusting practices and plans to cope with current or expected changes.
 - For nature, this involves helping ecosystems adjust, sometimes with human intervention.
- Abstract-Title-Keyword Analysis:
 - Use the title and abstract to understand the focus of the article. If the abstract discusses adaptation as defined above, it should be included. Only if it is not clear from the abstract that the article is about adaptation should you check the title or keywords.
- General Rules for Classification: Use the following rules to guide your classification:
- Keywords Indicating Inclusion:
 - Articles containing any of the following terms (or their synonyms) in the keywords should generally be classified as Inclusion: adaptation, adapt, adapting, adapted, resilience, resilient, cope, coping, climate-resilient development, livelihood, livelihoods, livelihood strategy, livelihoods strategies, poverty
 - Articles discussing the integration of adaptation and mitigation should be classified as Inclusion.
 - Articles that discuss adaptation options, actions, or decision-making should be classified as inclusion.
 - Articles that discuss how their findings can inform adaptation decision-making should be classified as inclusion
 - Articles about planning for the impacts of climate change are relevant to adaptation and should be classified as inclusion. This includes articles about managing the sustainability or sustainable use of natural resources under climate change.

- Articles that discuss risk, vulnerability, or decision-making related to climate change should be classified as inclusion.
- Articles that discuss climate change and agricultural decision-making are about adaptation and should be classified as inclusion.
- Articles that discuss responding to climate change should be classified as inclusion
- Articles that model potential climate impacts/impacts of climate change should be classified as inclusion – this includes environmental, economic, and social impacts, impacts on poverty, nutrition, agricultural production, crop yields, forage, food security, water availability, water management, soil quality, soil salinity, irrigation.
- Modeling of changes in future nutrition and food safety under climate change is relevant to adaptation and should be classified as inclusion
- Mobility and migration in response to climate change is adaptation and should be classified as inclusion
- If an article mentions sustainability or sustainable in the context of future climate conditions or future climate impacts, it should be classified as inclusion.
- Articles modeling potential climate impacts/impacts of climate change should be classified as inclusion.
 - Modeling potential climate impacts includes environmental, economic, and social impacts of climate change, and climate change impacts on poverty, nutrition, agricultural production, crop yields, forage, food security, water availability, water management, soil quality, soil salinity, and irrigation.
- Articles that provide evidence or examples of adaptation should be classified as Inclusion. This includes articles that describe changes in behavior, decisions, or activities that people make or have made in response to climate change or climate change impacts.
- Keywords Indicating Exclusion:
 - Articles containing the following terms (or their synonyms) in the keywords should generally be classified as Exclusion, unless they explicitly mention adaptation, resilience, or climate-resilient development in the title, abstract, or keywords: mitigation, sequestration, emissions, REDD+, reforestation, restoration
- Articles whose main focus is on mitigation issues, and only mention adaptation in passing, should be excluded
- Articles whose main focus is on an issue or sector (e.g. water resources, gender) that is not adaptation and only use adaptation as an example to illustrate something about the other issue or sector, should be excluded.
- Provide the output in JSON format with two keys: “output” (value should be “Inclusion” or “Exclusion”) and “reason” (value should be a one-line explanation for the classification). No additional text should be included.

Step 2: Classifying adaptation articles by their content

This analysis was only run on the subset of articles that meet the inclusion criteria above.

The next set of prompts reflects a dual goal in the project. The first was to classify all adaptation-relevant work by CGIAR researchers into categories to provide a portfolio-level description of the CGIAR’s adaptation research. This research was broadly classified into one of seven categories reflecting their broad contribution to adaptation thought and practice. Articles were categorized exclusively into one category:

- **Adaptation-empirical:** studies that reflect findings about implemented adaptation actions or policies
- **Adaptation-conceptual:** writing about the concept of adaptation and how the ways we think about it that does not explicitly reflect the outcomes of implemented actions or policies
- **Species adaptation:** articles focused on the adaptation of specific crops, plants, or animals, including their adaptive traits, which is relevant for adaptation but does not speak directly to adaptation action or policy
- **Ecosystem adaptation:** articles whose main focus is on the physical properties of an ecosystem or its components and which do not discuss how people manage those properties
- **Modeling and planning with implications for adaptation:** Articles that are focused on scenarios and/or models of future environmental conditions, such as temperature, precipitation, water availability, and soil quality. This includes work on simulation and simulation analysis, scenario development, and the development of frameworks and tools for monitoring and evaluation should be classified as “modeling and planning with implications for adaptation”.
- **Policy analysis:** Articles focused on discussions of policies that could shape adaptation outcomes, such as policy options that might produce better adaptation outcomes. Note: studies of implemented policies and their outcomes are classified under adaptation-empirical above.
- **Vulnerability:** articles that focus on assessing or otherwise understanding vulnerability without discussing adaptation actions, plans, or decision-making

The prompts used to identify the contribution of each article to adaptation knowledge:

- You will be provided with the Title, Abstract, and Keywords of a research article related to Adaptation in Climate Change. Your task is to classify the article as belonging to one of seven categories of adaptation research: adaptation-empirical, adaptation-conceptual, species adaptation, ecosystem adaptation, modeling and planning with implications for adaptation, or vulnerability, policy analysis based on the definitions and rules below.
- Content related to empirically-informed lessons about adaptation:

- Articles that provide cases of adaptation, adaptive responses, examples of observed adaptation, responses to climate change impacts, local initiatives to address climate change impacts, or evidence of the effectiveness of adaptation, should be classified as “adaptation-empirical”.
- Articles that describe pilot studies should be classified as “adaptation-empirical”.
- Studies of the outcomes, impacts, or effectiveness of programs, projects, and policies should be classified as “adaptation-empirical”.
- Articles that describe how people have adapted to a changing climate or environment in the past should be classified as “adaptation-empirical”.
- Articles that describe how people, decisions, or activities have adapted over time are “adaptation-empirical”.
- All articles in this category must contain information about observed adaptation actions or policies. If the article only discusses the need for adaptation actions, policies, or strategies without describing observed adaptation actions, policies, or strategies, it is not “adaptation-empirical”
- Content related to conceptual discussions about adaptation:
 - Articles that discuss adaptation in a general manner, without drawing on empirical cases or focusing on a specific observed adaptation actions, should be classified as “adaptation-conceptual”
 - Articles with a main focus on defining research priorities for adaptation should be classified as “adaptation-conceptual”.
- Content Related to Biological Adaptation:
 - Articles focused on the adaptation of specific crops, plants, or animals, including their adaptive traits, should generally be classified as “species adaptation”.
 - Articles focused on the adaptation of ecosystems or places, including their adaptive traits, should be classified as “ecosystem adaptation”.
 - Studies whose main focus is on the physical properties of an ecosystem or its components and which do not discuss how people manage those properties should be classified as “ecosystem adaptation”.
- Content related to modelling and planning:
 - Articles that are focused on scenarios and/or models of future environmental conditions, such as temperature, precipitation, water availability, and soil quality, should generally be classified as “modeling and planning with implications for adaptation”.
 - Simulation and simulation analysis should be classified as “modeling and planning with implications for adaptation”.
 - Studies focused on developing frameworks and tools for tracking, monitoring, and evaluating adaptation should be classified as “modeling and planning with implications for adaptation”.
 - Studies developing data or tools for prioritizing adaptation actions or policies should be classified as “modeling and planning with implications for adaptation”.
 - Climate change impact assessments should be classified as “modeling and planning with implications for adaptation”.
 - Studies that focus on describing climate change impacts on people, activities, and assets without discussing observed adaptation actions or policies, should be classified as “modeling and planning with implications for adaptation”.
 - If the article focuses on a future scenario, it is not an empirical study. It should be classified as “modeling and planning with implications for adaptation”.
- Content related to vulnerability analysis:
 - Articles that focus on assessing vulnerability without discussing observed adaptation actions, plans, or decision-making should be generally classified as “vulnerability”
 - Articles that focus on the impact of climate change on people, activities, and assets without discussing observed adaptation actions or policies should be classified as “vulnerability”
 - Articles focused on people’s perceptions of climate change impacts that do not discuss observed adaptation actions should be classified as “vulnerability”.
- Content related to policy analysis:
 - Articles in this category must explicitly discuss policy/policies. It is not enough for an article to be policy relevant.
 - Articles focused on the policies that shape adaptation outcomes, or the policy options that might produce better adaptation outcomes, should be generally classified as “policy analysis.” An exception to this is if the article examines the impact or outcomes of policies that shape adaptation outcomes – those articles should be classified as “adaptation-empirical”
- Provide the output in JSON format with two keys: “AdaptationType-output” (value should be “adaptation-empirical” or “adaptation-conceptual” or “species adaptation” or “ecosystem adaptation” or “modeling and planning with implications for adaptation” or “vulnerability” or “policy analysis”) and “AdaptationType_reason” (value should be a one-line explanation for the classification). No additional text should be included.

This categorization created a view of the overall adaptation portfolio of the CGIAR in terms of research emphasis. It also served as an inclusion/exclusion exercise to identify the studies of implemented adaptation actions and policies.

Step 3: Identifying studies of planned adaptation and autonomous adaptation

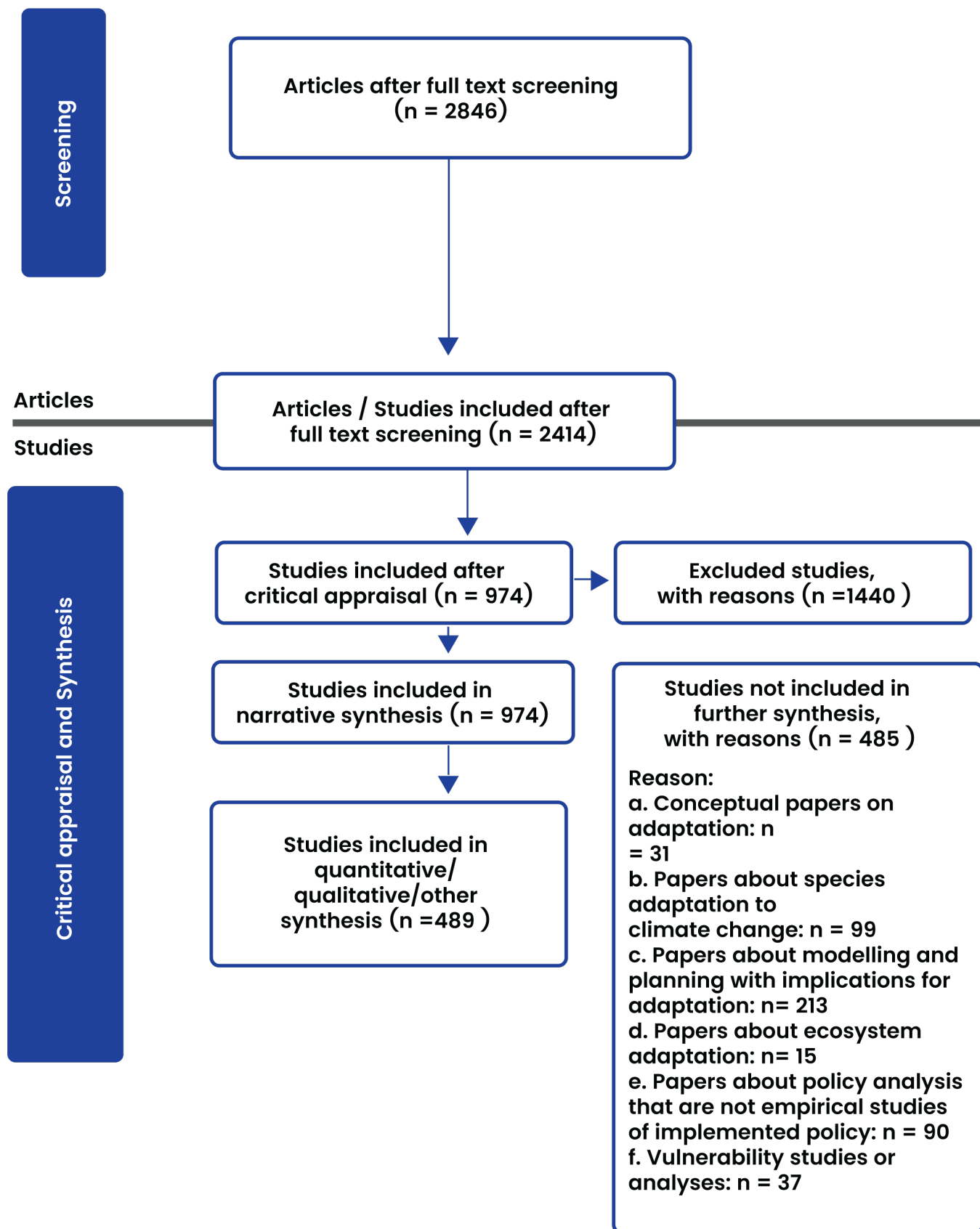
The CGIAR has conducted research into the local adaptations of individuals and groups as they respond to climate change, sometimes classified as “autonomous adaptation.” These actions and efforts will provide different lessons about adaptation and its efficacy than those planned by donors, governments, and other formal actors. This latter category of adaptation is sometimes called “planned adaptation.” Capturing lessons from each of these is important, but they should be separated to allow for coherent analysis and lessons learned. The following prompts were run to categorize the 489 articles that reported on observed adaptation actions or policies.

- You will be provided with the Title, Abstract, and Keywords of a research article related to Adaptation in Climate Change. Your task is to classify the article as belonging to one of two kinds of adaptation, autonomous adaptation or planned adaptation, based on the definitions and rules below.
- Definition of Autonomous Adaptation: Autonomous adaptation is the actions and plans made by individuals and communities in response to climate change impacts, without support from the government, development donors, or other forms of formal technical expertise and support. These actions usually reflect local understandings of the environment and human needs, and are closely linked to peoples’ perceptions of the climate and environment.
 - Scientific studies of the actions and plans made by individuals and communities in response to climate change impacts should be classified as autonomous adaptation.
 - Studies of local responses to climate change impacts, including efforts to cope with those impacts, should be classified as autonomous adaptation.
- Definition of Planned Adaptation: Planned adaptation is the actions, plans, and policies created by governments, development donors, and other organizations to address climate change impacts. These organizations generally employ scientific methods of analysis to understanding the climate and environment and how it is likely to impact people and activities.
 - Studies of actions, plans, and policies created by governments or other organizations and implemented to help specific places and people should be classified as “autonomous adaptation.”
 - Studies of government responses, or the responses of development organizations, to climate change impacts should be classified as autonomous adaptation.

Provide the output in JSON format with two keys: “output” (value should be “Autonomous” or “Planned”) and “reason” (value should be a one-line explanation for the classification). No additional text should be included.



ROSES flow diagram



METHODS FOR DATA ANALYSIS

Identifying the Adaptation Benefit Associated with Adaptation Actions and Policies

The analysis of the empirical studies of adaptation action and policy focuses on defining what adaptation benefits are delivered by the actions or policies explored by CGIAR researchers. The adaptation benefits framework (Carr and Nalau 2023) rests on the principle that adaptation actions are intended to reduce the vulnerability of people and places to the impacts of climate change. Drawing on well-understood components of climate risk and vulnerability, Carr and Nalau argue that an adaptation action or policy delivers an adaptation benefit if it reduces the exposure of people and places to a climate hazard, reduces their sensitivity to climate hazards, or increases their capacity to adapt to the impact or take advantage of opportunities created by the impact. Actions and policies can deliver one or more adaptation benefits, so classification in this step is non-exclusive.

Preliminary Prompts (these were run for the full-text of each article, excluding the bibliography, as answers to these prompts required more information than was usually available in the title-abstract-keywords):

You will be provided with the full text of a research article related to Adaptation in Climate Change. Your task is to identify the actions or policies created to deliver an adaptation benefit, classify the adaptation benefit as belonging to one or more of three types (exposure benefit, sensitivity benefit, adaptive capacity benefit), identify who benefited from the action or policy, and identify the extent to which the action or policy delivered the expected benefits, based on the definitions and rules below.

Exposure Benefit

- Definition: An intervention, policy, or action provides an exposure benefit if it lowers the frequency and/or magnitude of impacts on a person, population, or system targeted by the project. For example:
 - An infrastructure investment moves a transportation corridor further from the coast to avoid existing or projected flooding.
 - A project restores wetlands along a riverbed to limit seasonal flooding and protect nearby agricultural fields.
- When considering if an adaptation action provides an exposure benefit, a guiding question is “does this action reduce the frequency and/or magnitude of one or more climate impacts on the person, population, activity, or resource targeted by the project?” Actions for which the answer is yes provide an exposure benefit.
- Where an exposure benefit is present
 - Define the action that delivered the benefit. For example, if a project reduced exposure to coastal flooding by constructing a seawall, record that “constructing a seawall” was the way the benefit was delivered.
 - Identify groups or individuals who received the benefit
 - Assess the extent to which the intervention succeeded in delivering the intended benefit

Sensitivity Benefit

- Definition: An intervention, policy, or action provides a sensitivity benefit if it reduces the impact of a climate-related event on a person, population, or system that is, the event still occurs with the same/greater frequency and magnitude, but the person, population, or system is not as affected by the event as before the intervention. For example:
 - An infrastructure investment builds a roadway out of more durable, permeable materials to allow increasingly frequent floodwaters to pass and recede quickly with minimal damage.
 - A project identifies a sustainable source of irrigation, allowing farmers to plant crops that demand predictable, regular sources of water even as seasonal rainfall becomes increasingly unpredictable.
 - A project introduces new livelihoods activities to an agrarian community whose agricultural production is stressed by increasingly variable seasonal rainfall, creating alternative sources of income that buffer the family against the income and food security challenges created by climate change.
- When considering if an adaptation action provides a sensitivity benefit, a guiding question is “if the person, population, or system targeted by the project cannot reduce exposure to a climate impact, does this action make those climate impacts less problematic?” Actions for which the answer is yes provide a sensitivity benefit.
- Where a sensitivity benefit is present:
 - State the region and country in which the project delivered the benefit
 - Define the action that delivered the benefit. For example, if a project reduced an agricultural system’s sensitivity to climate extremes by providing farmers with access to crop insurance, record that “introducing crop insurance” was the way the benefit was delivered.
 - Identify groups or individuals who received the benefit
 - Assess the extent to which the intervention succeeded in delivering the intended benefit

Adaptive Capacity Benefit

- Definition: An intervention, policy, or action provides an adaptive capacity benefit if it increases the ability of a person, population, or system to manage climate impacts or realize an opportunity emerging from climate change, including by transforming how and where they live. This can happen even if that population, person, or resource remains exposed to and very sensitive to a climate impact, though typically increasing adaptive capacity facilitates productive efforts to lower exposure and sensitivity. For example:
 - Investments in extension services often increase farmer knowledge and access to agricultural resources. In places where the climate is marked by increasing variability, extension services can help farmers understand how to interpret seasonal forecasts such that they select appropriate seed varieties for likely seasonal conditions. In this example, the extension services provide an adaptive capacity benefit, while the seeds the farmers learn how to access provide a sensitivity benefit.
 - Investment in local planning capacity can yield improved zoning and land management in urban areas, allowing municipalities to avert impacts like flooding by reducing the land use driver of this challenge. Here, the investment in improved planning is an adaptive capacity benefit, which yields an exposure benefit by improving the quality of zoning and land management to reduce flooding.
 - A project works to increase the capacity of women to write adaptation project grant proposals and to participate in adaptation decision- and policy making processes, generating adaptation plans and actions that address the needs of different women alongside those of men. The investment in training is an adaptive capacity benefit, producing improved adaptation plans and actions that, depending on their character, provide exposure or sensitivity benefits.
- When considering if an action provides an adaptive capacity benefit, a guiding question is “does this action increase the ability of people to identify challenges and opportunities created by climate variability and change in a manner that allows them to address those challenges and mobilize those opportunities?” If the answer is yes, the action provides an adaptive capacity benefit.
- Where an adaptive capacity benefit is present:
 - Define the action that delivered the benefit. For example, if a project increased the adaptive capacity of farmers by providing them with credit to purchase the inputs needed for a new crop, record that “providing credit for new inputs” was the way the benefit was delivered.
 - Identify groups or individuals who received the benefit
 - Assess the extent to which the intervention succeeded in delivering the intended benefit

Provide the output in JSON format with two keys: “AdaptationType-output” (value should be “adaptation-empirical” or “adaptation-conceptual” or “species adaptation” or “ecosystem adaptation” or “modeling and planning with implications for adaptation” or “vulnerability” or “policy analysis”) and “AdaptationType_reason” (value should be a one-line explanation for the classification). No additional text should be included.



WAY FORWARD

1. Introduction
 - a. Discussion of the importance of identifying the impacts and outcomes of adaptation
 - i. Limited empirical evidence for adaptation impact/success
 - ii. Need for a framework of benefits from adaptation action to enable assessment of impact/success
 - b. Opportunity to learn from CGIAR research
2. Situating the contribution of the article
 - a. Prior efforts to assess adaptation impact or outcomes
 - i. GAMI
 - ii. IPCC AR6
 - iii. Others
 - b. Shared challenge assessing success/impact
 - i. Introduce adaptation benefits framework (Carr and Nalau)
3. Methods
 - a. Describe article database and its construction
 - b. Describe inclusion/exclusion prompts for adaptation-relevant work and the article set it produced
 - c. Describe the classification and inclusion/exclusion prompts to characterize the CGIAR adaptation research portfolio and identify studies of implemented actions or policies
 - d. Describe the analytic prompts to identify the adaptation benefits intended by actions or policies in studies, the extent to which the project delivered those benefits, and who received the benefits.
4. Results
 - a. Describe the CGIAR portfolio in terms of the broad categories of work represented
 - b. Describe the adaptation benefits captured by CGIAR research into implemented actions or policies
 - i. Overview of benefits and the actions that delivered them
 - ii. Describe the relative impactfulness/success of different actions and policies in delivering intended benefits
 - iii. Describe any significant patterns of benefit by action, paying attention to regional patterns or patterns specific to the climate impact in question.
5. Discussion
 - a. Lessons from CGIAR work on adaptation
 - i. Effective interventions
 - ii. Benefits delivered
 - b. A Research Agenda for Adaptation Impact: Knowledge gaps
 - i. How robust are the findings (how many cases for each trend/pattern/finding)?
 - ii. Under-researched regions/climate impacts/actions/policies

PROTOCOL PUBLICATION

The protocol was developed consultatively and is now published on CGIAR CGspace.

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