USAID
FROM THE AMERICAN PEOPLE

TECHNICAL REPORT

SYNTHESIZING GOOD PRACTICES IN CLIMATE ADAPTATION ASSESSMENTS

ANNEXES

February 2016
This document was produced for review by the United States Agency for International Development. It was prepared by Chemonics for the ATLAS Task Order.

This document was produced for review by the United States Agency for International Development. It was prepared by Chemonics International, Inc. for the Climate Change Adaptation, Thought Leadership and Assessments (ATLAS) Task Order No. AID-OAA-I-14-00013, under the Restoring the Environment through Prosperity, Livelihoods, and Conserving Ecosystems (REPLACE) IDIQ.

Chemonics Contact:
Chris Perine, Chief of Party
Chemonics International Inc.
1717 H Street NW
Washington, DC 20006
ATLASinfo@chemonics.com

Cover Photo: Lara Rall, USAID Resilience in the Limpopo River Basin (RESILIM) program, 2015. Students and neighbors in the Moreleta Park area of Pretoria, South Africa, count macroinvertebrates as a means of measuring the health of a nearby stream. Local monitoring can lead to improved water quality and reduced vulnerability to climate change.

SYNTHESIZING GOOD PRACTICES IN CLIMATE ADAPTATION ASSESSMENTS

ANNEXES

February 2016

Prepared for:

United States Agency for International Development
Climate Change Adaptation, Thought Leadership and Assessments (ATLAS)

Prepared by:

Chemonics International Inc.
Kathleen R. Flower, PhD – KRF Consulting, LLC; Marcia B. Brown, Judy Boshoven, Cristy Garris and Richard Margoluis – Foundations of Success

This report is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of Chemonics and do not necessarily reflect the views of USAID or the United States government.

CONTENTS

LIST OF FIGURES AND TABLES

ACRONYMS

ARCC	USAID's African and Latin American Resilience to Climate Change Project
ATLAS	USAID's Adaptation, Thought Leadership and Assessments Project
CC	climate change
CCA	climate change adaptation
CCVA	climate change vulnerability assessment
CDCS	Country Development Cooperation Strategy
CLIMA	USAID/Dominican Republic's *Ciudades Líderes en Iniciativas y Metas de Adaptación* or Leading Cities in Adaptation Initiatives or Goals Project
CMP	Conservation Measures Partnership
CRDF	USAID's Climate-Resilient Development Framework
DFID	United Kingdom's Department for International Development
DRR	disaster risk reduction
E3	USAID's Bureau for Economic Growth, Education, and Environment
ERICCA	USAID/Uganda's Education and Research to Improve Climate Change Adaptation Activity
FISH	USAID/Malawi's Fisheries Integration of Society and Habitats Project
FtF	Feed the Future
GIZ	Germany's Deutsche *Gesellschaft für Internationalev Zusammenarbeit*
GoM	Government of Malawi
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature
IUWASH	USAID/Indonesia's Urban Water Sanitation and Hygiene Project
IWRM	Integrated Water Resources Management
LIMCOM	Limpopo Watercourse Commission
LMB	Lower Mekong Basin
M&E	monitoring and evaluation
MRC	Mekong River Commission for Sustainable Development
NTFP	Non-Timber Forest Product
OS	Open Standards
PAD	Project Appraisal Document (USAID)
PDAM	*Perusahaan Daerah Air Minum*, Municipal Water Utilities in Indonesia
RESILIM	USAID/Southern Africa's Resilience in the Limpopo River Basin Program
TOC	theory of change
USAID	United States Agency for International Development
VA	vulnerability assessment

ACKNOWLEDGMENTS

The authors would like to thank the following staff of the United States Agency for International Development (USAID) for their inputs and review throughout this activity: Andre Mershon and Jenny Frankel-Reed of the Global Climate Change Office, Jami Montgomery of the Bureau for Democracy, Conflict, and Humanitarian Assistance, and Tegan Blaine of the Africa Bureau. The authors would also like to thank the key informants interviewed, and participants in the November 2015 climate adaptation experts' workshop for the information and insights they provided.

EXECUTIVE SUMMARY

These annexes accompany the *Synthesizing Good Practices in Climate Adaptation Assessments* summary report. Please refer to that technical report for the executive summary.

ANNEX A: GLOSSARY OF TERMS

Table 1. Glossary of Terms

Term	Definition	Source
Activity	Part of a program. The set of actions that is carried out by the organization(s) funded through a particular mechanism in support of a PAD.	
Adaptation	"The process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities." In natural systems, adaptation is a reaction to an actual change in climate since ecosystems cannot anticipate or plan for climate change. Adaptation actions seek to enhance resilience and reduce climate vulnerability in the near and long term by decreasing exposure or sensitivity or by increasing adaptive capacity.	CRDF p. 26 (USAID 2014)
Adaptation intervention	The CCA activity that has been selected for implementation to reduce the vulnerability of a particular development input in support of a stated development goal.	
Adaptation objective	In formulating a good adaptation objective, you should aim to explicitly identify: • The climate-related stress being addressed • The critical input, sector/theme, system or stakeholders at risk • The adaptation measures being promoted • The desired outcome. For example, "Reduced vulnerability of coastal communities' drinking water supplies to intense rainfall events and sea level rise" or "Improved use of climate information for medium- to long-term water utility planning and management decisions" or "Improved formal coordination by multiple ministries to address adaptation priorities" (From CC How-to Guide, Feb 2015, pp. 13–14).	USAID (2015)
Adaptation options	The suite of activities that have been identified as potential adaptation interventions but have not yet been evaluated according to selected criteria.	
Adaptive capacity	Adaptive capacity is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."* Adaptive capacity is fundamentally about the ability of an affected system to change in response to climate stressors. This could be about the capacity of an ecosystem to adapt to warmer temperatures, but is more often understood in terms of people, businesses and their communities. In particular, highly networked and wealthier communities often have more adaptive capacity than isolated and poorer communities.	CRDF p. 17; IPCC (2012)
CCVA timeframe	The amount of time it takes to develop and run a vulnerability assessment.	
CDCS	Country Development Cooperation Strategy. USAID Missions are required to develop and use CDCS. These five-year, country-based strategies show how Agency assistance is synchronized with other agencies' efforts.	USAID
Climate impact	Climate impacts are the effects on natural and human systems of climate variability and climate change.	CRDF p. 26 (glossary)
Climate projection	Climate projections are potential future climate conditions (e.g., higher sea levels, warmer temperatures, wetter or drier rainy seasons). These are typically generated from climate models. Climate projections may be accompanied by assumptions about change in socioeconomic conditions (e.g., income, technology, greenhouse gas emissions).	CRDF p. 26 (glossary)

Climate resilience	Climate resilience is the capacity of a system to "anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions." Applied to social systems, resilience is the capability to anticipate, prepare for, respond to and recover from significant stressors with minimum damage to social well-being, the economy and the environment. Essentially, the more resilient a system (e.g., ecosystem, village, country) is, the less vulnerable it is to climate change (and climate variability such as extreme events).	CRDF p. 26 (glossary)
Climate stressors	Climate stressors are climate factors that can affect the functioning of a system. For example, rising temperatures and greater rainfall variability may affect agricultural productivity, with implications for food security. Climate stressors can also limit the potential success of development interventions.	
Concept paper	Document developed within a bureau or office or sector; initiates work toward a PAD.	USAID
Development hypothesis	Similar to a theory of change.	
Development inputs	Development inputs are the factors that support or enable development. Inputs include financing, technology, training and information.	CRDF p. 26 (glossary)
Enabling conditions	Development inputs are shaped by broader political, economic and social conditions, which we call enabling conditions. Enabling conditions are elements of the sociopolitical environment that can affect whether development goals are achieved, such as regulatory regimes or market mechanisms. Enabling conditions can have a significant impact on a development initiative's ability to support development goals. For instance, safeguarding coastal infrastructure requires enforcement of coastal zoning regulations. Informed decisions about coastal development strategies, programs or projects must include critical consideration of enabling conditions such as the regulatory environment, willingness to enforce regulations, and enforcement capacity, among other enabling conditions. Issues related to enabling conditions are addressed in greater detail in the governance annex and the vulnerability assessment annex.	CRDF p. 12
Exposure	Exposure is the extent to which something is subject to a stressor. For example, flooding is a climate stressor that can affect infrastructure. Infrastructure built in a floodplain is exposed to this stressor, but infrastructure built at higher elevations is not exposed to flooding.	CRDF p. 17
Framework	A structure underlying a system; a process for designing, planning, implementing, monitoring, learning from, adapting and improving a project or program. Examples: Climate-Resilient Development Framework; the Conservation Measures Partnership's (CMP) Open Standards for the Practice of Conservation.	
LogFrame	The Logical Framework, or LogFrame, is one of the principal tools used by the international development community to help design projects to achieve measurable results. The key elements of the LogFrame Matrix include the narrative summary, the indicators and their data sources, and the assumptions.	USAID (2012)
Mainstreaming	Mainstreaming refers to the integration of climate stressors into existing planning and decision-making processes. It means that existing institutions and processes can include climate change as an additional consideration. For example, strategic planning would not only account for changes in population, economic conditions and trade patterns, etc., but also changes in climate.	CRDF p. 26 (glossary)
Method	Same as a "tool."	
Non-climate stressors	Non-climate stressors are development challenges such as environmental degradation, corruption, population growth and pollution that can harm the functioning of a system, thus hindering the achievement of development goals.	CRDF p. 26 (glossary)

PAD	Project Appraisal Document - specifies a project. A CCVA can be done to inform project design as part of developing the PAD.	USAID
Intermediate result	Intermediate results (IRs) are part of the CDCS results framework. A Project Purpose is linked to a CDCS Development Objective or IR.	USAID
Results chain	A graphical depiction of a project's core assumption, the logical sequence linking strategies to one or more focal interests (development goals). In scientific terms, it lays out hypothesized relationships. Depicts the theory of change.	Conservation Measures Partnership
Sensitivity	Sensitivity is the extent to which something will change if it is exposed to a stressor. For example, agricultural crops are sensitive to increased nighttime temperatures. However, some plants will fail at lower temperatures and are thus more sensitive to this climate stressor than others. Crop choice can reduce an individual farmer's sensitivity to increased temperatures. Considering the example of infrastructure in a floodplain, two buildings in the floodplain may both be exposed, but one built on stilts or designed to allow water to flow through would be less sensitive.	CRDF p. 17
Situation model	A visual representation of the surrounding world, relationships between various parts, and perceptions about actions, connections and consequences.	
Stakeholder	Any individual, group or institution that has a vested interest in or can influence the natural resources of the project area and/or that potentially will be affected by project activities and have something to gain or lose if conditions change or stay the same. Stakeholders are all those who need to be considered in achieving project goals and whose participation and support are crucial to its success.	Conservation Measures Partnership
Success in CCA	Climate adaptation options or actions identified (if necessary) and incorporated into USAID Strategies, Projects and Activities as part of successful application of the USAID Program Cycle.	
Theory of change	In general, a theory of change (TOC) states what expected (changed) result will follow from a particular set of actions. For example, a TOC might describe how actions could lead to building a campfire. The theory would connect needed inputs (wood, oxygen, heat) and actions (stacking the wood, striking a match) in a process of "if…then…" statements to achieve outputs (the fire) and outcomes (we are warmer). A simple example of one step in this TOC might be, "If I add more fuel to the fire, then it will burn hotter."	USAID (2010)
Time horizon of climate projection	How long into the future climate projections are cast. For example, 15, 30 or 50 years into the future.	
Tool	A specific exercise used to complete a step (or substep) in a framework. Examples: climate analysis, institutional analysis, Stakeholder Review & Recommendations Process (SRRP), results chain.	
Uptake	The effective use of information developed in one step of a process (e.g., project design and implementation) for the next step. In the case of CCVAs, this means the use or application of findings from a CCVA to inform policy or programming, which entails understanding decision makers' needs from the outset, and how CCVA results are likely to be used in decision making.	USAID
USAID sector strategy	Overall guiding document for the sector/initiative/office/bureau that sets the scene for the concept paper and PAD.	USAID
Vulnerability	Vulnerability is the degree to which something can be harmed by or cope with stressors such as those caused by climate change. It is generally described as a function of exposure, sensitivity and adaptive capacity.	CRDF p. 17

REFERENCES

Conservation Measures Partnership. (2013). *Open Standards for the Practice of Conservation, Version 3.0*. Available online at http://cmp-openstandards.org/

Intergovernmental Panel on Climate Change. (2012). *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Cambridge: Cambridge University Press. Available online at http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf

USAID. (2010). *Theories of Change and Indicator Development in Conflict Management and Mitigation*. Available online at http://pdf.usaid.gov/pdf_docs/Pnads460.pdf

USAID. (2012). *Technical Note: The Logical Framework*. Number 2, Version 1.0. Available online at http://usaidprojectstarter.org/sites/default/files/resources/pdfs/Logical%20Framework%20Technical%20Note_FINAL_Dec_2012.pdf

USAID. (2014). *Climate-Resilient Development (CRD): A Framework for Understanding and Addressing Climate Change*. Available online at http://pdf.usaid.gov/pdf_docs/pbaaa245.pdf

USAID. (2015). *Climate Change How-to Guide (Version 1.0): Project and Activity Design for Climate Change Adaptation Funding*. Available online at http://pdf.usaid.gov/pdf_docs/PBAAD775.pdf

ANNEX B: KEY FRAMEWORKS AND GUIDANCE FOR INTEGRATION OF CLIMATE CHANGE PRACTICE INTO USAID PROGRAMS

This annex provides a summary of key frameworks and guidance that USAID has produced and pilot initiatives it has undertaken to further advance the integration of climate adaptation into USAID project design and implementation. These frameworks and guidance served as the basis for defining the best practices and lessons learned for climate change vulnerability assessment (CCVA) and effective integration of climate change adaptation (CCA) in USAID programming used in this assessment.

FIRST RECOMMENDATIONS FOR VULNERABILITY ASSESSMENT AND ADAPTATION (2007)

In 2007, USAID's Global Climate Change Team produced *Adapting to Climate Variability and Change: A Guidance Manual for Development and Planning* (referred to as "The 2007 V&A Guide", USAID 2007). The 2007 V&A Guide outlined a six-step process for incorporating climate change vulnerability assessment and adaptation into the USAID program design process, referred to as a "project cycle." The steps are detailed in Table 2.

Table 2. Steps of Vulnerability and Adaptation Approach

Phase of USAID Project Cycle	Step of Vulnerability and Adaptation Approach
Problem Diagnosis	Screen for Vulnerability
Project Design	Identify Adaptations
	Conduct Analysis
	Select Course of Action
Implementation	Implement Adaptations
Evaluation	Evaluate Adaptations

The basic phases and steps of this methodology persist until today. Meanwhile, USAID further developed recommendations for improving CCVAs, CCA and the integration, mainstreaming and implementation (or "uptake") of results and recommendations into programmatic decisions

both within USAID and among its partners, collaborating governments and beneficiaries. Key recent additions to the knowledge base are described below.

INTEGRATION PILOT PROJECTS

In 2012 and 2013, USAID launched pilot projects that focused on uptake via integration of climate knowledge into existing development frameworks (USAID 2013). These projects included, for example:

- For Kazakhstan's wheat producers, improving the climate information that is available and ensuring that farmers can access the information, while raising awareness about food security in neighboring countries;
- In Macedonia, supporting a participatory municipal-level process to develop local climate change strategies; and
- In the Dominican Republic, training 1,000 smallholder farmers in climate science, risk reduction and adaptation strategies.

An additional five USAID-funded projects in Asia, Latin America, and Africa participated or are participating in this pilot, generating lessons, experiences and best practices to support the integration of climate-related risks, opportunities and vulnerabilities into development interventions to increase effectiveness and sustainability.

CLIMATE-RESILIENT DEVELOPMENT FRAMEWORK

In March 2014, USAID produced *Climate-Resilient Development: A Framework for Understanding and Addressing Climate Change* ("CRDF Guide", USAID 2014b). The Climate-Resilient Development Framework (CRDF) was developed to improve the mainstreaming of climate considerations into development planning by integrating CCVA and CCA steps into USAID's existing planning process (Figure 1).

The CRDF Guide is a five-step process that follows the phases of the USAID project cycle. Building on the 2007 V&A Guide, the CRDF Guide adds a scoping step before the vulnerability assessment begins, emphasizing the need for careful consideration of possible climate change vulnerability during the inception phase of any project, no matter the sector.

The CRDF Guide includes (or will include) a number of companion documents that provide specific guidance based on the general approach. Each is described as "An Annex to the USAID Climate-Resilient Development Framework." These companion documents (with release dates)[1] include:

- Evaluating Adaptation Options (Planned or in process);
- Climate Change and Water (December 2014);

[1] Each of these companion documents is or will be available online at: http://www.usaid.gov/climate/climate-resilient-development-framework. Accessed August 2015.

- Climate Change and Coastal Zones (March 2015);
- Governing for Resilience (May 2015);
- Working with Marginal Populations (Planned or in process); and
- Climate Change and Conflict (Planned or in process).

Figure 1. USAID's Climate-Resilient Development Framework (CRDF)

(Source: USAID 2014b)

THE HOW-TO GUIDE FOR DESIGNING USAID CLIMATE CHANGE ADAPTATION-FUNDED PROJECTS

In February 2015, USAID's Office of Global Climate Change produced another key (although internal) document for CCVA and CAA: *Climate Change How-to Guide: Project and Activity Design for Climate Change Adaptation Funding* (USAID 2015a). This "How-To Guide" serves as a supplement to USAID ADS Chapter 201 on Project Planning. The How-To Guide adds specific and useful guidance for implementation of the frameworks described above toward the drafting of a Project Appraisal Document (PAD). Of particular utility, the How-To Guide:

- Explicitly defines the difference between "focused" or "direct" versus "indirect" climate change adaptation activities. For example, a coastal project may be concerned about the health of coastal fisheries. "Direct" CCA interventions would address critical climate or climate-related stresses, such as ocean acidification and warming. Example projects would include helping communities to understand these climate stresses and adapt to them "through diversification into less climate-sensitive livelihoods, or promoting coral reef rehabilitation with more heat-

resistant species… [or] a project to develop early warning systems." Activities that primarily address overfishing, a non-climate stressor, would be considered "indirect."

- Provides simple guidance on developing an "Adaptation Objective." The How-to Guide explains that a good adaptation objective explicitly identifies:
  - The climate-related stress being addressed;
  - The critical input, sector/theme, system or stakeholders at risk;
  - The adaptation measures being promoted; and
  - The desired outcome.

  The How-To Guide recommends development of objectives such as: "Improved use of climate information for medium- to long-term water utility planning and management decisions"; "Improved formal coordination by multiple ministries to address adaptation priorities"; and "Increased civil society participation in national adaptation policy planning processes."
- Provides recommendations for how to incorporate climate change considerations into specific analyses for production of a PAD. This includes guidance for the required Gender, Environmental and Sustainability Analyses and for the recommended Economic and Financial, Cost-Benefit, Institutional and Conflict Assessments.

LESSONS LEARNED FOR CCVA "UPTAKE" FROM INDONESIA

In September 2014, the E3 Analytics and Evaluation Project produced *Assessing Climate Change Adaptation in Indonesia: A review of the Climate Vulnerability Assessments Conducted by USAID/Indonesia Partners (2010–2013)* ("Indonesia CCVA Assessment", USAID 2014a). This study reviewed five separate USAID-funded CCVA processes. In the Indonesia CCVA Assessment, "uptake" was defined as: "changes or the mainstreaming of climate & disaster risk management at the local level (as evidenced by influencing local budgets/regulations, local governments incorporating VAs into their planning processes and/or conducting them, etc.)." Recommendations for uptake from this study include:

1. Design
   a. Take existing Community Action Plans (CAPs) and CAP goals into account when designing projects for communities.
   b. After the CAP is developed, treat the facilitation of uptake, adoption and implementation as a separate project that requires a clear articulation in a project's theory of change (TOC), results plan and work plan.
   c. Include local government planning cycles when designing program work plans. This may require strict scheduling on report writing.
   d. Include local organizations in project design as they are best positioned to produce a sustained CCA and disaster risk reduction (DRR) effort at the community level. Fostering sustainability of USAID outcomes is usually best

accomplished through local networks that are organic expressions of village-level interest and are tied to local understanding, self-interest and benefits.

e. Ensure the required human, financial and data resources for effective CCVA processes. Identify a pool of experts from different fields to assist with the CCVA. In cases where no local experts are available, include at least one external facilitator who has adequate understanding of local language, community facilitation, climate change and relevant sector needs.

2. Implementation
    a. Use pilot projects as they are shown to be effective in activating local government uptake. This may require appropriately developed monitoring systems so that results and lessons can be shared.
    b. Engage corresponding local government agencies early and often in the CCVA process. Engagement and coordination between local government agencies and facilitators is key to ensuring alignment with *musrenbang* (in Indonesia, an annual participatory budgeting process during which residents meet together with local government to discuss issues and decide upon priorities for improvements).
    c. Focal points can serve as project "champions," or advocates, and liaisons between government agencies and the implementer. The implementing partner should also involve local legislative members, since members will have the final say for local government budgets.
3. Results and Mainstreaming
    a. Use multistakeholder fora at a governance level above the village to maximize the chances of uptake by local government.
    b. Encourage local or regional permanent learning organizations to update climate vulnerability and disaster risk information. The key role that educational institutions have played in a number of cases suggests that such organizations could be naturally positioned to link medium-term programs and longer-term needs to build local capacity in the CCA and DRR sectors.

ARCC LESSONS LEARNED REPORT FINDINGS

In March 2015, USAID's African and Latin American Resilience to Climate Change Project (ARCC) produced a *Compendium of Lessons Learned from ARCC Climate Change Vulnerability Assessments* ("ARCC Lessons Learned Report", USAID 2015b). Like the 2014 USAID/Indonesia report, this analysis assessed the linkages between CCVA design and uptake, here defined as "the use or application of the findings from a CCVA to inform policy or programming." The study project reviewed ARCC CCVA projects and processes in Uganda, Malawi, Dominican Republic, Senegal and Mali.

ARCC found that three factors influence the degree to which uptake occurs: credibility, the perceived technical quality and adequacy of the findings; salience, the perceived relevance of the information provided; and legitimacy, the level of acceptance of the findings as an accurate reflection of reality. Several critical steps in the design and execution of the CCVA were found to influence one or more of these factors. Key lessons learned from the ARCC study include:

1. Design and implement measures to enhance credibility, salience and legitimacy of the results.
    a. For enhancing credibility:
        i. Use the best available, highest-quality data, information and recognized methods and analysis procedures
        ii. Clearly communicate data gaps, limitations of the methods, and uncertainties in the results
        iii. Discuss non-climate-related confounding factors
    b. For enhancing salience:
        i. Gather and validate input from decision makers about their information needs and intended uses of CCVA findings
        ii. Structure CCVA findings to directly address critical, expressed needs
        iii. Demonstrate an understanding of political, social, economic, cultural and institutional contexts in which the CCVA is embedded
        iv. Release information from the CCVA in a timely manner aligned with policy, planning and procurement schedules
    c. For enhancing legitimacy:
        i. Involve key stakeholders in the design of the CCVA
        ii. Ensure that stakeholders represent the full range of appropriate technical sectors and levels of society
        iii. Maintain dialogue and open involvement, providing voice to many actors throughout the CCVA process
2. Fully engage stakeholders during all phases of the CCVA: Design, data collection and analyses, verification of findings, and development and validation of recommendations for adaptation options.
    a. Identify knowledge brokers and champions early in the process and engage them fully
    b. Recognize that a member of the CCVA team will likely act as a knowledge broker
3. Understand the political and social context of the CCVA: Because climate change has begun to alter the scale of threats to a level with which many individuals have had no previous experience, credibility for CCVAs may be more contested, salience more sensitive, and legitimacy more crucial than for other types of VAs.

REFERENCES

USAID. (2007). *Adapting to Climate Variability and Climate Change: A Guidance Manual for Development Planning*. Washington, DC: USAID.

USAID (2013) Integration: Pilot Projects Merge Climate and Development. Available online at https://www.usaid.gov/sites/default/files/documents/1865/GCC_Integration_30oct13.pdf.

USAID. (2014a). *Assessing Climate Change Adaptation in Indonesia. A review of climate vulnerability assessments conducted by USAID/Indonesia partners (2010-2013).* Available online at: http://pdf.usaid.gov/pdf_docs/PA00KD6T.pdf. Accessed August

USAID. (2014b). *Climate-Resilient Development (CRD): A Framework for Understanding and Addressing Climate Change*. Available online at http://pdf.usaid.gov/pdf_docs/pbaaa245.pdf

USAID. (2015a). *Climate Change How-to Guide (Version 1.0): Project and Activity Design for Climate Change Adaptation Funding*. Available online at http://pdf.usaid.gov/pdf_docs/PBAAD775.pdf

USAID. (2015b). *Compendium of Lessons Learned from ARCC Climate Change Vulnerability Assessments*. Available online at: http://community.eldis.org/.5b9bfce3/Integrated%20ARCC%20Compendium_CLEARED.pdf. Accessed August 2015.

ANNEX C: ASSESSMENT OF ADHERENCE TO USAID BEST PRACTICES AND LESSONS LEARNED

Using information gathered during the review of USAID guidance and frameworks (each described in Annex B), we synthesized information related to USAID best practices and lessons learned for CCA programming into a list of criteria (see Table 3). These criteria were categorized according to the five steps in the CRDF Guide: scope, assess, design, implement and manage, and evaluate and adapt. The source of each criterion is shown in Column 3. They are also organized with respect to whether the criterion supports credibility, salience or legitimacy according to the ARCC Lessons Learned Report (Column 1).

As a result of our analysis, we rated each case study of CCA programming (each described in Annex D) against each criterion according to the evidence we found (Table 3, Columns 4–8):

- Yes-Written or Yes-Interview (Y-W or Y-I) indicates that we found evidence that the criterion was met;
- Somewhat (S) indicates that the criterion was partially but not fully met (for example, if a few stakeholders were consulted but not a full range, we would mark “S” for the best practice “Involve key stakeholders in the design of the CCVA”);
- NO indicates that we found explicit evidence that the criterion was not met; and
- No Evidence (NE) indicates that we could not find any or sufficient information to clearly determine whether or not the criterion was met.

Desk review and key informant interviews provided more evidence for the first three CRDF steps of scope, assess and design than for the last two steps of implement/manage and evaluate/adapt. Additional information is needed to more completely assess CCA programming adherence to the criteria for these last two CRDF steps.

Table 2. Assessment of Adherence to Best Practices and Lessons Learned

Column 2 lists the best practices and lessons learned found in the frameworks listed in Column 3. Column 1 indicates whether the best practice contributes to Credibility (C), Salience (S) or Legitimacy (L). Columns 4–9: Y (yes – fully achieved); S (somewhat achieved); NO (not achieved); NE (no evidence found); -W (assessment based on written materials); -I (assessment based on key informant interviews).

S,C,L[2]	Best Practice and Lessons Learned for CCVA and CCA	Relevant Framework[3]	Dominican Republic	Indonesia	Limpopo	Malawi	Mekong	Uganda
1. SCOPE								
S	• Identify priority development goals	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
S	• Identify key inputs to achieving development goals	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
C	• Identify climate and non-climate stressors	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
C	○ Identify existing CCVA and CCA processes, products and knowledge relevant to development goals for this sector and geography	Guide	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
C	○ Identify climate stressors (relevant to the achievement of development goals) early in the scoping process	CRDF, Guide	Y-W	Y-I	Y-W	Y-W	Y-I	Y-W
C	○ Identify non-climate stressors (relevant to the achievement of development goals)	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
C	○ Identify relevant interactions between climate and non-climate stressors	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
S,L	• Identify needs and opportunities through an understanding of the social and political context of the CCVA	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
L	○ Engage key stakeholders in scoping	CRDF	Y-W	Y-W	Y-I	Y-W	Y-W	Y-I
C	○ Reach early agreement on time horizon of climate projections	ARCC	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
S	○ Gather and validate input from decision makers about their information needs regarding the CCVA	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-I
S	○ Gather and validate input from decision makers about their intended uses of the CCVA	CRDF	Y-I	Y-I	Y-W	NE	NE	NE

[2] We only categorized best practices into primary contribution to credibility, salience and legitimacy for the first three design steps to correspond with the proposed TOC for USAID's CCA work (Figure 1 of the technical report).

[3] CRDF = Climate-Resilient Development Framework; Guide = The How-To Guide for Designing USAID Climate Change Adaptation-Funded Projects; ARCC = ARCC Lessons Learned Report Findings.

S,C,L[2]	Best Practice and Lessons Learned for CCVA and CCA	Relevant Framework[3]	Dominican Republic	Indonesia	Limpopo	Malawi	Mekong	Uganda
	findings							
L	○ Conduct literature review to identify best practice for operating and engaging stakeholders within the given context	CRDF	NE	NE	NE	NE	NE	NE
L	○ Conduct other scoping activities to identify best practice for operating and engaging stakeholders within the context	ARCC	Y-I	Y-W	Y-W	Y-W	Y-I	Y-W
S	○ Include an institutional analysis	CDRF	NE-W	Y-W	Y-W	Y-W	NE	Y-W
L	○ Involve key stakeholders in the design of the CCVA	CDRF	Y-W	Y-W	Y-W	Y-W	Y-I	Y-I
L	○ Identify knowledge brokers and champions early in the process and engage them fully	ARCC	Y-I	Y-I	Y-I	Y-I	Y-I	Y-I
L	○ Ensure that stakeholders engaged through the CCVA process represent the full range of appropriate technical sectors and levels of society	ARCC	Y-W	Y-W	Y-I	NE	NE	NE
2. ASSESS								
C	• Define research questions that inform the development goal, inputs and climate and non-climate stressors identified during Step 1 (Scope)	ARCC	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
C	○ Build interdisciplinary CCVA team	ARCC	Y-W	S-I[4]	Y-W	Y-W	Y-W	Y-W
C	• Select methods	CRDF						
S	○ Directly assess the vulnerability of inputs identified to achieve the development goal	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-I
C	○ Conduct climate analysis early in CCVA process	ARCC	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
C	○ Know data required and the data sources before CCVA teams begin assessments	CRDF, ARCC	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
S	○ Ensure that CCVA timeframe (how long it takes to conduct the assessment) is appropriate for results to be useful	Guide	Y-W	Y-W	Y-W	Y-I	Y-I	Y-I
C	• Assess vulnerability	CRDF						

[4] CCVA targeted a single sector – water and water infrastructure. CCVA team was diverse within this specific context but not broadly diverse.

S,C,L[2]	Best Practice and Lessons Learned for CCVA and CCA	Relevant Framework[3]	Dominican Republic	Indonesia	Limpopo	Malawi	Mekong	Uganda
C	○ Use the best available, highest-quality data, information, and recognized methods and analysis procedures	ARCC	Y-W	S-I[5]	Y-W	Y-W	Y-I	Y-I
C	○ Ensure strong and consistent leadership through the CCVA process	ARCC	Y-I	Y-I	Y-W	Y-W	Y-I	Y-I
L	○ Provide opportunities for stakeholders to engage with climate experts during the CCVA process	ARCC	S-I[6]	Y-W	Y-W	S-I	S-I	S-I
C	○ Assure that assessment teams integrate their findings across disciplines	ARCC	Y-W	S-I[7]	Y-W	Y-W	Y-W	Y-W
C	○ Clearly communicate data gaps, limitations of methods, and uncertainties in results	ARCC	NE	NE	NE	NE	NE	NE
S	• Provide actionable information	ARCC	S-I[8]	Y-I	S-I	S-I	S-I	S-I
S	• Develop climate change scenarios that are plausible	ARCC	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
S	• Identify areas, resources, populations or enterprises most likely to be negatively affected by significant climate shifts (i.e., climate change "hotspots")	CRDF	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
S	• Structure and communicate CCVA findings to directly address critical, expressed needs	ARCC	Y-I	Y-W	Y-W	S-W[9]	Y-I	Y-I
S	• Provide data in a way that is accessible and documented for use in the CCA design process	ARCC	Y-W	Y-W	Y-W	NE	Y-W	Y-W
S	• Demonstrate an understanding of political, social, economic, cultural and institutional contexts in which the CCVA is embedded	CRDF, ARCC	Y-I	Y-W	Y-W	Y-W	Y-I	Y-I
S	• Release early results in subsectors or subcomponents	ARCC	Y-I	Y-W	NE	NE	Y-W	NE

[5] Data used were the best available, however, there was a serious lack of available hydrological data. This lack of baseline data prevented downscaling of climate models.

[6] In the case of the ARCC studies, stakeholders were consulted at the beginning and end of the CCCA but not throughout.

[7] CCVA targeted a single sector – water and water infrastructure – so there was limited need for integration across sectors.

[8] In most cases, the recommendations provided in CCVAs were very broad. Additional analyses, downscaling, groundtruthing and/or participatory decision-making processes were required and used to identify and design specific adaptation interventions appropriate for the stakeholder or beneficiary group. This was not the case for the IUWASH project because individual CCVAs were conducted in each municipality at the PDAM scale.

[9] Findings were not structured and communicated in a way that paired proposed adaptations with specific climate impacts—particularly for those that appeared to be the most severe and unmitigated as of the date of the CCVA.

S,C,L[2]	Best Practice and Lessons Learned for CCVA and CCA	Relevant Framework[3]	Dominican Republic	Indonesia	Limpopo	Malawi	Mekong	Uganda
	when ready							
S	• Release key information to coincide with important policy decisions or the relevant ministry's program cycle in the host country	ARCC	Y-I	Y-W	NE	NO-I	Y-I	Y-I
S	• Release information about the CCVA in a timely manner aligned with policy, planning and procurement schedules within USAID	ARCC	Y-I	NO-I	NO-I	S-I[10]	NO-I	Y-I
C	• Describe data as being useful, with a reasonable level of confidence	ARCC	Y-I	Y-W	Y-I	NE	Y-W	Y-W
S	• Pre-identify funds to implement selected adaptation activities		Y-I	Y-W	Y-W	NO-I	Y-W	Y-I
3. DESIGN								
L	• Involve legislative members, since members will have the final say for government budgets	ARCC, Guide	NE	NE	NE	NE	NE	NE
C	• Identify adaptation options [long list]	CRDF, Guide	Y-W	Y-W	Y-W	Y-W	Y-W	Y-W
S	• Provide adaptation options that are actionable in the context of project design	CRDF	S-W[11]	Y-I	S-W	S-W	S-W	S-W
C	• Select evaluation criteria [to identify one or a portfolio of adaptation interventions that will be funded and implemented]	CRDF	NO-W	Y-W	Y-I	Y-I	Y-I	Y-I
C	• Evaluate adaptation options	CRDF	NO-W	Y-W	Y-I	Y-I	Y-I	Y-I
L	• Use participatory processes (inclusion of stakeholders) to prioritize adaptation options	CRDF, ARCC	NO-W	Y-W	Y-I	NO-I[12]	Y-I	NO-I[13]
C	• Select adaptation option [i.e., adaptation intervention] or portfolio of options	CRDF, Guide	Y-I	Y-W	Y-I	Y-I	Y-I	Y-I
S	• Select adaptation interventions that clearly and explicitly address vulnerabilities and support achievement of development goal(s)	Guide	Y-I	Y-W	Y-I	Y-I	Y-I	Y-I

[10] Results supported initiation of one project (FISH) but otherwise have not corresponded with project cycles inside or outside of USAID.

[11] In most cases in this row, adaptation options were provided as general guidelines, and therefore were not immediately actionable. Further processes were then used to evaluate options and identify and design interventions.

[12] Adaptation options were evaluated and selected within the Mission. Stakeholder-consultation processes may have been used, but they were not reported.

[13] Adaptation options were evaluated and selected within the Mission. Stakeholder-consultation processes may have been used, but they were not reported.

S,C,L[2]	Best Practice and Lessons Learned for CCVA and CCA	Relevant Framework[3]	Dominican Republic	Indonesia	Limpopo	Malawi	Mekong	Uganda
S	• Design adaptation interventions to be integrated into development projects and activities rather than existing as stand-alone interventions	Guide	Y-I	Y-W	Y-I	Y-I	NE	Y-I
4. IMPLEMENT AND MANAGE								
	• Build on implementation and management of best practices	CDRF	NE	NE	NE	NE	NE	NE
	• Include quantitative and qualitative indicators	ARCC	NE	NE	NE	NE	NE	NE
	• Align project with government planning cycles when designing program work plans	ARCC	Y-I	Y-W	NE	NE	NE	NE
	• Use pilot projects. This may require appropriately developed monitoring systems so that results and lessons can be shared	Guide	Y-W	Y-W	Y-W	NO[14]	Y-I	NO[15]
	• Build flexibility and adaptive management into the project design and implementation	CRDF, ARCC	Y-I	Y-I	Y-W	NE	Y-I	Y-I
	• Incorporate climate information into baseline values and indicators	CRDF, ARCC	NE	NO[16]	NE	NE	NE	NE
5. EVALUATE AND ADAPT								
	• Build on established evaluation practices	CRDF	NE	NE-W	Y-I	Y-I	Y-I	Y-I
	• Measure performance	CRDF	NE	NE-W	Y-I	Y-I	Y-I	Y-I
	• Regularly monitor and evaluate progress following the monitoring and evaluation plan	Guide	NE	NE-W	Y-I	Y-I	Y-I	Y-I
	• Evaluate impacts of actions on vulnerability	CRDF	NE	S-I[17]	NE	NE	S-I[18]	NE
	• Involve stakeholders in adaptive management activities	Guide	NE	Y-W	Y-I	NE	Y-I	NE

[14] Adaptation project is full-scale and stand-alone, although it may have unidentified pilot components.

[15] Adaptation projects are full-scale and stand-alone, although they may have unidentified pilot components.

[16] Project does not have baseline data to use.

[17] Using initial data, but without ability to measure against a baseline.

[18] Using proxy indicators for resilience and adaptive capacity.

ANNEX D: CASE STUDY DESCRIPTIONS AND SITUATION MODELS

We examined six case studies, each of which included all of the five steps in the CRDF. Each project is different in many ways, but all had completed the Scoping, Assessment, and Design steps at the time of writing. Scope and Assess were typically well documented in each project's written materials. In some cases, Design was also well described. All of them had initiated the Implement and Manage step; however, in most cases the majority of evidence of this step came from key informant interviews rather than written materials. The projects varied in terms of the extent to which they were able to Evaluate and Adapt, and all evidence of this came from key informant interviews. In most cases, this was a function of timing: many of the CCVAs were only completed in 2013 or 2014, leaving little time to implement the last two CRDF steps, let alone report on them.

LOWER MEKONG BASIN ARCC PROJECT

CCVA Purpose/Development Goals Addressed: Mekong ARCC is a five-year project (2011–2016) funded by the USAID Regional Development Mission for Asia. The Mekong ARCC project was initiated in response to USAID's Asia–Pacific Regional Climate Change Adaptation Assessment, conducted in 2010. The CCVA provides the scientific base for identifying the environmental, economic and social effects of climate change in the Lower Mekong Basin (LMB). Using the information, Mekong ARCC assists highly exposed and vulnerable rural populations in ecologically sensitive areas to adapt to climate change impacts on agriculture, fisheries, livestock, ecosystems and livelihoods. For the purpose of the case study, we restricted our analysis to the CCVA of the agriculture sector and agricultural livelihoods (Figure 2, brown ovals on right-hand side).

CCVA Methods: For each of the target species and systems, the exposure, sensitivity, impact and adaptive capacity were defined using the baseline and climate threat modeling results (based on the climate modeling results of the Integrated Water Resources Management (IWRM) watershed model for the whole Mekong Basin) and matrix support tools. After describing and analyzing the main agricultural production systems, researchers developed a vulnerability assessment of the main crops across the entire LMB using a combination of quantitative and qualitative methods. The International Centre for Environmental Management (ICEM) conducted the CCVA. Government authorities in the Mekong region largely consider ICEM to be a robust and credible research organization. A large portion of the data was provided by the Mekong River Commission (MRC) Secretariat. The MRC is an intergovernmental agency that works with the governments of Cambodia, Lao PDR, Thailand and Vietnam on joint water resource management.

Results of Vulnerability Assessment:

- **Climate exposure:** As highlighted in Figure 2 (orange boxes with red text), the most important climate exposure factors identified were a delayed and more intense rainy season, increased temperatures, sea level rise in the lowland areas, and a longer and drier dry season. Increased temperatures and increased occurrence of extreme events were also common exposure factors across the basin.

- **Climate sensitivity:** Sensitivities to climate such as drought, water stress, erosion, flooding and salt water intrusion have been observed and are predicted to have increasing effects on crops in the lowland floodplains and mid- to high-elevation zones. Many assessed crops were predicted to change their geographic area of suitability by 2050. For example, rubber, cassava and coffee crops' productive range will move into higher altitudes. In lowland areas, suitability for rainfed rice should improve because drought-prone areas are expected to receive more rain in the future. Climate models predicted increased erosion due to heavier rainfall events in the upland areas, leading to reduced soil fertility.

- **Adaptive capacity:** An assessment of adaptive capacity across the LMB was used to identify eight "vulnerability hotspots" for all sectors assessed. Vulnerability assessments of important crops were then overlaid in these areas to identify the most vulnerable crops within the hotspots.

Adaptation Options: The CCVA team identified six categories of possible adaptation interventions (Figure 2, yellow hexagons), each targeting a different aspect of the agricultural system. These included reducing the impact of non-climate stressors, expanding mitigation measures, and directly addressing the impacts and effects of climate change.

Selection of Adaptation Interventions: The Mekong ARCC team selected two vulnerability hotspots in each country to target its CCA implementation work. Using participatory, bottom-up processes, Mekong ARCC worked with communities to verify climate vulnerabilities at the local level and identify activities that would address top-level needs. Interventions included crop diversification for species resistant to drought and/or flood, improved pig rearing for livelihood diversification and resistance to flooding, use of water meters to improve water supply systems, tree planting to improve sustainable non-timber forest product (NTFP) production, improvements to the traditional integrated rice/shrimp farming system to address sea level rise, water quality monitoring, mangrove planting for shoreline protection, improvements to small-scale water infrastructure to alleviate water stress and flooding, and introduction of climate change awareness and preparedness into existing community-based socioeconomic planning processes.

Implementation of Adaptation Interventions: Implementation began in January 2015 in Cambodia, Vietnam and Thailand and had been running for nine months at the time of writing. In Lao, implementation began in January 2015 but was hindered from April–September due to rainy season road closures. Each of the interventions is implemented as a pilot study, with a clear M&E strategy and a flexible approach to accommodate adaptive management. Mekong

ARCC uses proxy-indicators to measure improvements in socioeconomic resilience that include an adaptive capacity scale developed for and by all project partners and indicators of human well-being and adaptation readiness.

Summary of Uptake: The project targets for uptake are the host governments (local and national), regional partners such as the MRC, USAID's Regional Development Mission for Asia (RDMA) and bilateral missions in Cambodia and Vietnam, and international development organizations and donors. At the local level, the bottom-up process of adaptation identification supports community and local-level buy-in for the interventions running so far. However, as the project is relatively early in the implementation phase, little evidence of local-level uptake of CCVA results and recommendations has been gathered to date. USAID reports that the Government of Cambodia included the Mekong ARCC study in a revision of its national climate change strategy and Vietnam and Thailand indicated that they may promote the improved shrimp–rice farming methodologies. Within USAID, RDMA's Urban Development and Resilience Program responds to some CCVA findings and considerations. RDMA also collaborated with USAID–Cambodia to support the integration of the CCVA results into Cambodia's Feed the Future (FtF) programming. Finally, evidence exists that the United Nations World Food Programme, Stockholm Environment Institute, Asian Development Bank's (ADB) Greater Mekong Subregion Core Environment Program, and International Union for the Conservation of Nature (IUCN) all use the Mekong ARCC CCVA report to guide analyses, planning and programming.

Factors that Contributed to the Uptake of the CCVA Results: Respondents in the key informant interviews indicated that the following factors contributed to uptake and/or could have contributed to improved uptake of CCVA results, both within and outside of USAID:

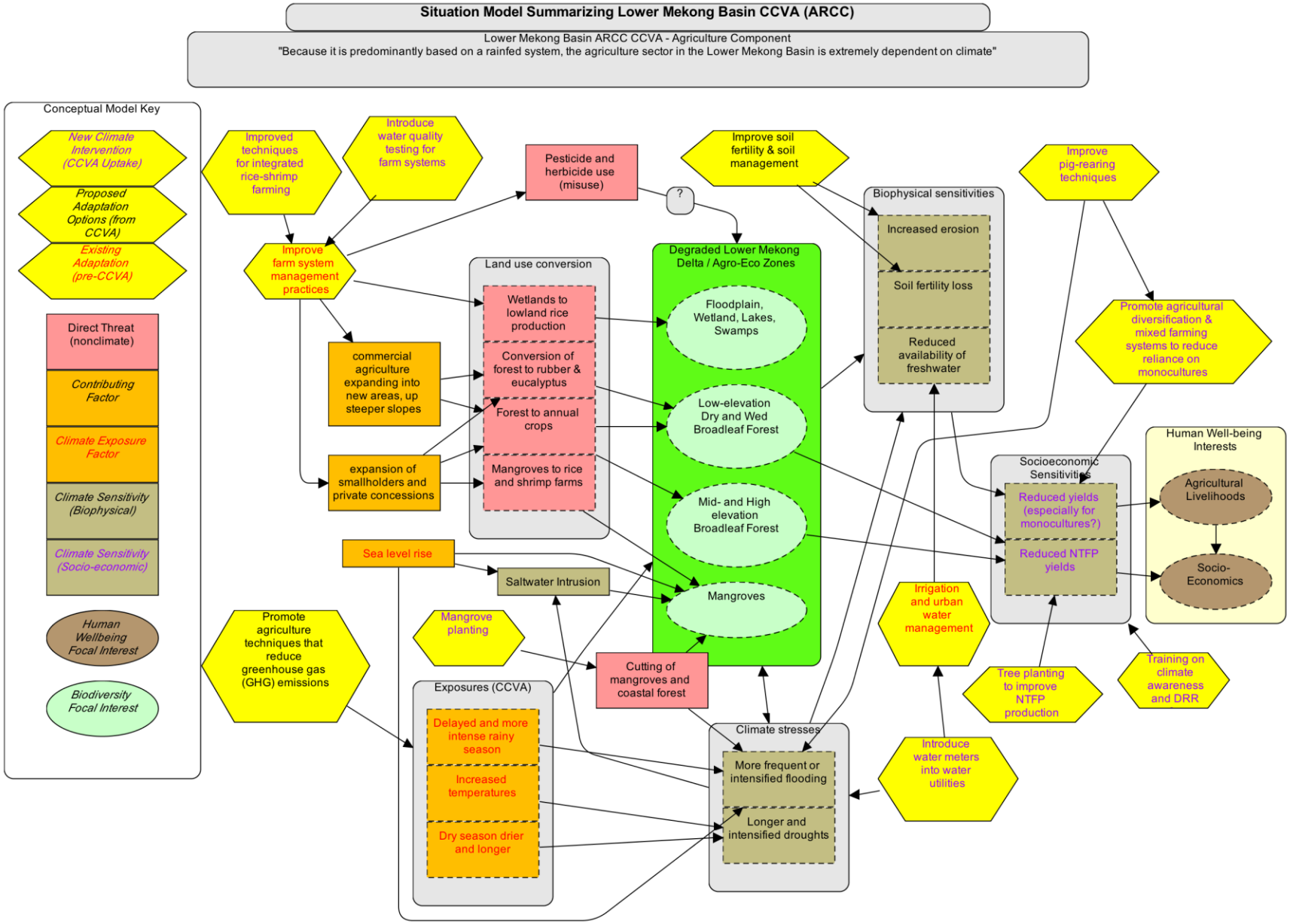
- Ensure early engagement with stakeholders and beneficiaries. Effective and sustained participatory planning increases the chances of sustainability, validates results, keeps the process on track, and ensures relevant results.
- Cast a wide net at first to identify uptake targets. This is because you can do everything that should lead to uptake and still not achieve it. Potential targets can and should range from large multinational organizations to community leaders.
- Share information transparently and encourage others to share data and information. Organizations that contribute data and other information to the CCVA are more likely to incorporate results and recommendations into their own planning and programming.
- Recognize the importance of government-to-government relationships. Uptake can be directly helped or hindered based on formal and informal relationships between governments and government representatives at all levels.
- Ensure that the CCVA has a champion who is motivated to explain results and promote recommendations repeatedly, in different ways and in multiple fora, over a long period of time (one year or more). For uptake within USAID, this champion should be a USAID employee. For uptake outside of USAID, this champion can be a USAID employee or an implementing partner.

- At the national government level, credibility, legitimacy and salience are built on a high level of technical competence and relevance to national needs and processes.
- At a subnational level, credibility, legitimacy and salience require subsequent downscaling, validation and prioritization of results and selection of top-priority adaptation interventions through appropriately scaled participatory processes. Here, engaging and working through respected local partners to bridge science into the communities also contributes to uptake.
- Be open to changes in strategies and activities and adjust when needed to improve the chances of uptake. Flexibility in implementation is fundamental to success.
- Timing is critical to uptake. Understand and align with budgeting cycles of host governments. Release or share information when new information is sought, such as during planning and strategic development processes.
- Communicate early and often as CCA progresses. Work to ensure that USAID, project partners, outside groups and agencies, and host governments are regularly reached and remain aware of results, successes and challenges.

Assessment: In each hotspot, participatory processes were used to identify top-level needs in that area and prioritize adaptation interventions. Selected interventions addressed specific sensitivities related to agriculture (shrimp–rice farming, pig rearing, and issues related to low crop diversity), freshwater management, NTFP production, and coastal protection. Adaptive capacity was improved in target communities with training about climate change and CCA strategies.

At the same time, a review of the situation model in Figure 2 reveals that some contributing factors and CCA options identified in the CCVA report are not addressed in the current project. For example, expansion of commercial and smallholder agriculture up mountain slopes, overuse or misuse of pesticides and herbicides in agriculture, and loss of topsoil and soil fertility were all found to be important contributors to ecological and socioeconomic sensitivity, but are not explicitly addressed in the adaptation plans.

Figure 2. Lower Mekong Basin Situation Model



INDONESIA IUWASH PROJECT

CCVA Purpose/Development Goals Addressed: The USAID Indonesia Urban Water, Sanitation and Hygiene (IUWASH) Project (2011–2016) is a US$47 million, 60-month effort to improve human well-being (brown ovals in Figure 3) through access to safe water and sanitation by expanding service access via municipal water utilities (PDAMs). The anticipated project outcomes were: (1) two million people in urban areas gain access to improved water supply; (2) two hundred thousand people in urban areas gain access to improved sanitation facilities; and (3) the per unit water cost paid by the poor in targeted communities decreases by at least 20 percent through improved services.

Upon initiation of IUWASH, implementers found that many PDAMs were already experiencing shortages of raw water for treatment and distribution. Because this shortage was expected to worsen with climate change, the implementation team opted to conduct CCVAs in 20 municipalities. Using Global Climate Change funds, US$1 million was put toward the CCVA activity. CCVA results specifically supported decision making to achieve outcomes (1) and (3).

CCVA Methods: The CCVA was implemented via two sequential analyses: (1) an evaluation of the current situation to create a baseline scenario of water provision ability, supply and demand; and (2) development of a climate change-driven scenario of water provision ability, supply and demand. The implementation approach was risk-based (i.e., not using the V=f(E,S,AC) model[19]); bottom-up (emphasizing the use of local knowledge informed by science-based analysis); local-scale (scale aligned with the size of the municipal water utility); capacity development-oriented (engaging local universities and water utilities in the process to build local capacity); and uptake-focused (intentionally closely aligned with PDAM budgeting processes and needs).

Results of Vulnerability Assessment: Land use change, insufficient or ineffective PDAM management, and pollution were found to be the most important non-climate stressors to clean water supply. Because of predicted changes in rainfall patterns (Figure 3, orange boxes with red text), landslides and flooding were found to be the most important climate change impacts. Demand for water services was projected to outstrip supply in approximately 2030. The major "vulnerability hotspots" for Mojokerto were found to be concentrated in upstream areas already vulnerable to decreased flows. This trend was predicted to worsen with climate change, as changes in precipitation patterns are likely to reduce groundwater infiltration. Built assets for the distribution and storage systems in three areas were predicted to face increasingly higher levels of risk to flood and landslides as storm events become more extreme.

Adaptation Options: A long list of adaptation options were identified following the CCVA process. Among these, some were actionable at the local government scale. These included improving water availability with infiltration ponds, repairing and improving maintenance of water

[19] Formula commonly used to communicate the concept of vulnerability expressed as a function of [(exposure + sensitivity) - adaptive capacity].

intakes for the PDAMs, and creating new raw water management policies. Other adaptation options identified were beyond the scope of IUWASH because they would require landscape-scale or interjurisdictional planning and cooperation.

Implementation of Adaptation Interventions: Using multi-criteria analysis based on the PDAMs' existing planning process, stakeholders worked from a long list to identify high-priority interventions or options. Following this process, the PDAMs in local governments agreed to initiate implementation of several key activities (Figure 3, yellow hexagons). The first activity initiated was to improve the monitoring of targeted fresh water spring flow levels to compile robust historical data and provide an improved baseline for future analyses and decision making. Additionally, IUWASH and the Coca-Cola Foundation Indonesia initiated a successful effort to build infiltration ponds. Working at five locations, the project worked with local communities to build about 1,650 ponds, and was projected to build another 1,700 by the end of 2015.

Summary of Uptake: Among target groups (PDAMs, local government and community groups), uptake and use of CCVA results is considered quite high from a direct adaptation and from a local policy perspective. IUWASH observed community groups building additional ponds using their own initiative, funds and labor. In addition, many of the PDAMs that participated in CCVAs are using the findings to set up new regulations for raw water use and protection. Within USAID, uptake of the CCVA results is evidenced by the existence of a follow-on project that supports the U.S. government's Global Climate Change Initiative. *Adaptasi Perubahan Iklim dan Ketangguhan* (APIK), a climate change adaptation project, was in procurement at the time of writing. Among its three project sites, APIK will be co-located with IUWASH in East Java and was designed to address climate change adaptation through DRR at the landscape scale.

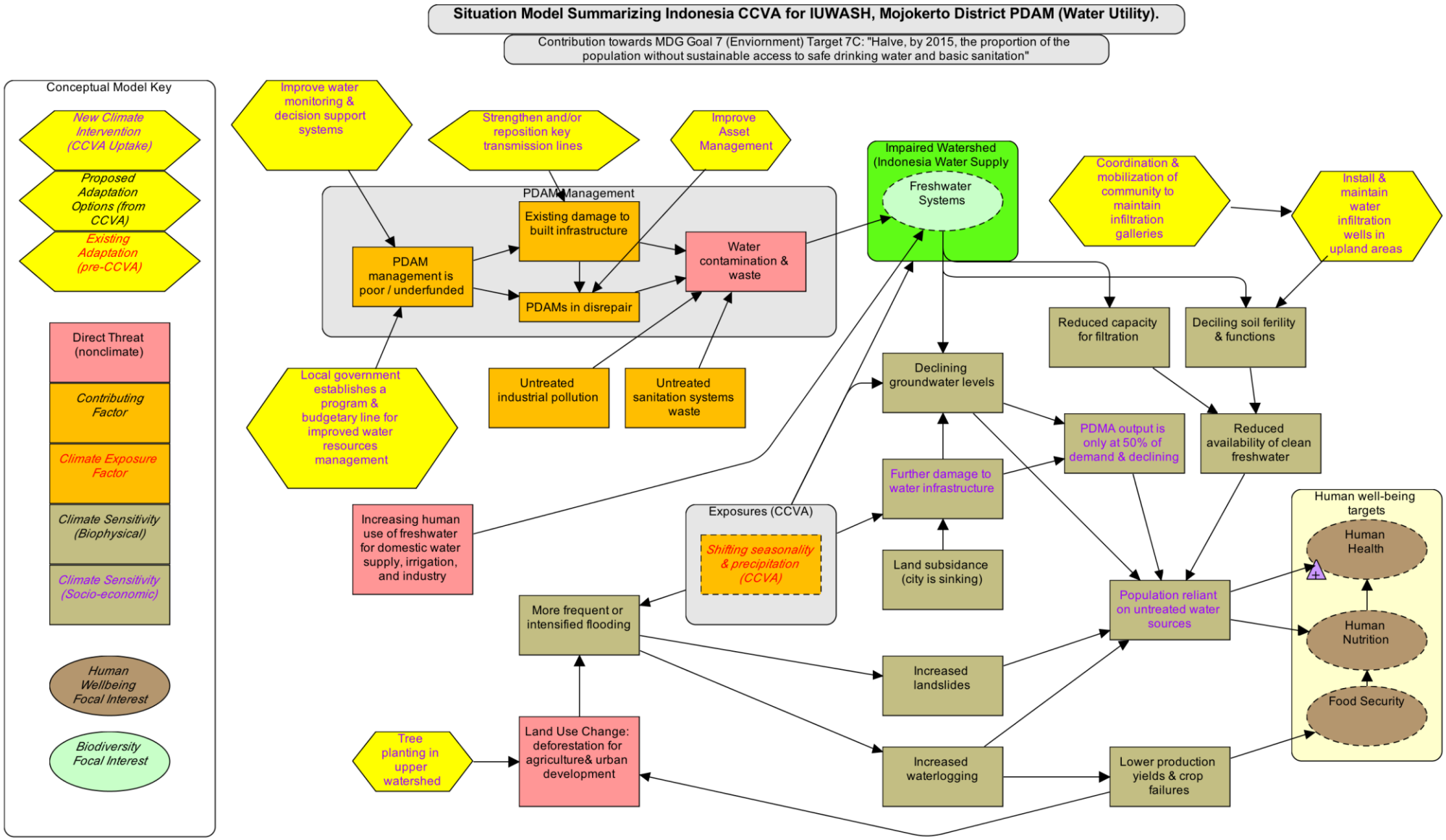
Factors that Contributed to the Uptake of the CCVA Results: Respondents in the key informant interviews indicated that the following factors contributed to uptake and/or could have contributed to improved uptake of CCVA results, both within and outside of USAID:

- Integrate CCA into a locally important issue. On Java and Sumatra, ensuring access to enough clean water is a top priority for most residents and municipalities.
- Start work in places where people already experience climate-related or climate-linked issues. In this case, PDAMs that were already having issues with raw water supply were especially motivated to implement adaptation interventions.
- Keep CCVA results simple and practical. Due to data constraints such as a lack of long-term water data in target areas, detailed downscaled climate change models were not available for use. Therefore, CCVA results were more general. This worked as an advantage, as overly complicated results have been observed to reduce uptake at the local government level.
- Use a team of locally respected experts to develop and communicate guidance to municipalities. In this case, involvement of experts from the hydrology department at a local university lent credibility to the studies and results.
- Select simple, pragmatic, practical adaptation interventions that local government, PDAMs and communities can undertake on their own.

- Select adaptation interventions that show results quickly and solve multiple problems. For IUWASH, communities with infiltration ponds saw immediate results during the dry season: more raw water was available longer to downstream communities with hillside and hilltop catchments. The ponds also gained popularity because they reduced flooding for upstream communities that may or may not have been experiencing water stress.
- Anticipate that local government leaders have a limited number of external projects that they can engage with at one time. This can make integrated projects like IUWASH more attractive than stand-alone adaptation projects that may not align with local development goals and needs.

Assessment: A very strong relationship exists between the adaptation options identified and those implemented. However, a review of the situation model in Figure 3 reveals that some key drivers of increased sensitivity are not addressed in the current suite of interventions. For example, two important direct non-climate threats, increasing water use and land use change for agriculture and urban development, will continue to stress the water system. It is unclear whether the selected interventions alone—focused exclusively on water supply—will continue to meet the increasing demand over time.

Figure 3. Indonesia IUWASH Situation Model



UGANDA ARCC PROJECT

CCVA Purpose/Development Goals Addressed: The Uganda Climate Change Vulnerability Assessment Report was produced under Uganda ARCC in August 2013. The assessment formed part of the implementation of the Feed the Future Uganda strategy. Its purpose was to improve understanding of the impact of climate change on rural livelihoods in Uganda to inform food security and agricultural programming and investment decisions by focusing on select crop value chains in six USAID/ FtF priority districts. Eight crops were selected for assessment. The key focus of this assessment was to investigate how projected changes in climate will affect important agricultural value chains within Uganda, which in turn affect the livelihoods that rely upon these value chains.

CCVA Methods: The six FtF priority districts were selected based on important cropping systems, representing different agro-ecological zones, and proximity to weather stations that have collected consistent rainfall and temperature data. The study employed a mixed-method approach that included: historical climate analysis and projections; a value chain analysis of eight key crops and a phenological review (i.e., how climate change affects the growth cycle of each of those crops); a livelihood survey of 800 households; 80 focus group discussions; key informant interviews with representatives from district and national levels; and a desktop assessment of water use for agriculture. Of these eight crops, three were FtF crops and the remaining five were identified in consultations during scoping.

Results of Vulnerability Assessment:

- **Climate exposure:** The most important climate exposure factors identified by the assessment include changes in the timing of rainfall, increased temperatures and more rainfall in the dry season (Figure 4, orange boxes with red text).
- **Climate sensitivities:** One of the greatest climate sensitivities (Figure 4, orange boxes with purple text) is the increase in crop disease and pests, leading to a loss in productivity and crop loss during post-harvest storage. Non-climate related stressors exacerbate climate sensitivities (Figure 4, orange boxes with black text). These stressors were found to include poor-quality inputs and inadequate post-harvest storage facilities. Other non-climate pressures, such as low education and lack of access to finance and land, combined with climate stressors, were identified as important factors also influencing farm income.
- **Adaptive capacity:** The assessment found that having diverse sources of income (e.g., crops and livestock), shifting planting dates, and having more off-farm income as a result of being proximate to urban areas all increased farmers' adaptive capacity.

Adaptation Options: Following a long period of stakeholder consultation and consensus-building, the assessment team developed a preliminary long list of adaptation options that fell into several categories (Figure 4, yellow hexagons). These included improving policy, supporting research and advancing community development. Adaptation options included building the capacity to use climate information, which one would assume would help provide more detailed information on the crop value chain sensitivities. Other adaptation options

included supporting research on stress-tolerant and disease-resistant crops, developing farm management strategies, and developing post-harvest strategies to directly intervene on the identified climate-related sensitivities. Other options, such as strengthening loan and insurance programs and strengthening farmers' organizations, potentially act on the non-climate stressors to build farmers' resilience. Investing in less climate-dependent livelihoods was identified as an adaptation option that could build farmers' adaptive capacity.

Implementation of Adaptation Interventions: Within USAID, adaptation interventions were prioritized and selected based on alignment with USAID–Uganda's country strategy and contribution to its competitive advantage. Four FtF activities were initiated: Education and Research to Improve Climate Change Adaptation (ERICCA); Enhancing Climate Resilience of Agricultural Livelihoods, Strengthening Meteorological Services, Products, and Use in the Agriculture and Water Sectors; and Enabling Environment for Agriculture (EEA). ERICCA supports Uganda's university system to be a hub of academic excellence around climate change and disseminates new climate knowledge as broadly as possible. EEA aims to increase the adaptive capacity of central and district government officials who are key agricultural policy makers. This activity builds directly on the CCVA study, using it as the foundational information on which mainstreaming work within the district local governments is based. The Agricultural Livelihoods activity supports the International Institute for Tropical Agriculture (IITA) and National Agricultural Research Organisation (NARO) to conduct field-based research and inform national, community and farm-level decision making about climate risk, identify appropriate climate change adaptation technologies and interventions, and identify and assess the policies that affect farmers' vulnerability. The Meteorological Services activity works to improve the meteorological information value chain and enhance the capacity of the agriculture and water sectors to use information provided.

Summary of Uptake: The Uganda ARCC CCVA was designed and implemented to inform programming within USAID and to identify ways to use Global Climate Change funds to align with and support agricultural activities. In addition to the three projects listed above, ongoing FtF–Uganda activities incorporated CCVA results by internally developing climate adaptation plans.

At the same time, the CCVA was designed to support project partners and other organizations. Outside of USAID, groups such as the World Bank, GIZ, and the Ugandan government's National Planning Authority and Ministry of Agriculture expressed interest in using the CCVA, and a USAID implementing partner used it as baseline data for research efforts. At the district level, the CCVA was released while target districts were undergoing strategic planning. As a result, USAID's EEA activity supported 22 districts to integrate climate change into their district plans. The Food and Agriculture Organization (FAO) amplified these results working in additional districts.

Factors that Contributed to the Uptake of the CCVA Results: Respondents in the key informant interviews indicated that the following factors contributed to uptake and/or could have contributed to improved uptake of CCVA results, both within and outside of USAID:

- Ensure stakeholder involvement in scoping and analysis steps.
- Produce lots of different types of knowledge products and materials that range from big reports to short executive summaries, and results summaries tailored to different geographies and sectors.
- Present results to different donor groups and to government agencies from national to district levels. Without communication, the results will just sit on a shelf.
- Within USAID Missions, ensure a champion to continually remind colleagues about the study, its results and its relevance to projects across sectors and geographies. Work closely across program teams to identify strategic ways to incorporate results.
- Within USAID Missions, continue educating team members about the importance and impacts of climate change.
- Multistakeholder processes to support CCVAs take a lot of time, energy, and work, especially when it is difficult to reach consensus. In the case of Uganda, it took about 18 months to move through the CCVA process.

Assessment: The four FtF activities developed clearly address aspects of vulnerability. ERICCA, the Meteorological Services activity and EEA address vulnerabilities related to adaptive capacity at the levels of central and district government agencies, national tertiary education and research. The fourth, Enhancing Climate Resilience of Agricultural Livelihoods (ECRAL), supports climate-based decision making by farmers and other actors in agricultural value chains. ECRAL activities include: generating calibrated suitability models and maps for maize, beans and coffee; developing and testing groups of climate adaptations to crop selection and production, soil fertility and water management, and crop storage; testing adaptation trade-offs and synergies of diversification options; and understanding which policies affect farmers' vulnerability and adaptive capacity at the local level.

.

Figure 4 shows that some sensitivity factors identified for both agricultural systems and agricultural communities may not be addressed within the USAID strategy. For example, selected interventions (yellow hexagons with text in purple and red) do not address sensitivity to flooding or land conversion due to population increase, which was cited as an important driver of increasing vulnerability. Several reasons explain why this may be the case. Most importantly, USAID does not operate in a vacuum. On the contrary, discussions with key informants revealed that several actors work in Uganda to address climate change vulnerability, including other bilateral donors, multilateral organizations, private foundations, the Government of Uganda and other civil society groups. USAID strategically selected interventions based on several factors including: (1) where the Mission found it would make the greatest impact; (2) limitations in the types of funding available (that is, in both FtF and Global Climate Change funds) to implement activities; and (3) priorities of the host country government and civil society stakeholders.

Figure 4. Uganda ARCC Situation Model

SOUTHERN AFRICA LIMPOPO RIVER BASIN RESILIM PROJECT

CCVA Purpose/Development Goals Addressed: Resilience in the Limpopo Basin (RESILIM) is a five-year (2012–2017) project designed to improve transboundary management of the Limpopo River Basin to enhance the resilience of people and ecosystems, thereby increasing sustainable economic growth. RESILIM collaborates and coordinates closely with the Limpopo Watercourse Commission (LIMCOM), an advisory group to provide a forum for South Africa, Botswana, Zimbabwe and Mozambique to collaborate, coordinate and cooperate on Limpopo water-related challenges. RESILIM also supports the national-level institutions that comprise the transboundary organization. RESILIM was designed to support LIMCOM's five-year IWRM Plan, which focuses on disaster management, water allocation and water quality. RESILIM also supports the Southern African Development Commission's (SADC) CCA Strategy and Revised Protocol on Shared Watercourses.

Methods: The project applies an integrated water resources management (IWRM) framework focused on water-based ecosystem services. Experts at the University of Cape Town downscaled the global climate models. OneWorld, a regional, well-respected consulting firm, led the vulnerability assessment process. To assess climate change vulnerability, the project used a vulnerability mapping approach to create and weight geographic data layers for Exposure, Sensitivity and Adaptive Capacity. Then, vulnerability was calculated as an index of these factors, generating geographic hotspots. Careful peer review by key scientists and local stakeholders of the methodology and results ensured transparency, best practice, alignment with locally understood approaches, and production of validated results.

A sister project, RESILIM-O, includes a CCVA and CCA within one Limpopo subcatchment (the Olifants River). This project will produce finer-scale results using new methodologies grounded in systems thinking.

Results of Vulnerability Assessment: The CCVA identified eight highly vulnerable areas as "resilience action areas" across the Limpopo River Basin. Each of these varied in terms of exposure, sensitivity and adaptive capacity.

- **Climate exposure:** Water scarcity is a dominant theme across the resilience action areas. Climate models on a 2050 time horizon predict that the basin is likely to become drier and warmer. Some models indicate more frequent extremely wet summers. Rainfall events are expected to become heavier, with increased risks of local and regional flooding. Dry spells and droughts are expected to increase in frequency and severity. The projections for tropical cyclones along the Mozambique coast remain uncertain, but cyclones could become more intense.
- **Climate sensitivities:** Sensitivity to water scarcity was found to be highest in areas with high human population density, land degradation, pollution and climate-induced floods and droughts.

- **Adaptive capacity:** A biodiversity assessment indicated that zones of high biodiversity, although vulnerable, act as “water towers” for the basin. Therefore, these areas hold a key to resilience of ecosystems and people within the Limpopo River Basin.

Adaptation Options: Using peer review and a multistakeholder process, the RESILIM project identified a number of adaptation options, which fell into several categories: Building robust, resilient water management institutions and an enabling environment at the basin and national levels; Strengthening political and local economies; Conducting research to fill knowledge gaps; Securing high-altitude catchments to increase infiltration, especially in South Africa; Restoring degraded land to reduce sedimentation; Enhancing water quality; Improving seasonal water forecasting; and Improving groundwater management.

Implementation of Adaptation Interventions: According to materials available to date, several adaptation interventions are being implemented. Some are implemented directly by RESILIM, and others by the sister grant-making project implemented by AWARD. Research activities include: Limpopo Basin environmental flow requirements analysis; basin-wide analysis of the intersections between natural and human systems; and analysis of impacts of water allocation on ecosystem–livelihoods–resilience. Adaptation activities include: priority mangrove restoration in Xai-Xai, Mozambique; and removal of water hyacinth and piloting of an effluent trading scheme to improve water quality. Alternative livelihood activities include: building resilience of communities through marula oil production; supporting an aquaculture program in Chokwe, Mozambique; developing an integrated livelihoods diversification strategy for better resilience of the Great Limpopo Transfrontier Conservation Area (GLTFCA); and supporting charcoal production from water hyacinth. Capacity-building activities include: resilience-building trainings; workshops on knowledge management and information sharing; and development of resilience training modules with the Southern African Wildlife College (SAWC). Resource management and disaster planning activities include: developing community-based DRR in Botswana; integrating resilience into natural resource management in Botswana; developing an integrated climate change response strategy for the Savannah Biome in South Africa; supporting community-based natural resource management in Zambia; and supporting municipal management of the Tati River Subcatchment in Botswana.

Summary of Uptake: Uptake has been greater outside of USAID than inside to date. Within USAID, the RESILIM project is implemented at the program level, ensuring that all program activities are built on the CCVA results. However, this can work against integration of the results into other Mission programs such as health or agriculture. We did not find any evidence of uptake of RESILIM’s results within the relevant bilateral USAID Missions.

At a regional scale, LIMCOM incorporated results and recommendations into its operations, but its ability to implement recommendations is currently hindered because it is a new organization with relatively low capacity. The RESILIM team also acted as ambassadors of the CCVA results and recommendations, informing high-level discussions and products produced for the December 2015 United Nations Conference on Climate Change, COP 21, and products

produced at the World Parks Congress in Sydney in 2014. The information informed Zimbabwe's new Climate Change Strategy and South Africa's updated National Biodiversity Strategic Action Plan. At a more local scale, CCVA results and recommendations were incorporated into several subcatchment management plans and inspired development of a management plan for the Ramotswe Aquifer.

Factors that Contributed to the Uptake of the CCVA Results: Respondents in the key informant interviews indicated that the following factors contributed to uptake and/or could have contributed to improved uptake of CCVA results, both within and outside of USAID:

- Remember that process is as important as the product when it comes to uptake. Multistakeholder processes require a longer project timeline, but improve uptake in the long run.
- To build credibility and legitimacy, ground the process in the local context.
- Ensure robust and consistent stakeholder participation and transparency.
- Partner with regional experts to develop and downscale climate models, develop adaptation options, and facilitate processes and workshops.
- Use locally known and understood CCVA methods when possible, rather than bringing in a new approach.
- Promote data sharing among collaborating groups to improve transparency, buy-in and mutual trust.
- Use a scenario-driven approach to select geographies and work through adaptation options.
- At the local level, downscale and validate larger-scale results to improve salience.
- Align actions and outputs with the needs, approaches and planning cycles of your target groups.
- Provide new information that is useful. This is especially important in information-poor environments, where there is little information available or it is not packaged in a way that is useful.
- Build strong relationships with intended beneficiaries. Ensure a good mechanism for information sharing and exchange.
- Be ambassadors of the information. Take the findings and recommendations and talk to as many groups as you can, from high-level government officials to community groups. Present the findings so that they are relevant to the target group and address their current situation and needs.
- Match the findings and predictions to locally felt conditions. If an area is in drought and the predictions are for drought, the messages of adaptation for drought will resonate, leading to increased uptake.

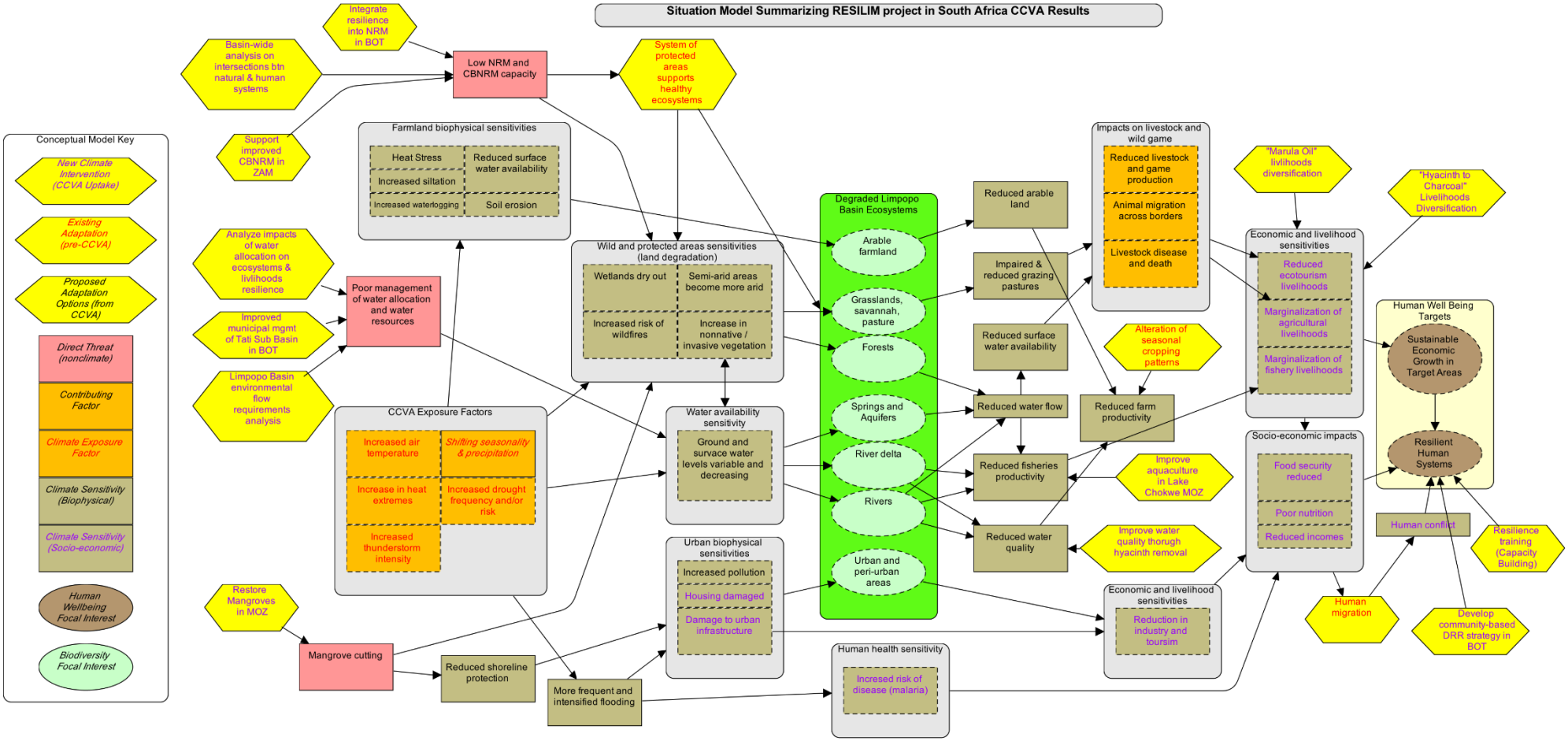
Identified Barriers to Uptake:

- Target groups may not have the capacity to use the information, especially if they are in early stages of development.

- Organizations that are well-developed but single-sector, or government agencies that are restricted to a single sector according to their mandate, may have difficulty understanding the results or taking action on integrated recommendations from multidisciplinary studies.
- Target groups are less likely to accept results if they are counter to the perceived conditions and needs in that area. This could include mismatches in climactic predictions (predictions of rain when the area is in drought), mismatches in recommendations (suggestions for activities that are not high priority for the area), and mismatches in levels of assessed versus felt vulnerability (an area may perceive a high level of vulnerability although it is not identified as being within a vulnerability hotspot). These mismatches could be due to a variety of factors, but they will all lead to uptake challenges in the short or long run.

Assessment: The three most important human-caused direct threats identified during the CCVA were low capacity for natural resource management, poor management of water resources, and mangrove cutting. These are each addressed in the adaptation plan. Additional non-climate threats were identified and addressed, including the proliferation of water hyacinth, an alien invasive species, and the previously unidentified water level reduction in the Ramotswe Aquifer. Interventions were selected in a variety of ways, leading to a mixed evaluation and implementation approach. At the same time, Figure 5 allows us to identify a few gaps in the overall adaptation approach. For example, although agriculture, pastoralism and game ranching are identified as primary livelihoods, relatively few interventions directly address strategic shifts that might reduce vulnerability of traditional methods and along value chains and the quality of grazing or farmland. Vulnerabilities in ecotourism, another important regional livelihood, are also not clearly addressed (although recommendations may emerge from the basin-wide analysis of intersections between human and natural systems). Increased risk of malaria was also identified as an important human health sensitivity that, to date, is not evidenced as part of a linked intervention.

Figure 5. Southern African Limpopo River Basin RESILIM Situation Model



DOMINICAN REPUBLIC ARCC PROJECT

CCVA Purpose/Development Goals Addressed: The Dominican Republic Climate Change Vulnerability Assessment was conducted to increase understanding of current and potential impacts of climate change on watersheds and coastal resources that are critical to human security (especially the security of marginalized groups) and prosperity (specifically, tourism-based, agricultural and fisheries-based livelihoods), represented in Figure 6 as three types of livelihoods (brown ovals). The assessment focused on four climate-sensitive regions of the country.

Methods: The assessment analyzed climate exposure, sensitivity and adaptive capacity. Researchers used a historical review of temperature and rainfall data and trends from the past 50 years and downscaled climate projections for 2030 and 2050. This was supplemented by a literature review of extreme rain events, a wind analysis, and a GIS analysis of land use and river and ocean storm-surge flooding. Using the V = f {E,S,AC} framework, researchers assessed the vulnerability of coastal and marine resources using secondary data, a literature review and key informant interviews.

Results of Vulnerability Assessment:

- **Climate exposure:** As shown in the situation model (Figure 6, orange boxes with red text), the assessment identified intensity of tropical storms (such as hurricanes), sea level rise, increased temperature, changes in the seasonality of precipitation, and ocean acidification as the most important climate exposure factors to impact on human security.
- **Climate sensitivities:** The assessment found that one of the biggest concerns is that the combination of more extreme storms and sea level rise can produce coastal storm surge and flooding, threatening populations (houses, roads, businesses, agricultural lands) and ecosystems. Degradation of mangrove and coral reef ecosystems has decreased the capacity of these ecosystems to protect the coast. At the same time, flooding is exacerbated by increased runoff due to deforestation and an increase in impervious surfaces. Climate stressors combined with non-climate stressors represent significant concerns for marginalized groups and tourism-based, fisheries-based and agricultural livelihoods.
- **Adaptive capacity:** Adaptive capacity was assessed through a literature review and institutional analysis triangulated with key informant interviews and focus groups. The assessment found that the national government has begun to develop policies (e.g., a new climate change law), plans and institutions and to take actions at the national level, but this has not yet filtered down to subnational levels. In general, the guidelines, capacity, resources and inter-institutional coordination needed to support climate adaptation are still weak.

Adaptation Options: Based on its findings about exposure, sensitivity and adaptive capacity, the assessment team developed a preliminary set of adaptation options (Figure 6, yellow hexagons) that fall along three pathways: (1) disaster risk reduction; (2) development planning (for infrastructure and land use); and (3) management and conservation of coastal habitats and

watersheds. Then it held six “options analysis” workshops to develop specific recommendations within these three categories with stakeholders representing key government agencies, NGOs, private businesses and academic institutions.

Implementation of Adaptation Interventions: The Dominican Republic’s Country Development Cooperation Strategy (CDCS) for 2014–18, approved after the completion of the CCVA, set “Increased resilience of people to the impacts of climate change” as one of three development objectives. To support this development objective, the USAID–Dominican Republic Mission developed a Project Appraisal Document (PAD) for its Urban Resilience to Climate Change program. Activities under this project are designed to reduce the physical and economic insecurities of the most vulnerable Dominicans, who live in urban areas, because their situation is projected to worsen with climate change. This project is known by its Spanish acronym, CLIMA (*Ciudades Líderes en Iniciativas y Metas de Adaptación* or Leading Cities in Adaptation Initiatives or Goals).

The purpose of the CLIMA project is to increase the resilience of urban and upper watershed communities to climate change by improving land use planning to enable the diagnosis and reduction of climate risk and by implementing climate risk reduction measures at the municipal and community levels. CLIMA includes three activities: (1) CLIMA-Info, which improves access to relevant and usable climate information and supports decision making related to urban development and city administration; (2) CLIMA-Plan, which develops participatory municipal land use planning processes that provide transparent and effective entry points for the integration of the climate change information developed under the first activity; and (3) CLIMA-Adapt, which supports implementation of locally appropriate and affordable actions to solve specific problems related to flooding and unreliable water supply, such as enhanced water storage and storm water drainage capacity, increased storm surge protection measures, and improved flood control.

USAID–Dominican Republic also supports climate adaptation through other activities. For several years (since before the CCVA was conducted), USAID supported The Nature Conservancy’s work on mangrove and coral reef conservation and fisheries management. USAID also supports a climate-smart agriculture activity to help farmers deal with drought in the northwestern region of the country.

Summary of Uptake: Mission representatives believe that the CCVA enabled the Mission to design a program and activities to respond to the climate sensitivities that the country considers highest priority: flooding and reduced water quality. CLIMA addresses these climate sensitivities by increasing the availability of climate information, strengthening municipal land use planning, and directly implementing adaptation interventions.

USAID has also influenced other institutions. For example, thanks to USAID participation in a regional program, the Santiago Water Supply and Treatment Cooperative (CAAS, its acronym in Spanish) recently decided to locate a new sewage treatment facility in a higher location than

originally planned because the new location is less vulnerable to flooding. CAAS also decided to establish a climate change unit to provide a climate lens for all of its operations.

As the CLIMA project is just beginning, its impacts are difficult to measure. However, Mission staff report that other initiatives started earlier are beginning to decrease the vulnerability of communities to climate change. For example, farmers in the northwestern region have experienced severe drought in the last few years, resulting in millions of dollars being spent on groundwater pumping. USAID increased their adaptive capacity by helping them to install solar pumps and to increase their feed storage capabilities for cattle. USAID also improved water supply and wastewater management for a marginalized community in Santiago.

Factors that Contributed to the Uptake of the CCVA Results: Respondents in the key informant interviews indicated that the following factors contributed to uptake and/or could have contributed to improved uptake of CCVA results, both within and outside of USAID:

- It is an intrinsic best practice of USAID to conduct a CCVA to inform a CDCS and PAD that will include climate adaptation activities. Involving USAID representatives from several USAID offices (health, environment, and democracy and governance) increased understanding of climate change in these offices. As a result, CLIMA activities are designed to meet the needs of multiple USAID offices, for example, by improving health by improving water supply and water quality and strengthening local governance while also increasing resilience to climate change.
- The participation of key stakeholders in the design of the CCVA, the information gathering process and the climate options analysis contributed significantly to uptake.

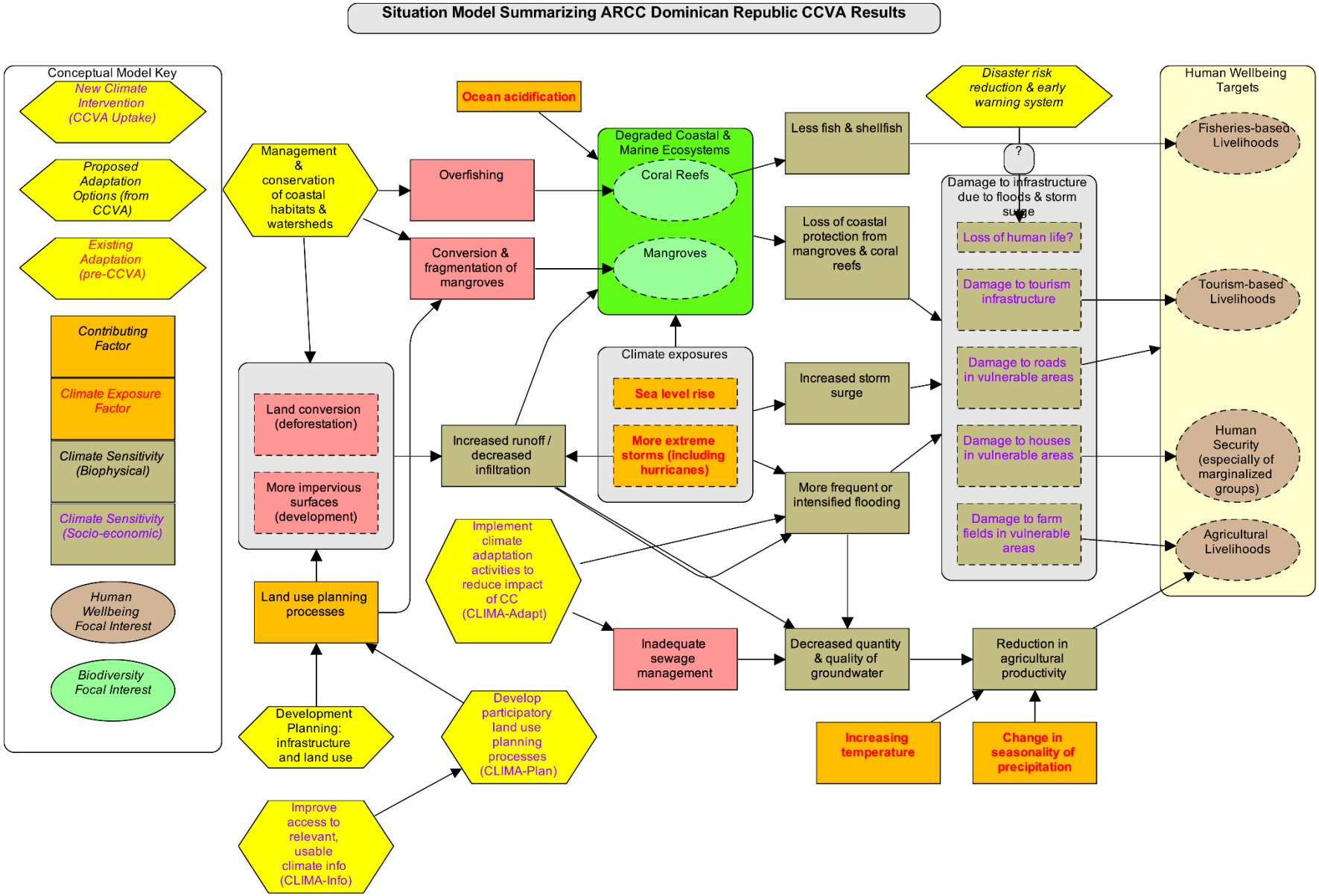
Identified Barriers to Uptake:

- The CDCS covers geographic areas not included in the CCVA. The CCVA focused on four climate-vulnerable watersheds (Punta Cana / Bávaro; Yaque del Norte; Bajo Yuna; and Santo Domingo), but these watersheds do not include all of the sites currently considered highest priority for climate adaptation. The sites selected for the CCVA were an approximation of areas that USAID thought would be included in the CDCS, but then decisions were made to include geographic areas in the CDCS that the CCVA did not cover.
- The analysis of climate vulnerability for these four watersheds does not provide information for the whole country. The national government is currently drafting its recommendations for the third session of the United Nations Framework Convention on Climate Change (UNFCCC) and needs information for the whole country.

Assessment: The adaptation options provided included many specific options within three broad categories (disaster risk reduction and early warning system; development planning; and management and conservation of coastal habitats and watersheds) (yellow hexagons, Figure 6). We found no evidence, however, that the CCVA used specific criteria to identify, compare or evaluate climate options. As a result, neither the matching of activities to the components of vulnerability nor the advantages and disadvantages of specific actions were clear. For example, it is possible to address the threat of flooding either by improving watershed management

(through reforestation, other green infrastructure and soil conservation) or by increasing water storage and storm water drainage capacity (an engineering approach). CLIMA-Adapt supports both of these actions, but seems to emphasize engineering solutions (greater water storage) over watershed management. Additionally, some sectors that were identified as important during the CCVA, such as fishing, were not addressed in the final CLIMA strategy. It is difficult to determine whether CLIMA is investing in the most effective suite of adaptation interventions as the process for selecting these interventions is not reported.

Figure 6. Dominican Republic ARCC Situation Model



MALAWI ARCC PROJECT

CCVA Purpose/Development Goals Addressed: The goal of the Malawi ARCC CCVA was to understand climate change impacts (current and projected) on central and southern Malawi and the extent to which the region could adapt to those impacts. The underlying focus of the CCVA was an assessment of the impact of climate change on rural livelihoods and food security to inform USAID's FtF programming in Malawi. The CCVA team analyzed climate change impacts across various themes associated with rural livelihoods and food security that included: agriculture (commercial and smallholder), fisheries, and water and natural resource management at the community level and by the Government of Malawi (GoM), as well as institutions and policies that govern or influence these factors.

CCVA Methods: The assessment included an initial scoping mission, participatory rural assessments (PRAs), key informant interviews, climate modeling with downscaling,[20] and studies for each sector (fisheries, natural resource management/ biodiversity, water resources, phenology) as well as a value chain and economic analysis. A team at the University of Cape Town conducted the climate modeling. Next, the vulnerability assessment team mapped methods across scales and spatial and temporal elements, and then by sector to select the most appropriate and effective method for its research and assessment needs.

The CCVA team separated climate exposures (first degree) from climate sensitivities, which manifest as biophysical changes (second degree) and socioeconomic changes (third degree) (Figure 7). The CCVA team focused on adaptive strategies (instead of capacities) to identify where communities and market systems attempt to address the second and third degree impacts through adaptation or coping. The CCVA analyzed strategies organically used by populations and those implemented by various actors (USAID, GoM, multilateral organizations and others). The CCVA team made recommendations for future programming to strategically address the climate vulnerabilities in the system and to enhance the adaptive capacities of Malawi's population and markets.

Results of Vulnerability Assessment:

- **Climate exposure:** The assessment presented evidence that the region is highly exposed to first degree climate impacts such as changes in seasonality and precipitation, intensified winds, increased risk of droughts and flooding events, and increased mean monthly temperatures. The impact of most concern was rainfall unpredictability. Livelihoods in central and southern Malawi are heavily reliant on rainfall for freshwater. The Shire River system, fed by Lake Malawi, is the primary source of surface water in the region. The watershed is 90 percent rainfed. Erratic rainfall, augmented by increased evaporation from higher temperatures, has led to a decline in total surface water over the past few years. Lake Chilwa, shared with Mozambique, is a smaller but critical source of freshwater, food and

[20] The Global Climate Models (GCMs) used to downscale the Malawi CCVA climate change projections came from the 2012 Coupled Model Inter-comparisons Project Phase 5 Archive and utilized an empirical/statistical technique to approximate local weather conditions from regional-scale atmospheric variables provided by the GCMs.

rural livelihoods. The lake is the source of one-quarter of all fish production for Malawi. Increasing temperatures, evaporation and higher wind speeds—in addition to other anthropomorphic stressors like overfishing—have had a negative impact on fish populations in Lake Chilwa.

- **Climate sensitivity:** Degradation of the Shire River watershed and neighboring arable lands continues as commercial and smallholder farming practices put increasing pressure on those resources. Large-scale irrigation for commercial agriculture depletes available freshwater resources while smallholder farms lack the access and control over shared resources to meet their rural livelihoods and subsistence needs. Despite some evidence that local farming practices have started to shift toward more climate-resilient approaches, most farms continue to lack cropping plans and techniques that would reduce their crop vulnerabilities to climate impacts. Secondary climate impacts such as heat waves, floods and pest/disease outbreaks have also contributed to higher costs of production through post-harvest losses.
- **Adaptive capacity:** Adaptive strategies observed through the assessment include uptake and use of climate-resilient farming practices, changes in fishing practices, shifts to alternative livelihoods, afforestation in and around farmlands, and increased use of manure and composts to improve soil quality. Additionally, the GoM and key partner governments and multilaterals (International Fund for Agricultural Development, World Bank, the United Nations, USAID) have begun to implement conservation and climate adaptation programs across Malawi to address large-scale problems arising from climate impacts.

Adaptation Options: The results and preliminary conclusions were presented to the GoM National Committee on Climate Change and other stakeholders. Based on their findings, and using stakeholder recommendations, the CCVA team developed a preliminary set of adaptation strategies that fell along four pathways: (1) Weather and climate monitoring systems (*alerts and better understanding of first order impacts*); (2) Improved governance and management of water and natural resources by local communities and GoM; (3) Cross-sectoral planning, harmonization and coordination of climate adaptation efforts; and (4) Economic diversification (rural livelihoods and commercial production). These recommendations were broad in scope and included a long list of specific strategies recommended as potential pathways for addressing third degree climate sensitivities.

Implementation of Adaptation Interventions: One USAID-funded CCA activity builds on the results of the CCVA: the Fisheries Integration of Society and Habitats Project (FISH). FISH is a five-year project launched in September 2014 with the overall goal to achieve “increased social, ecological and economic resilience of freshwater ecosystems and people who depend on them” in Lakes Malawi, Malombe, Chiuta and Chilwa.

Summary of Uptake: At the national level, the Malawi ARCC CCVA results informed the GoM’s National Climate Change Adaptation Planning Process. The National Adaptation Plan of Action (NAPA) process was still ongoing at the time of writing. Within USAID–Malawi, uptake is evidenced in the FISH project described above. CCVA results and recommendations are being

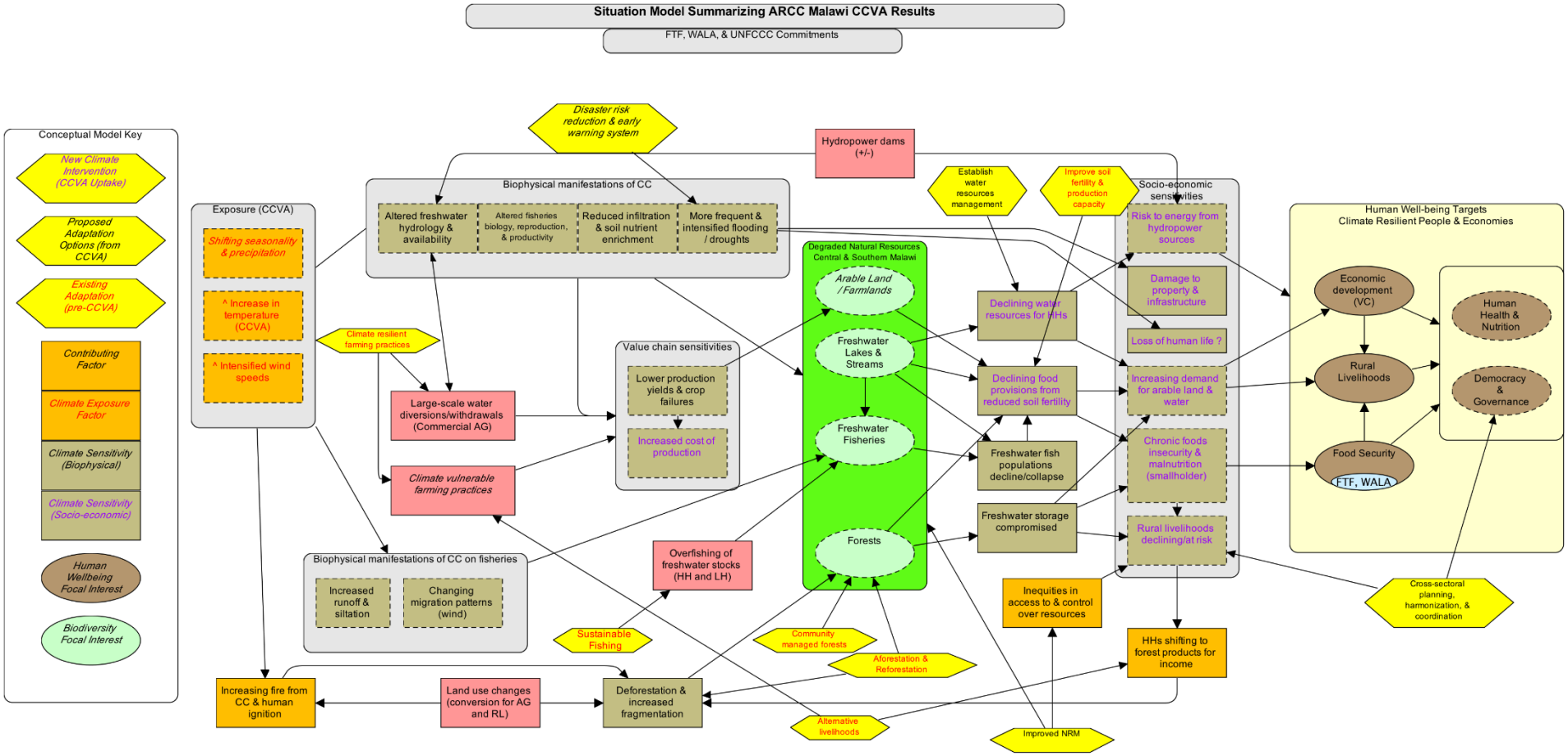
promoted by the Mission's Program Office and used to develop a social dynamics project and an FtF PAD.

Factors that Contributed to the Uptake of the CCVA Results: Respondents in the key informant interviews indicated that the following factors contributed to uptake and/or could have contributed to improved uptake of CCVA results, both within and outside of USAID:

- Within USAID, a champion of the CCVA results is required to overcome uptake barriers, such as staff turnover, a general lack of understanding of the importance of climate change impacts and issues, and a perceived lack of relevance of climate change to sectors such as health, education, and democracy and governance.
- The recommendations produced by large, national or regional-scale CCVAs are actionable by large organizations such as USAID. However, uptake by smaller organizations requires secondary downscaling, validation and prioritization to become actionable at smaller scales.
- To overcome the "project cycle" barrier to uptake, ongoing projects should be run in a way that is flexible enough to incorporate new information, such as CCVA results, when they become available.

Assessment: The CCVA's recommended adaptation options were not explicitly tied to the identified climate impacts, making it difficult to discern which proposed options were matched to which specific climate impacts. The proposed mitigations did not directly address some of the identified biophysical impacts such as the intense flooding or droughts exacerbated by climate changes, nor did the proposed adaptations address the associated socioeconomic losses such as housing and farm damage from flood waters or destructive winds. The CCVA did not clearly articulate how proposed mitigations would address impacts to the agricultural value chains. Those unmitigated impacts include but are not limited to volatile crop prices, post-harvest losses, affordable farm inputs, and a lack of access to markets for alternative crops. The CCVA would have benefited from a structured mapping process that ranked each climate impact by its degree, scope and severity on each focal theme, then prioritized proposed adaptation options by those that address the most significant and not-yet-mitigated climate impacts.

Figure 7. Malawi ARCC Situation Model



ANNEX E: SURVEY INSTRUMENT FOR WRITTEN MATERIALS

QUESTION	RESPONSE TYPE
Introductory Questions	
Survey Date; Revision Dates	Survey Date; Revision Date
What is your name?	Name
What color highlighter did you use in the supporting documents?	Color
Case Study Country	Country
Case Study Sector(s) or Subsector(s)	Sector
Case Study Project	Project
Which documents did you use for this case study?	Document List
We are documenting uptake of CCVA results into development projects through the implementation of CCA. In this case study, what was the strategy, project, mechanism or activity intended for uptake? Provide information for intended uptake into processes within and outside of USAID (CCA INT)	Text or N/A
1A. Identify Priority Development Goals	
What is/are the development goal(s) for this sector that the CCVA is designed to address? (DEV GOAL)	Text or N/A
Who conducted the scoping activity or activities? (SCO TEAM)	Text or N/A
When in the process did the scoping occur? (SCO WHEN)	Text or N/A
1B. Identify Key Inputs to Achieving Development Goals	
Did the scoping exercise (or other relevant project documents) include a process to identify the critical inputs needed to meet development goals? (DEV INP)	Yes/No/Not Known
Notes on DEV INP	Text or N/A
Did the scoping exercise include a process to identify existing CCVA and CCA processes, products and knowledge relevant to development goals for this sector/place? (SCO RESEARCH)	Yes/No/Not Known
Notes on the process that was used to identify existing CCVA and CCA processes, products and knowledge relevant to development goals (SCO RESEARCH)	Text or N/A
Are stakeholders are engaged in scoping? If so, who are they? How were they engaged? When in the process were they engaged? (SCO SH)	Text or N/A
Were any stakeholders obviously missing from the process, as relevant to achievement of development goals? (SCO SH)	Text or N/A

1C. Identify Climate Stressors	
Were climate stressors (relevant to the achievement of development goals) identified early in the scoping process? (SCO CLIMATE)	Yes/No/Not Known
Notes on identifying climate stressors	Text or N/A
Was there an early agreement reached on time horizon of climate projections? (SCO TIME)	Yes/No/Not Known
Notes on identifying time horizon of projections	
1D. Identify Non-Climate Stressors	
Were non-climate stressors (relevant to the achievement of development goals) identified during scoping? (SCO NC)	Yes/No/Not Known
Notes for non-climate stressors	Text or N/A
Were relevant interactions between climate and non-climate stressors identified during scoping? (SCO CC-NC)	Text or N/A
Notes for interactions between climate and non-climate stressors	Yes/No/Not Known
1E. Identify Needs and Opportunities for CCA	
Was a literature review conducted to identify best practice for operating and engaging stakeholders within the given social, economic and political context? (SCO SH RES)	Yes/No/Not Known
Were other scoping activities conducted to identify best practice for operating and engaging stakeholders within the given social, economic and political context? If so, what was it? (SCO SH RES)	Yes/No/Not Known
Notes for SCO RES SH	Text or N/A
Was an institutional analysis included? (SCO INST)	Yes/No/Not Known
Notes for SCO INST	Text or N/A
What documents provide evidence of scoping? What step in the USAID project cycle was used to conduct scoping activities?	Text or N/A
When was the CCVA team formed?	Text or N/A
Was the assessment CCVA team interdisciplinary? (VA TEAM)	Yes/No/Not Known
Notes about CCVA team	
Was there evidence of strong and consistent leadership through the CCVA process? (VA LEAD)	Yes/No/Not Known
2A. Define CCVA Questions	
Does the CCVA have explicit research or development questions it is designed to answer? (VA Q)	Yes/No/Not Known
To what extent do the CCVA “research questions” inform information gaps that were identified through a “scoping” effort that identified the development goal, inputs and climate and non-climate stressors? (VA Q)	Text or N/A
Did the CCVA directly assess the vulnerability of inputs identified to achieve the development goal? (VA Q)	Yes/No/Not Known
Does the CCVA respond specifically to a strategic direction (development goal) set by the project or Mission? (VA Q)	Yes/No/Not Known
Notes for VA Q	Text or N/A
Did the CCVA approach relate directly to the concept of exposure, sensitivity and adaptive capacity? (VA ESAC)	Yes/No/Not Known

Notes for VA ESAC	Text or N/A
When in the CCVA process was the climate analysis carried out? (VA CC WHEN)	Text or N/A
2B. Select Methods	
How were methods selected for the CCVA? (VA METH SEL)	Text or N/A
What were the technical methods and tools used for the CCVA? (VA METH)	Text or N/A
What was the selected geographic scale for the CCVA? Is the scale appropriate for the CCVA results to be useful? (VA SCALE)	Text or N/A
Were the data required and the data sources known before CCVA teams began assessments? (VA DATA)	Yes/No/Not Known
2C. Assess Vulnerability	
How long did it take to conduct the CCVA? Is the timeframe appropriate for the CCVA results to be useful? (VA TIME)	Text or N/A
Were stakeholders engaged during the CCVA process? (VA SH)	Yes/No/Not Known
Who were the stakeholders and how were they engaged? (VA SH)	Yes/No/Not Known
Were adjustments made as needed (adaptive management) throughout the CCVA process? (VA AD MG)	Yes/No/Not Known
Notes for VA AD MG	Text or N/A
2D - Part 1: Packaging CCVA Results	
Does the CCVA provide plausible climate change scenarios and identification of those areas, resources, populations or enterprises most likely to be negatively affected by significant climate shifts? (VA CC)	Yes/No/Not Known
Did the assessment team integrate their findings across disciplines? (VA INTEG)	Yes/No/Not Known
Notes for VA INTEG	Text or N/A
What were the results of the CCVA? (VA RESULT)	Text or N/A
Were the CCVA results data accessible and documented for use in the CCA design process, with provenance described? (VA RESULT)	Yes/No/Not Known
2D - Part 2: Communicating Results	
Was a communications strategy developed and used during the CCVA process? (COM STRAT)	Yes/No/Not Known
Did the communication strategy include goals, audience and tools? (COM STRAT)	Yes/No/Not Known
Notes for COM STRAT	Text or N/A
Were early results in subsectors or subcomponents released when ready? (COM RECS)	Yes/No/Not Known
Were the data described as being useful, with a reasonable level of confidence? In other words, was uncertainty communicated in a way that allowed results to be useable? (COM RECS)	Yes/No/Not Known
Was key information released to coincide with important policy decisions or the relevant ministry's program cycle in the host country? (COM RECS)	Yes/No/Not Known
Was key information released to coincide with the development of new strategy, project or activity within USAID? (COM RECS)	Yes/No/Not Known
Notes for COM RECS	Text or N/A

3A. Identify Adaptation Options	
How were adaptation options identified? (AO METH)	Text or N/A
Were adaptation objectives developed to ensure alignment with the development goal and to guide the evaluation of adaptation options? (AO OBJ)	Yes/No/Not Known
What adaptation options were identified? (AO)	Text or N/A
Were the adaptation options actionable in the context of project design? Why or why not? (AO)	Text or N/A
Notes about identifying adaptation options	Text or N/A
3B. Select Evaluation Criteria	
What evaluation criteria were used to evaluate adaptation options? (AO EVAL)	Text or N/A
Notes about selecting evaluation criteria	Text or N/A
3C. Evaluate Adaptation Options	
What process or types of activities were used to evaluate adaptation options? (AO EVAL)	Text or N/A
Were participatory processes used to prioritize adaptation options?	Yes/No/Not Known
What participatory processes were used to involve stakeholders in prioritization and/or decision making? (AO SH)	Text or N/A
At this point, had funds been pre-identified or set aside to be used to implement selected adaptation interventions? (AO FUNDS)	Yes/No/Not Known
Have any adaptation interventions been selected following the CCVA?	Yes/No/Not Known
What adaptation option(s) was/were selected for implementation as adaptation interventions? (AO SEL)	Text or N/A
Do the selected adaptation interventions clearly and explicitly address vulnerabilities and support achievement of development goal(s)? (AO IMPACT)	Yes/No/Not Known
Notes for AO IMPACT	Text or N/A
Do adaptation interventions clearly demonstrate appropriate use of information and recommendations that resulted from VAs? (AO INFO)	Yes/No/Not Known
Are the adaptation interventions designed to be integrated into development projects and activities rather than existing as stand-alone interventions? (AO INT)	Yes/No/Not Known
PLAN FOR IMPLEMENTATION	
Was an explicit, high-level theory of change and/or development hypothesis developed to guide the implementation of the adaptation intervention(s)? (AO TOC)	Yes/No/Not Known
Does the TOC show how the selected intervention(s) will reduce vulnerability of the development input and achieve or help to achieve the development goal?	Yes/No/Not Known
Notes for AO TOC	Text or N/A
Were adaptation intervention objectives written to describe the implementation of the adaptation interventions? (AO OBJ)	Yes/No/Not Known
Were adaptation objectives SMART? (AO OBJ)	Yes/No/Not Known
Notes about selecting an adaptation intervention (or suite of options) for implementation	Text or N/A

Was a monitoring plan developed as a part of the TOC and before adaptation activities were implemented? (IM M&E)	Yes/No/Not Known
If not before, when in the project design was the monitoring system developed? (IM M&E)	Text or N/A
Does the monitoring plan include indicators to explicitly measure progress toward adaptation objectives? (IM M&E)	Yes/No/Not Known
Does the monitoring plan include both quantitative and qualitative indicators to measure both outputs and outcomes? (IM M&E)	Yes/No/Not Known
Does the monitoring plan include regular evaluation activities to monitor progress and make course corrections as needed?	Yes/No/Not Known
Notes for IM M&E	
Is climate information built into the monitoring system, including baseline values and indicators? (IM CC)	Yes/No/Not Known
Notes for IM CC	Text or N/A
How is flexibility and adaptive management built into the project design and implementation? (IM ADAPT)	Text or N/A
Have any adaptation activities been implemented following the CCVA?	Yes/No/Not Known
What adaptation activities were implemented? (IM ACT)	Text or N/A
Were stakeholders involved in the implementation of adaptation activities? (IM SH)	Yes/No/Not Known
If so, how were stakeholders involved in the implementation of adaptation activities? (IM SH)	Text or N/A
Notes about implementation	Text or N/A
5A. Build on Established Evaluation Practices	
Does the project regularly monitor and evaluate progress following the M&E plan? (EA MON)	Yes/No/Not Known
Notes on the implementation of the monitoring and evaluation plan	Text or N/A
5B. Measure Performance	
Is the resulting information analyzed regularly? (EA EVAL)	Yes/No/Not Known
5C. Inform Adjustments to Adaptation	
Is there clear evidence of adaptive management of the adaptation interventions based on evidence gathered through M&E? (EA ADAPT)	Yes/No/Not Known
Notes on adaptive management of adaptation interventions	Text or N/A
How would you rate the level of uptake into USAID strategies, project documents (concept papers or PADs), Requests for Proposal / Requests for Application, or past or present mechanisms/ activities? This could be within an office in a particular Mission or within a USAID–Washington bureau (UPTAKE)	Choose from: High; Medium; Low, None; Cannot Assess
Please explain your answer related to level of uptake into USAID. Reference any documents in which you found information	Text or N/A
How would you rate the level of uptake (mainstreaming) into host-country policies, strategies, programs or activities? (UPTAKE)	Choose from: High; Medium; Low, None; Cannot Assess

Please explain your answer related to level of uptake (mainstreaming) into host-country policies, strategies, programs or activities. Reference any documents in which you found information	Text or N/A
What factors were found to support or improve uptake in this case study? (UPTAKE)	Text or N/A
Where uptake was low, what were the barriers that you or other analysts have observed? Reference any documents in which you found information (UPTAKE BARRIERS)	Text or N/A
What information could not be found in the materials that will need to be learned through key informant interviews?	Text or N/A
How well does the Climate-Resilient Development Framework fulfill the requirements of an adaptive management cycle such as the CMP Open Standards framework?	Choose from: Very well; Somewhat well; Not well; Not at all; Cannot Assess
Notes about how well the CRDF fulfills the requirements of the CMP Open Standards framework in the context of this case study	Text or N/A
Did you have any important observations or thoughts to share that were not prompted in the survey?	Text or N/A

ANNEX F: KEY INFORMANT INTERVIEW TOPIC GUIDE

The Key Informant Interview usually took about one hour of time to complete. Questions were asked following this general format. However, questions were often modified for clarity or tailored to learn specific information about each project.

SCOPE

In USAID's Climate-Resilient Development Framework (CRDF), the scoping step establishes the development context and focus for the CCVA, identifying priority development goals and key inputs to achieving them, climate and non-climate stressors (and their interactions) and needs and opportunities for the CCVA.

1. I have reviewed the available written information about this case study, and have a few specific questions related to the early scoping steps of the project. Could you briefly help me fill in some of the details?
    - How and why was the CCVA initiated?
    - What was the target group for "uptake" of information (for example, a USAID team, a host-country government agency, or another group)?
    - Was this CCVA designed to help Missions use Global Climate Change funds?
    - Was this CCVA designed to support the development of a PAD?
    - How well was the CCVA integrated with local needs, whether within the Mission or among USAID partners and stakeholders? For example, did the scoping team gather and validate input from decision makers about their information needs and intended uses of CCVA results? Were stakeholders engaged throughout the scoping process?
2. In your opinion, to what extent did the scoping team apply USAID best practices and lessons learned related to scoping activities?

ASSESS

In the CRDF, the Assessment step is about running the CCVA, thereby enhancing understanding about vulnerability. This includes defining VA questions, selecting methods, assessing vulnerability, and providing actionable information.

3. To what extent did the CCVA apply USAID best practices and lessons learned for vulnerability assessments?
4. Was there strong and consistent leadership through the CCVA process?
5. Was the CCVA team interdisciplinary?

6. How were stakeholders engaged in the CCVA process?
7. Would you say that the CCVA is perceived as credible, salient and legitimate? If so, to what extent has the integration of best practices and lessons learned led to these perceptions?
    - According to the CRDF, **Credible** means that the CCVA is of high technical quality and is therefore trustworthy
    - **Salient** means that the information is considered highly relevant to stakeholder needs and ongoing processes
    - **Legitimate** means that the CCVA results are an accurate reflection of reality and therefore accepted or validated by key stakeholders.
8. To what extent have these perceptions of the CCVA led to increased capacity to make actionable recommendations for CCA in USAID programming?

DESIGN

In the CRDF, the Design step identifies, evaluates and selects adaptation options.

9. To what extent have these recommendations been taken up into CCA activities?
10. Do the selected adaptation interventions directly address the reduction of a climate change stressor or its potential impact? In other words, are the adaptation interventions different from "business as usual"? If so, how?

IMPLEMENT & MANAGE; EVALUATE & ADJUST

Implement and Manage puts adaptation into practice, building on established practices and adopting a flexible approach to account for continuing change. Evaluate and Adjust tracks performance and impact and informs adjustments to adaptation strategies. In the CRDF, these are the final steps. We are addressing them together because we feel that implementation and adaptive management are strongly intertwined.

11. To what extent have CCVA results and recommendations led to implementation and adaptive management of CCA in USAID programming? Can you give me some examples?
12. Have you seen any project results? If so, to what extent has implementation and adaptive management of CCA in USAID programming led to reduced impact of climate change on people, places and livelihoods?
13. To what extent have project results reduced impact of climate change on people, places and livelihoods led to the accomplishment of development goals?

UPTAKE AND USE OF INFORMATION FROM THE CCVA

14. What do you think are the key factors in determining uptake?

15. Have any of these factors not been implemented for your project? If so, what difference would these factors have made in influencing how USAID conducts business in the sector?
16. In retrospect, what could have been done to increase uptake of CCVA results into projects and processes *external* to USAID?

ANNEX G: DETAILED CCA FRAMEWORK ANALYSIS

As a supplement to the discussion and table in Part III of the technical report, below is a detailed analysis of CCA frameworks from four selected donors and the CMP Open Standards, examining them for their suitability for use in adaptive management.

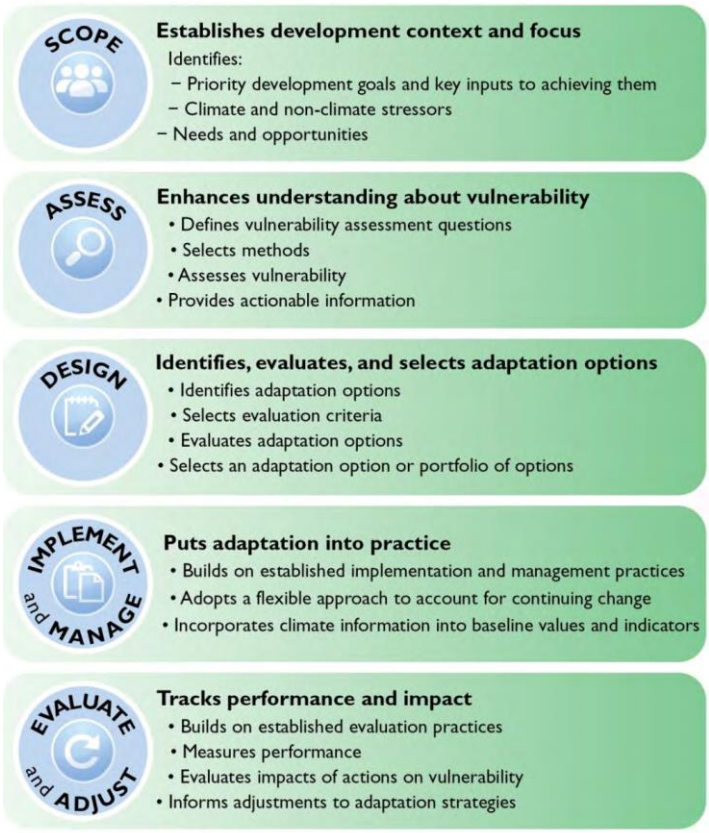
USAID'S CLIMATE-RESILIENT DEVELOPMENT FRAMEWORK

The Climate-Resilient Development Framework (CRDF) was developed recently to outline and provide examples of and guidance for USAID's approach to CCA. The framework is a five-step process, with best practices within each step (Figure 8).

The first stage in the framework is Scope, which includes all activities related to establishing the development context for the vulnerability assessment. This includes identifying development goals and the inputs needed to achieve these goals and climate and non-climate stressors to development inputs that are barriers to achieving the goals. Careful scoping ensures that the CCVA is designed at the appropriate scale, using appropriate tools, and delivers the right type of information needed for adaptation.

The second stage, Assess, includes conducting the CCVA according to information gained through scoping. The assessment includes the vulnerability of key inputs and the broader system. It also assesses the adaptive capacity of stakeholders to deal with impacts and take advantage of opportunities. When done well, assessments provide high-quality and trusted information that integrates climate information and is at the level of detail needed to design strategies, programs and projects.

Figure 8. USAID's Climate-Resilient Development Framework (CRDF)



(Source: USAID 2014b)

Design, the third stage in the framework, includes identification, evaluation and selection of the activities that will be implemented to adapt to climate change. These activities should be designed to reduce vulnerability and support climate-resilient development. For example, activities may reduce risk or potential damage (e.g., flood protection) or increase the ability to cope with damage that is inevitable (e.g., accelerating recovery through insurance programs). The selection process used should include consideration of risk and the potential of the adaptation for impact.

The fourth stage, Implement and Manage, puts the selected activities into practice. In addition to building on established practice for project implementation, management and monitoring, practitioners are to monitor climate change and vulnerability.

Evaluate and Adjust is the fifth stage. This stage provides for adaptive management of the strategy, program or project to provide additional support, improve performance, respond to changing weather patterns, and incorporate changes in climate knowledge. An evidenced need for major adjustments may require added efforts to bolster initial adaptation programming.

Because it is a framework, the CRDF does not provide specific guidance or recommend tools for any of the stages. Instead, it adds new climate-specific steps to the established USAID Program Cycle. For example, in Stage 4, Implement and Manage, the guidance includes “Build

on established implementation and management practices." This implies that the CCA practitioner should refer to additional guidance on standards, best practices and lessons learned related to project design and implementation.

The CRDF is strong on process, including all of the steps in a project cycle, but it lacks clear linkages between the steps that are essential to good monitoring, evaluation and adaptive management. For example, as noted in the Uptake Assessment, the process for selection of interventions among options identified in the CCVAs is not clear and explicit and no clear process exists for outlining expected results along a TOC and monitoring the extent to which these results were or were not attained.

GIZ'S VULNERABILITY SOURCEBOOK FRAMEWORK

GIZ's Vulnerability Sourcebook presents a conceptual or situation model-based approach to identifying indicators of vulnerability. The framework, which includes eight modules, focuses almost entirely on development of a CCVA, aligning with the first two stages in the CRDF: Scope and Assess.

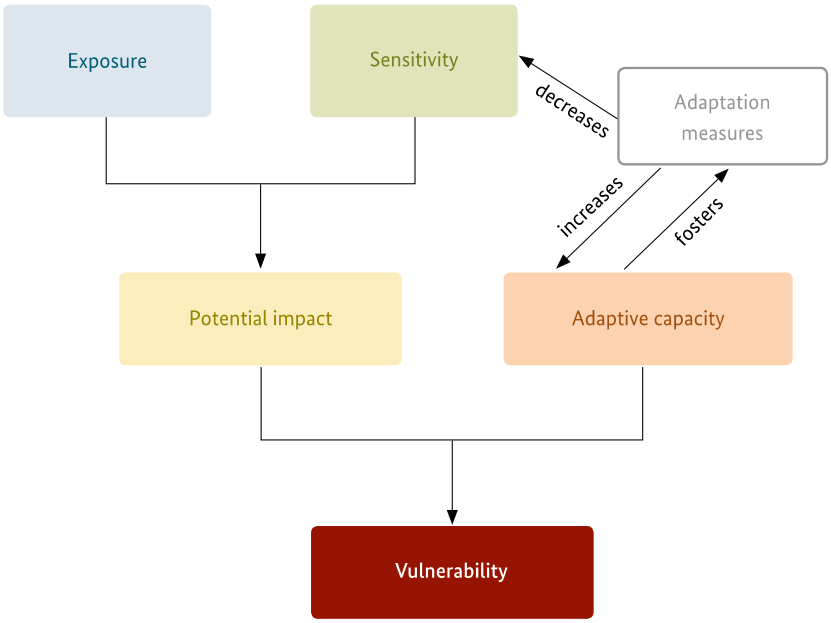
Module 1 prepares for the vulnerability assessment. This step is very similar to the CRDF Scoping stage and includes understanding the development context, identifying objectives and expected outcomes, determining the geographic scope of the CCVA, and preparing a CCVA implementation plan.

The second module develops impact chains to describe the current development situation. The impact chain is a visual analytical tool that helps to better understand, systematize and prioritize the factors that drive vulnerability in the system under review. The basic impact chain used by GIZ is presented in Figure 9; the impact chain forms the core of the GIZ approach. To develop a detailed impact chain, GIZ recommends informing the design using advice from external experts and stakeholder workshops with key groups and institutions. Practitioners are encouraged to start brainstorming adaptation measures during this step. An example of an impact chain, with possible adaptation measures, is available in Figure 10.

In Module 3, practitioners identify and select indicators. This includes indicators for exposure, sensitivity and adaptive capacity. Importantly, these indicators are to be used in the initial CCVA and also during CCA implementation, ensuring that project impacts are measured against an appropriate baseline measure of vulnerability.

Module 4 includes acquisition, examination and management of data for each of the identified indicators. During this step, practitioners move from a preliminary to a final list of indicators based on data available.

Figure 9. The GIZ Impact Chain Framework for Describing Vulnerability in a System



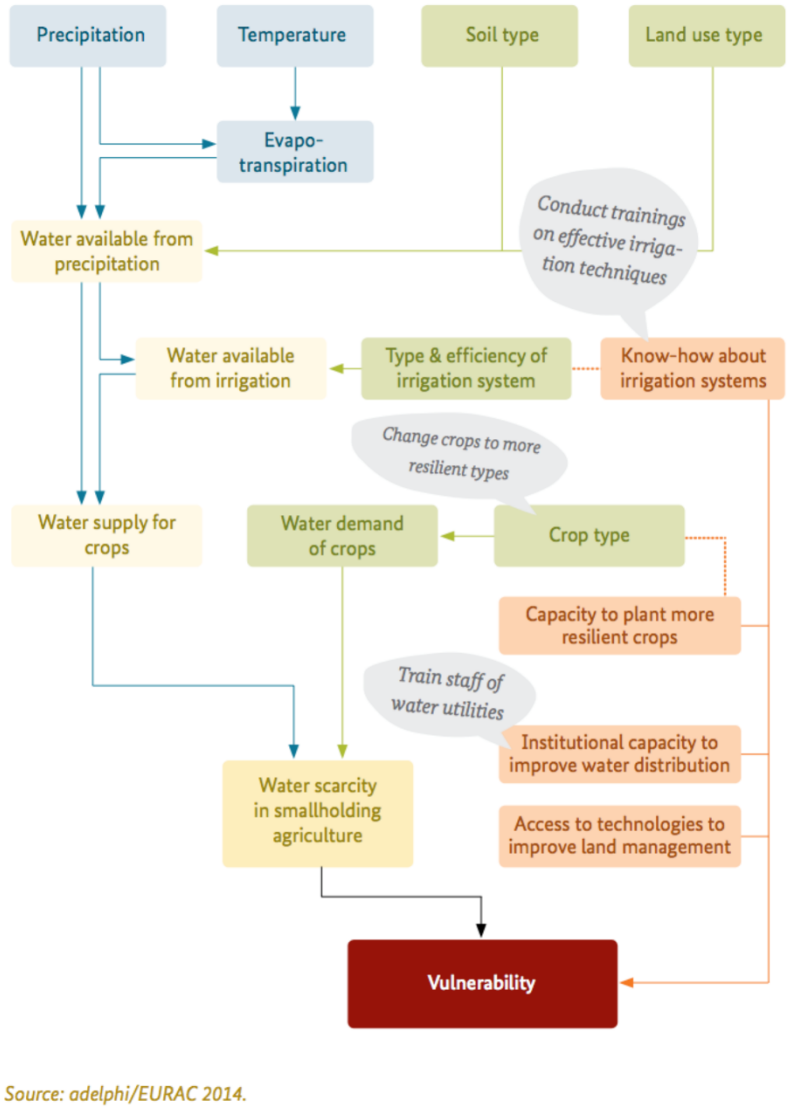
Source: adelphi/EURAC 2014.

(Source: GIZ 2014b)

In Module 5, practitioners initiate the CCVA by normalizing the indicator data and in Module 6 they weigh and aggregate the indicators. In Module 7 they conclude the CCVA by aggregating vulnerability components to achieve a measure of vulnerability. Each of these modules includes detailed guidance. Module 8 presents the findings, using a variety of tools like a report, illustrations and maps.

A second section in the Vulnerability Sourcebook describes how CCVA design and results are to be used to conduct monitoring and evaluation, to monitor changes in vulnerability.

Figure 10. Theoretical Example: GIZ Impact Chain Approach Applied to the Development Challenge of "Water Scarcity in Agriculture"



(Source: GIZ 2014b)

Interestingly, GIZ recommends developing an impact chain early in the process, to structure the CCVA around what is already understood about exposure, sensitivity and adaptive capacity. In the GIZ approach, the impact chain is then used to clearly and transparently identify indicators and CCA interventions that will reduce the vulnerability of the target resource or socioeconomic group. GIZ recommends that the indicators of exposure, sensitivity, adaptive capacity and vulnerability be used to measure the effectiveness of CCA interventions during implementation. Our Uptake Assessment revealed that many of USAID's CCA practitioners faced challenges in measuring progress toward reductions in vulnerability. **The GIZ approach helps CCA practitioners overcome this challenge by bringing CCVA results and indicators forward into the implementation phase. This establishes the CCVA as a baseline and provides**

indicators that measure relevant factors and CCA outcomes related to exposure, sensitivity, adaptive capacity and vulnerability.

An example of the implementation of this approach comes from Burundi. Using the process outlined in GIZ's Vulnerability Sourcebook, three institutions plus GIZ formed a technical expert group to conduct a CCVA of the agriculture sector. GIZ used the impact chain shown in Figure 11 to identify indicators of exposure, sensitivity and adaptive capacity used to conduct the CCVA. In principle, each indicator specifically measures one of the exposure, sensitivity, vulnerability and impact/potential impact factors illustrated in the impact model. Of course, some of those factors could not be measured directly.

The expert group developed CCVA output maps identifying three watersheds that were the most vulnerable "hotspots" for the highest potential climate change impacts. Within each of these hotspots, the expert group oversaw local vulnerability community-based assessments to identify adaptation measures in participation with the vulnerable communities. At the time of writing, we were not able to find further documentation that outlines whether and how the indicators used for this study were carried forward to assess changes in vulnerability that could be attributed to interventions identified using this impact chain.

The GIZ framework uses indicators to ensure clear linkages between the baseline measures of vulnerability established during the CCVA and later measurement of the effectiveness of adaptation interventions in reducing these vulnerabilities. For example, to address water scarcity in agriculture, Figure 10 shows that one important factor related to adaptive capacity is the "capacity to plant more resilient crops." The CCVA would establish a baseline measure of this capacity and adaptation projects could continue to measure this, as they tried to increase this capacity. The weakness of the GIZ framework is that it lacks guidance for project design, implementation and evaluation. It does not include a step for planning actions and monitoring (equivalent to the CRDF Design step) and it gives no guidance on how to evaluate adaptation options identified in the CCVA. In addition, information to guide project implementation is incomplete and the framework does not include an equivalent to the CRDF Evaluate and Adjust step. It is possible that these steps are covered in other GIZ frameworks that are not specific to climate adaptation.

Figure 11. Actual Example: Impact Chain for the Agriculture Sector in Burundi

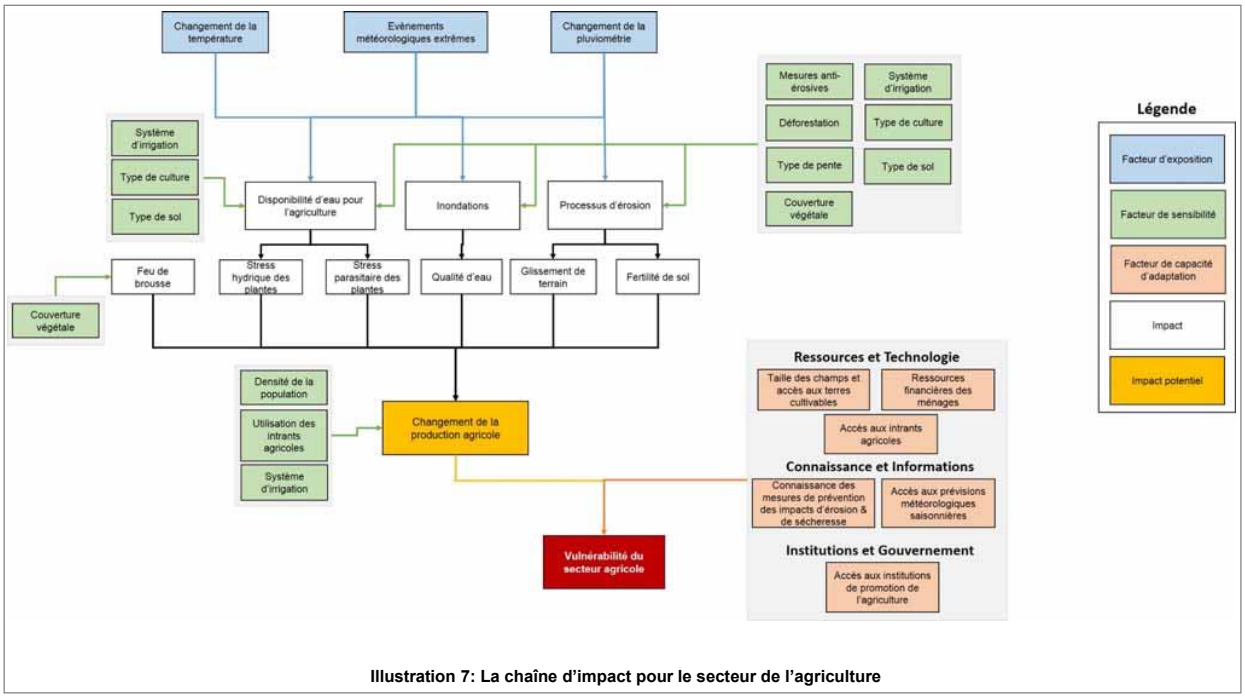


Illustration 7: La chaîne d'impact pour le secteur de l'agriculture

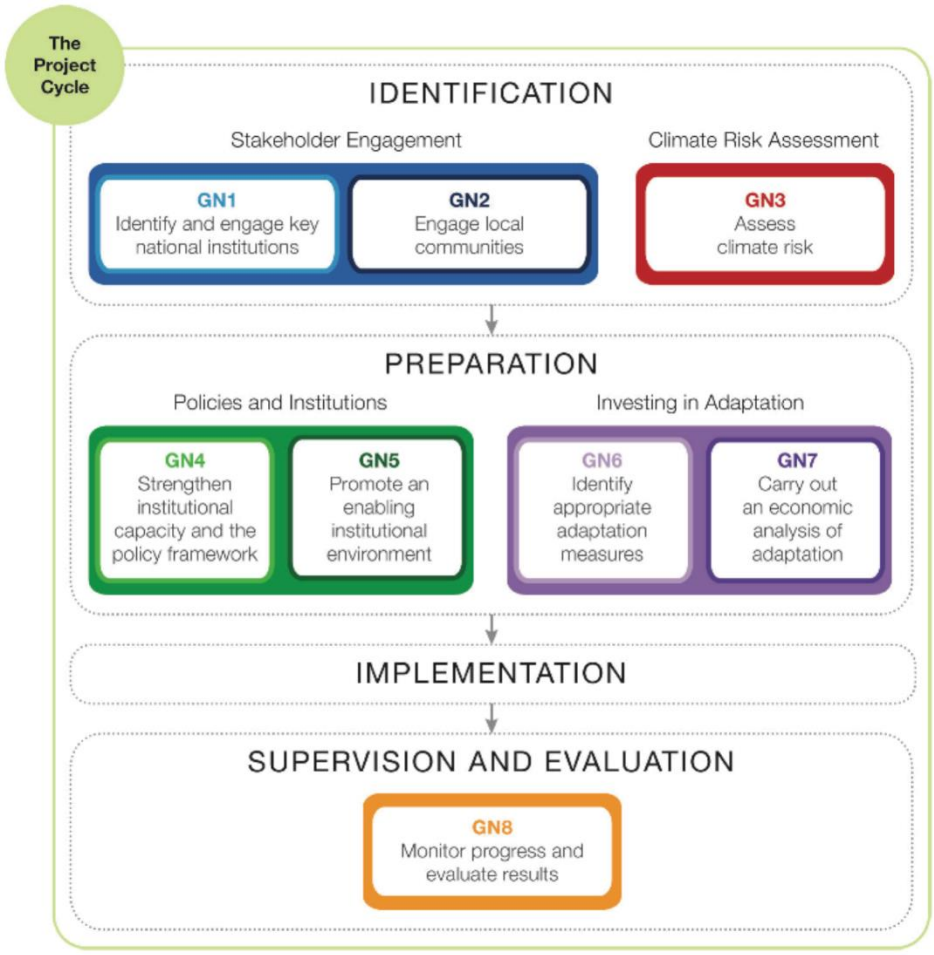
(Source: GIZ 2014a)

WORLD BANK: MAINSTREAMING ADAPTATION INTO AGRICULTURE AND NATURAL RESOURCES MANAGEMENT PROJECTS

The World Bank approach to CCA frequently varies by sector, region and implementing partner. However, the use of risk assessment and economic models for screening and predicting impacts characterizes a number of projects funded by the organization. In this case, we selected the 2010 Guidance Notes, *Mainstreaming Adaptation to Climate Change in Agriculture and Natural Resources Management Projects* ("Mainstreaming Adaptation"), as an example for analysis.

This World Bank Mainstreaming Adaptation project cycle includes four main steps: Identification, Preparation, Implementation, and Supervision and Evaluation (Figure 12). Within the Identification step, the Mainstreaming Adaptation guide recommends Stakeholder Engagement and Climate Risk Assessment as the first two activities in the process. The two key components of Stakeholder Engagement are: (1) Identifying appropriate institutional counterparts, which includes reviewing institutional structure and existing disaster/ climate risk management programs, identifying appropriate 'champions' within the institutions, building political consensus, and engaging national institutional counterparts in fruitful cooperation that addresses current climate risk and supports regional CCA initiatives; and (2) Engaging local communities by strengthening community awareness of adaptation to climate change, guiding the assessment of communities' adaptive capacity and promoting community participation in identifying and adopting sustainable adaptation strategies.

Figure 12. World Bank Cycle for Mainstreaming Climate Adaptation Into Agriculture and Natural Resources Management Projects



(Source: World Bank 2010)

For Climate Risk Assessment, Mainstreaming Adaptation does not recommend one tool or set of tools over another. Instead, it provides a comparative overview of established tools. The list includes the World Bank's Climate Change Portal and the ADAPT screening tool as well as others, for example SERVIR (developed by USAID, NASA, CATHALAC and IAGT), CRiSTAL (IISD, IUCN, SEI) and Climate Wizard (TNC).

The "Preparation" step includes two types of activities: (1) preparing policies and institutions by strengthening institutional frameworks and promoting an enabling environment for climate change; and (2) investing in adaptation by identifying the appropriate adaptation measures and conducting an economic analysis to determine feasibility and effectiveness. To strengthen institutional frameworks, Mainstreaming Adaptation guides practitioners to assess institutional capacity needs and foster adaptation-friendly policies and legal frameworks. In terms of the enabling environment, Mainstreaming Adaptation provides guidance to improve conditions for CCA considering three challenges: that adaptation requires local communities to efficiently manage common resources, that effective adaptation requires enabling policies and systems at

the national level, as well as effective central–local coordinating mechanisms, and that the multisectoral nature of climate impacts calls for tackling impacts from different angles in a synergistic and coordinated way at various institutional levels.

Following a Climate Risk Assessment, Mainstreaming Adaptation recommends selecting adaptation interventions based on analysis of possible adaptation options, taking into account the uncertainty (or potential for 'regret') of different types of adaptation. Then, adaptation options are subjected to an economic evaluation. For agricultural and environmental programming, the economic evaluation includes: (1) evaluating the potential impacts that climate change could have on productivity in the project area, assuming either only autonomous adaptation or no adaptation at all; (2) evaluating costs and benefits of possible planned adaptations; and (3) factoring in the implications of uncertainty with respect to the choice of specific adaptation options. This economic evaluation enables final selection of adaptation interventions based on clear criteria.

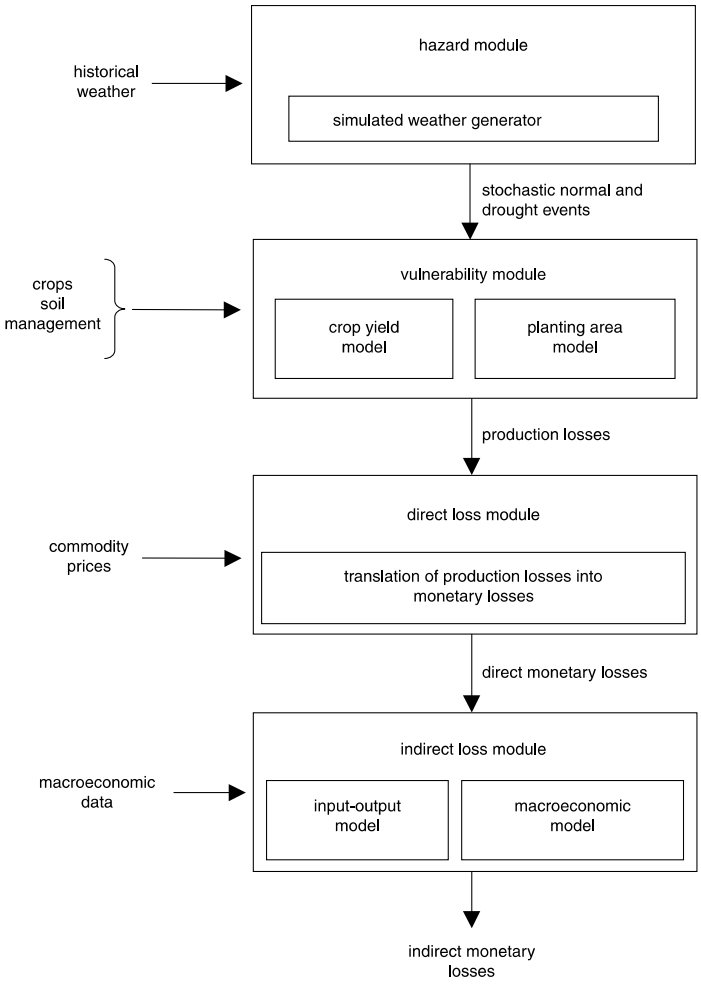
The "Implementation" step is not described. Mainstreaming Adaptation relies on other programmatic resources to guide project management.

The final step, "Supervision and Evaluation," provides information on how to monitor and evaluate progress, specifically focusing on identification of key aspects and issues for successful monitoring and evaluation of adaptation projects. This includes selection of specific indicators relevant to adaptation projects and adoption of suggested best practices for establishing a good monitoring and evaluation system within CCA. It does not include guidance related to the use of indicators or evaluation for adaptive management.

One example of implementation of this framework is the 2006 World Bank Report, *Overcoming Drought: Adaptation Strategies for Andhra Pradesh, India*. The Andhra Pradesh state government requested this CCVA to support the early uptake of climate change adaptation interventions into government planning. Because the state was already suffering from drought, this climate change impact was identified as the key threat to agricultural activities across the state. The results of the study fed into the Government of Andhra Pradesh's pilot of an innovative Drought Adaptation Initiative with World Bank support.

Following the World Bank's use of risk assessment and economic models, the CCVA team used a series of impact-response models along an impact chain (based on the model in Figure 13) to predict future climate change implications at the local and state levels.

Figure 13. Impact/Response Models Used to Predict Direct and Indirect Monetary Losses Using a Probabilistic Drought Risk Assessment Model for Andhra Pradesh, India[21]



(Source: World Bank 2006)

In summary, the Mainstreaming Adaptation framework covers all of the same four steps included in the CRDF framework, but not completely. The Identification step (equivalent to the CRDF Scope step) includes interesting information on stakeholder engagement but it does not include a complete identification and understanding of the context within which the CCVA is being conducted. It does not include guidance on how to conduct the CCVA. It provides very good information on using economic tools to evaluate adaptation options, but no information on implementation. Finally, the Supervision and Evaluation step does not link M&E to adaptive management.

[21] Here, "probabilistic" is used to mean that the model includes "statistical outputs, such as average annual loss [AAL] and loss exceedance curve [LEC]." The theoretical models were calibrated using local experience. Validation exercises found it to be most successful in predicting outputs for rice, maize, sorghum, sunflower and groundnut.

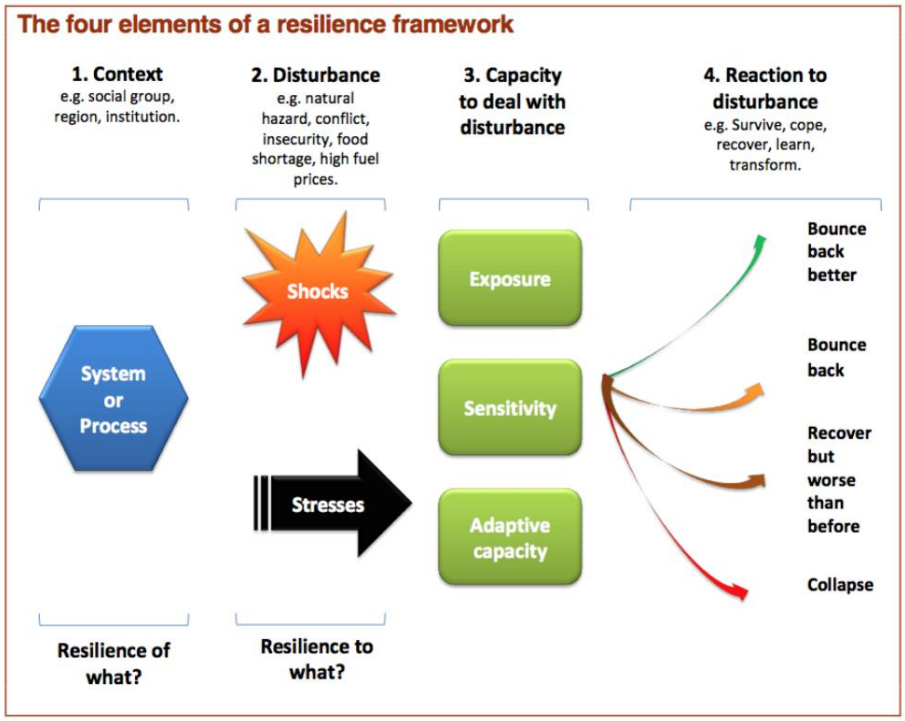
DFID: DEFINING DISASTER RESILIENCE

DFID has adopted resilience as a core approach to tackling disasters, whether or not they are climate-related. Rather than providing a step-wise framework for CCA, DFID provides a theoretical model that describes its efforts to blend disaster risk reduction (DRR), social protection, and climate change adaptation using the concept of resilience (Figure 14) in its 2011 Approach Paper (DFID 2011). DFID adopted a working definition of resilience as "the ability of countries, communities and households to manage change by maintaining or transforming living standards in the face of shocks or stresses – such as earthquakes, drought or violent conflict – without compromising their long-term prospects" (DFID 2011). DFID defines its resilience framework as containing four main elements:

- Context — the target system, group, geography or livelihood allowing a coherent answer to the question, "Resilience of what?" The context could include, for example, a social group, region or institution.
- Disturbance — sudden events or long-term trends that challenge the system. The identification of a disturbance answers the question, "Resilience to what?" and can include both shocks (such as disease outbreaks, floods, high winds, landslides, droughts or earthquakes) and stresses, or long-term trends that undermine a system or process and increase vulnerability (such as natural resource degradation, loss of agricultural production, urbanization, demographic changes, climate change, political instability and economic decline).
- Capacity (or ability) to deal with disturbance — determined by:
  - Exposure to risk, determined by the magnitude and frequency of shocks or the degree of stress on a system;
  - Sensitivity, described as the degree to which a system will be affected by, or respond to, a given shock or stress; and
  - Adaptive capacities of actors (individuals, communities, regions, governments, organizations or institutions), determined by their ability to adjust to a disturbance, moderate potential damage, take advantage of opportunities and cope with the consequences of a transformation.
- Reaction to disturbance—how the target system (identified by "Context") responds to a shock or stress. For example, a target system may "bounce back better," "bounce back," "recover, but [to a level that is] worse than before," or "collapse."

In this model, DFID defines resilience based on the first three factors: context, disturbance and capacity to deal with the disturbance. Interestingly, what DFID calls "Capacity to deal with disturbance" is determined by the same elements that the IPCC and other organizations use to measure vulnerability (exposure, sensitivity and adaptive capacity), potentially leading to confusion in terminology and approach between the DFID and other approaches analyzed herein (IPCC 2014).

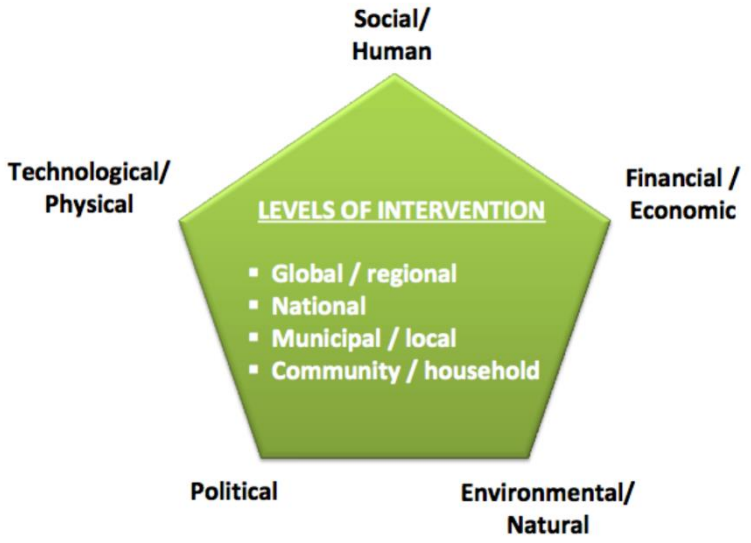
Figure 14. The Four Elements of DFID's Framework for Disaster Resilience



(Source: DFID 2011)

DFID recommends using the livelihoods assets pentagon (Figure 15) to identify and prioritize adaptation options. This framework identifies five types and four levels of resilience-building activities. The types are the livelihood assets: social/human, financial/economic, environmental/ natural, political and technological/ physical. The levels of intervention are global/regional, national, municipal/local and community/household. DFID can use these five assets and four levels to map its resilience-building activities in a country or region. Beyond serving as a classification system for adaptation activities, the relationship between Figures 14 and 15 is not clear. For example, if the five livelihood assets should be addressed with resilience-building interventions, then should they also be assessed during an investigation into "3. Capacity to deal with disturbance"?

Figure 15. Types and Levels of Resilience-building Activities for Classifying and Prioritizing DFID's Interventions



(Source: DFID 2011)

To support its Regional Climate Change Programme for Southern Africa, DFID carried out a GIS-based CCVA "hotspot" analysis for Southern Africa during which it developed indicators including both direct measurements and indices for adaptive capacity, sensitivity and exposure. Indicators of adaptive capacity included infrastructure poverty, economic wealth and malnourishment in children under five years old. Indicators of sensitivity included percent land under irrigation, human appropriation of net productivity, and volume of rainfall per person on agricultural land. And finally, indicators of exposure included the coefficient of variation for inter-annual rainfall, the coefficient of variation for monthly rainfall, risk of cyclones, additional population density, 1 in 10 year drought, and General Circulation Model (GCM) ensemble precipitation change. However, the report presented no logic model or description to justify the selection of these indicators. It does not appear to be possible to use these indicators for performance monitoring or adaptive management.

The DFID framework is not described as a stepwise process and practitioners have to infer that a CCA approach using this framework would include five main steps: identify and understand the context; identify and understand the disturbance; assess capacity to deal with the disturbance; assess past reactions, observe present reactions, or predict reactions to the disturbance; and identify resilience-building activities using the livelihood assets pentagon and levels of intervention. More importantly, the logic seems circular – for example, defining Capacity to Deal with Disturbance as a function of exposure, sensitivity and adaptive capacity and considering this as just one component of vulnerability, rather than V = f{E, S, AM}, is confusing and inconsistent with other donors' approaches. Finally, while the Livelihoods Assets Framework may be helpful for *categorizing* climate interventions, it does not appear to be useful for *evaluating* them and selecting the best ones. It implies that all arms of the pentagon should receive equal weight in all cases and it only focuses on adaptive capacity. Without additional information, this framework might be the hardest one to apply in the field.

THE CMP OPEN STANDARDS FOR THE PRACTICE OF CONSERVATION

This document compares four CCA frameworks to the CMP Open Standards to determine how best to embed CCVAs into an *adaptive management* framework that would lead to a higher probability of uptake and use. This section describes the Open Standards and provides an example of some of the key products that a CCA application of the Open Standards would include.

The Open Standards consists of a five-step process for adaptive management of conservation projects (see Figure 16). Although the framework was developed specifically for conservation, most of the steps could apply to any project management.

The five steps in the Open Standards project cycle include: Conceptualize; Plan Actions and Monitoring; Implement Actions and Monitoring; Analyze, Use and Adapt; and Capture and Share Learning. The Conceptualize step focuses on understanding the project context by clearly defining the project scope, conservation "targets" (focal ecosystems and species), the current and desired status of the conservation targets, threats to them, and factors contributing to those threats. Plan Actions and Monitoring includes defining project goals, conservation strategies, assumptions (or theories of change) about how each strategy will contribute to conservation success, objectives and monitoring plans and operational plans. Step 3, Implement Actions and Monitoring, includes the development of work plans and budgets to implement both action and monitoring plans. Step 4 (Analyze, Use and Adapt) focuses on the analysis of project results, assumptions and operational and financial data, and the use of that information to assess whether project actions are succeeding or failing and, if necessary, to modify the actions and document discussions and decisions. The final step (Capture and Share Learning) involves sharing lessons with key internal and external audiences. Each step of the Open Standards explicitly builds upon the previous step.

Importantly, the Open Standards improves upon simple and sound management planning and implementation in several important ways that are relevant to CCA:

1. Strong emphasis on the conceptualization phase (Figure 16, Step 1). The Open Standards recommends that substantial resources be put into scoping, defining the focus of the project, and identifying threats and opportunities. Within CCA, it would be appropriate for the entirety of a CCVA process to be contained within this first step (specifically, within the "Identify Critical Threats" substep).
2. Careful attention to and early selection of indicators for monitoring and evaluation based on testing key assumptions in a TOC (Figure 16, Step 2). The Open Standards describes specific processes for identifying and using indicators that provide the evidence needed to effectively implement adaptive management.
3. Selection of strategies based on the most effective intervention points on high-priority threats (Figure 16, Step 2).
4. Robust approach to adaptive management (Figure 16, Steps 3 and 4). This is linked to careful selection of appropriate indicators in Step 2, as noted above, and intentional

incorporation of periodic monitoring and evaluation and adaptation along the whole project lifespan.

5. Support for integration of communications and learning into the project approach (Figure 16, Step 5). The final step of the cycle focuses exclusively on sharing learning and fostering a learning environment across the entire project team.

Figure 16. Conservation Measures Partnership's Project Management Cycle Version 3.0

(Source: Conservation Measures Partnership 2013)

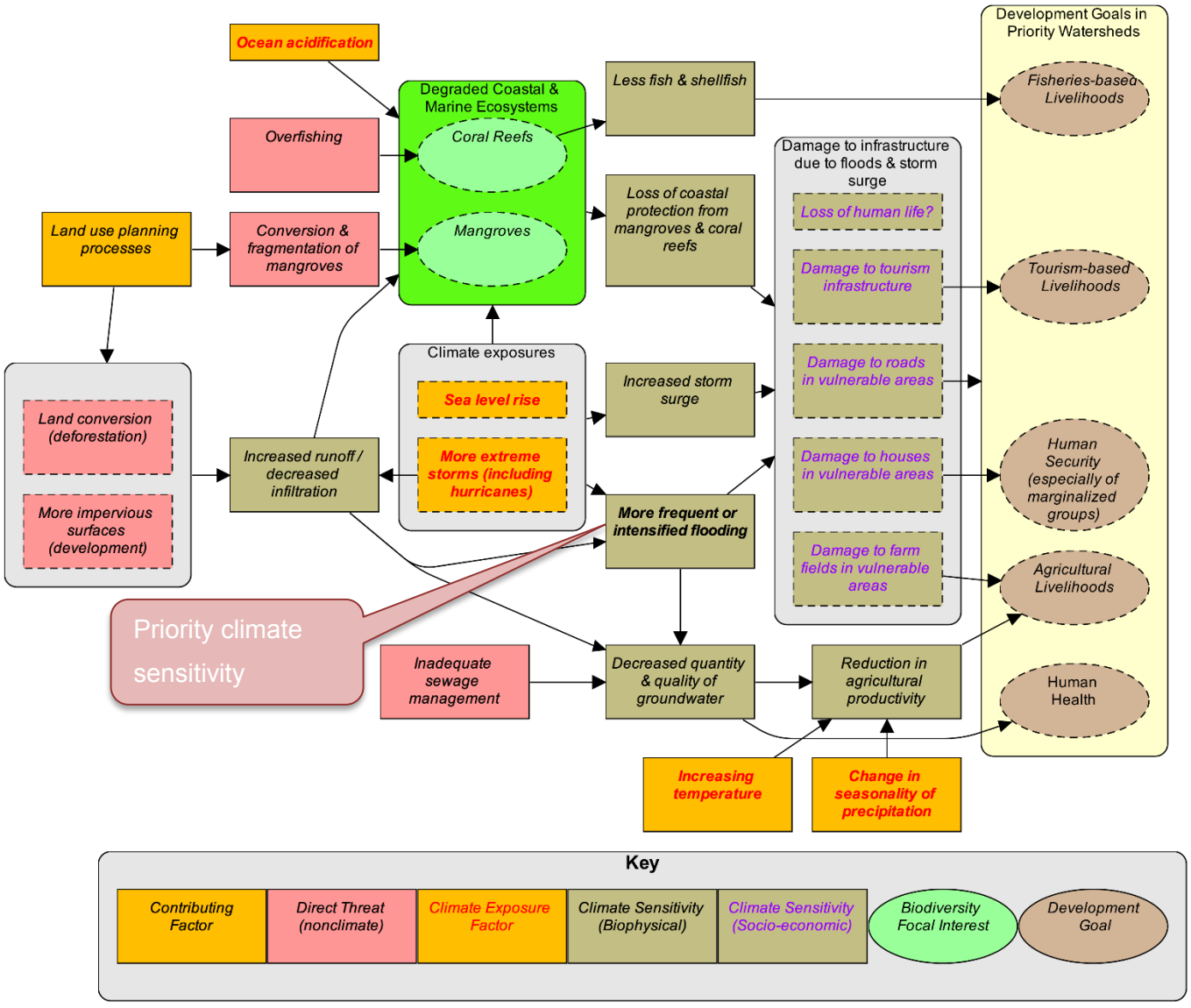
The Open Standards was developed primarily for biodiversity conservation projects. We therefore use a semi-hypothetical example based on the ARCC Dominican Republic CCVA case to describe its potential application to CCA in more detail.

The first step in the Open Standards, Conceptualize, focuses on understanding the project context, including the scope and vision of the project, development goals to which it contributes, threats to those development goals (including climate change and non-climate threats), and factors contributing to those threats. Figure 17 shows a conceptual model that graphically summarizes these elements, based on the Dominican Republic CCVA.

According to the CCVA, important climate exposure factors include sea level rise, more extreme storms, increasing temperature and changes in seasonality of precipitation. The conceptual model shows how these exposure factors are predicted to affect development goals (related to sustainable livelihoods and human security) in the watersheds. For example, increased runoff

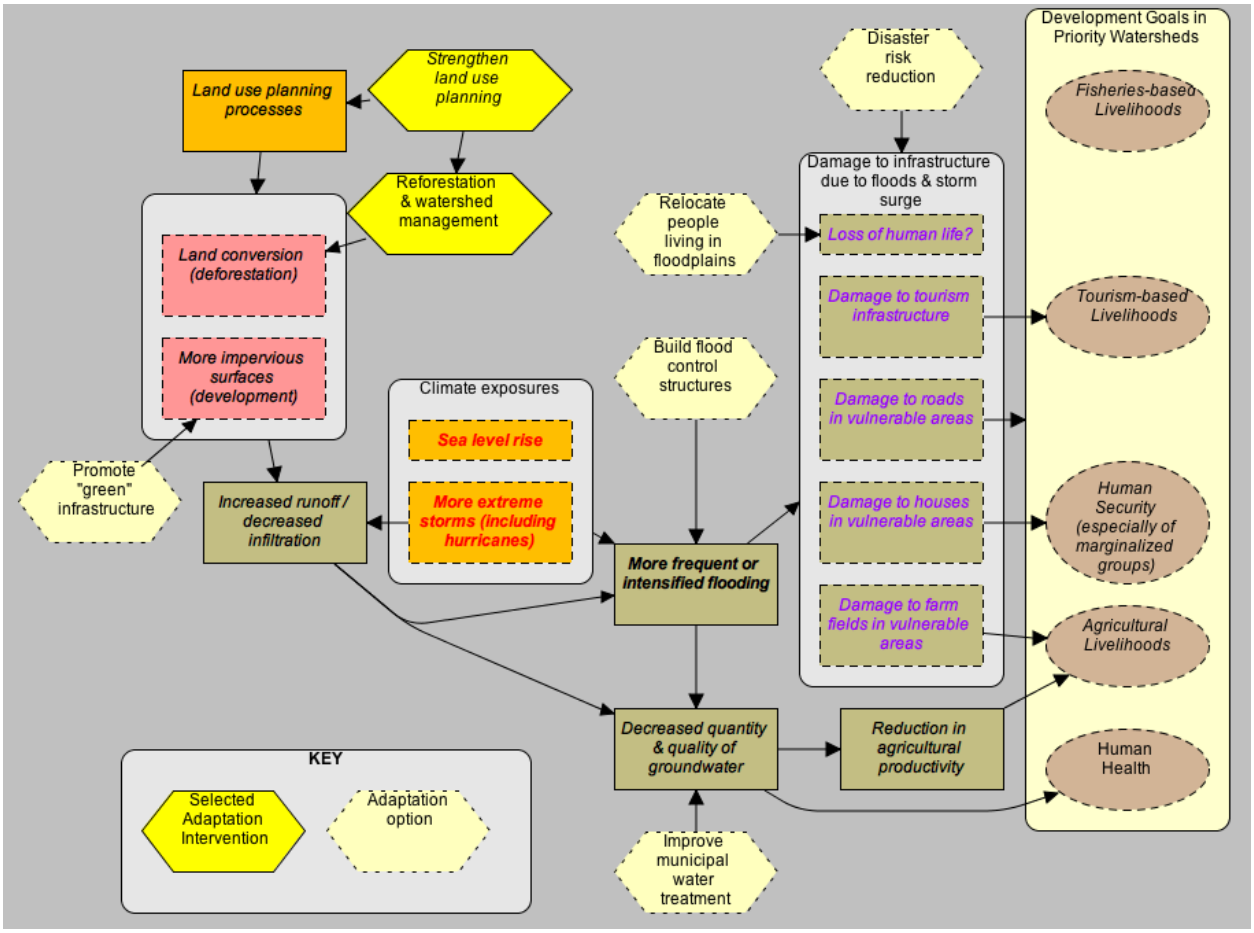
and decreased infiltration are predicted to occur due to more extreme storms (a climate exposure) as well as deforestation and an increase in impervious surfaces due to development (non-climate threats). Increased runoff will cause more frequent and/or intense flooding, which will damage infrastructure and may threaten human lives, which will affect development goals. Flooding is also predicted to decrease water quality, affecting human health. Flooding is one of the most important climate sensitivities, so it is shown in bold text.

Figure 17. Conceptual Model Summarizing Dominican Republic ARCC CCVA Results



The next step in the Open Standards process is to use the conceptual model to brainstorm adaptation options (potential interventions) and select final interventions. Figure 18 shows how a conceptual model can be used to brainstorm adaptation options. In this example, a broad suite of adaptation options exists, each of which links to a specific factor in this portion of the conceptual model. For example, USAID could build flood control structures to directly reduce flooding or support reforestation and forest management to reduce runoff. The Open Standards suggests rating potential interventions and selecting those that rank highest on selection criteria such as impact, feasibility, urgency and cost-effectiveness. In our example, the team selects strengthening land use planning and reforestation and watershed management. Adaptation options are shown as light yellow hexagons and final selected interventions as dark yellow hexagons.

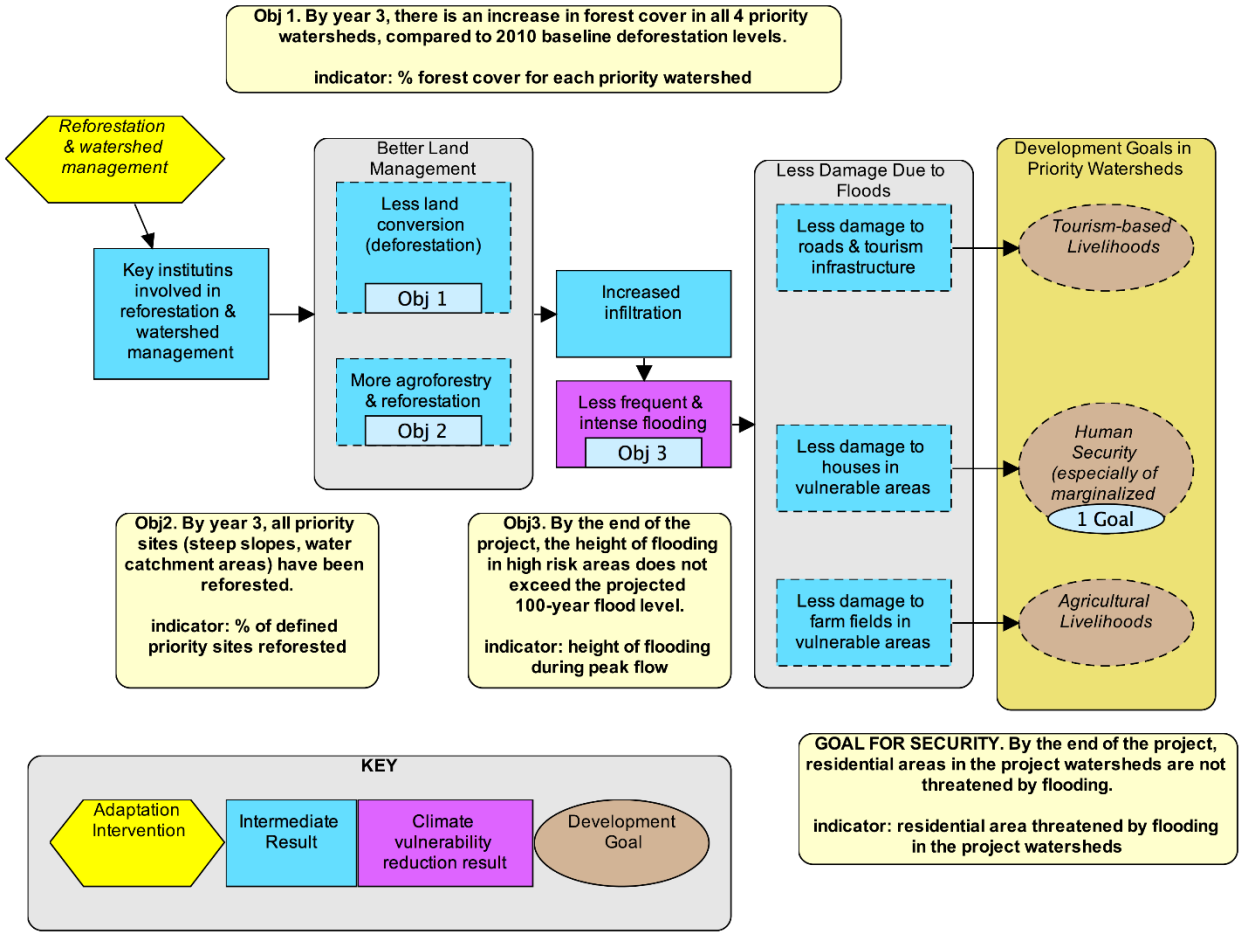
Figure 18. Use of a Conceptual Model to Brainstorm Adaptation Options and Select Final Interventions



Once the team selects an intervention, the next step in the Open Standards is to define the team's TOC for that intervention – its assumptions about what needs to happen for the intervention to reduce the related vulnerability and contribute to the development goals. The team also needs to establish objectives and indicators to monitor the effectiveness of its work. Figure 19 provides an example TOC or results chain diagram for the reforestation and watershed management intervention. The team believes that for this intervention to succeed in

reducing flooding (the priority climate vulnerability), key institutions must be involved in improving land practices, specifically reducing deforestation and increasing agroforestry and reforestation. Defining specific, measurable objectives and indicators linked to important intermediate results provides a framework for monitoring and evaluating progress toward a reduction in flooding and the ultimate development goals.

Figure 19. Example Results Chain with Objectives and Indicators



REFERENCES

Conservation Measures Partnership. (2013). *Open Standards for the Practice of Conservation, Version 3.0*. Available online at http://cmp-openstandards.org/

DFID. (2011). *Defining Disaster Resilience: A DFID Approach Paper*. London: DFID.

GIZ. (2014a). *Analyse intégrée de la Vulnérabilité au Burundi. Volume III: Méthodologie détaillée de l'Analyse de Vulnérabilité nationale*. Burundi: GIZ.

GIZ. (2014b). *The Vulnerability Sourcebook – Concept and guidelines for standardized vulnerability assessments.* Available at https://gc21.giz.de/ibt/var/app/wp342deP/1443/wp-

content/uploads/filebase/va/vulnerability-guides-manuals-reports/Vulnerability_Sourcebook_-_Guidelines_for_Assessments_-_GIZ_2014.pdf

IPCC. (2014). *Climate Change 2014: Impacts, Adaptation and Vulnerability. Summary for Policymakers*. Available online at: http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf.

USAID. (2014). *Climate-Resilient Development (CRD): A Framework for Understanding and Addressing Climate Change.* Available online at: http://pdf.usaid.gov/pdf_docs/pbaaa245.pdf

World Bank. (2006). *Overcoming Drought. Adaptation Strategies for Andhra Pradesh, India.* Washington, DC: The World Bank.

World Bank. (2010). *Mainstreaming Adaptation to Climate Change in Agriculture and Natural Resources Management Projects*. Guidance Notes GN1 – GN8. Washington, DC: The World Bank.

ANNEX H: SUMMARY OF ATLAS CLIMATE ADAPTATION EXPERTS' WORKSHOP

The ATLAS Climate Adaptation Experts' Workshop, held in Washington, DC, on November 12, 2015, presented and socialized the findings captured in the body of this report. This annex includes a summary of workshop content and the recommendations for next steps suggested by participants during Session 3. Annex I contains the participant list, agenda and PowerPoint presentations used in the workshop.

WORKSHOP SUMMARY

The workshop consisted of three sessions. Session 1 identified the challenges of operationalizing CCVAs. Session 2 discussed ways to improve the CCVA and CCA planning process to improve uptake. Finally, Session 3 provided a forum to discuss potential next steps.

Twenty-eight global and regional climate change experts came together to learn about the research methods and results, provide feedback on the key findings and recommendations, and begin to use some of the recommended tools (see Participant List in Appendix I). The attendees included 18 USAID staff members and 10 representatives from implementing partners including consulting firms (Abt Associates, Tetra Tech, etc.), international NGOs (WWF, Mercy Corps, Conservation International, WRI, etc.), and one multilateral organization (World Bank).

Workshop objectives were as follows:

1. Explore the utility and applicability of available assessment approaches to meet climate-resilient development planning needs.
2. Evaluate tools to operationalize existing vulnerability assessments with a focus on obtaining actionable program development recommendations.
3. Share and discuss a working model of a TOC for successful uptake of climate considerations into the USAID program cycle.
4. Produce a set of recommendations for moving from vulnerability assessment to climate-resilient programming and adaptive management that we can test going forward.

RECOMMENDATIONS FOR NEXT STEPS

In Session 3, participants suggested next steps to support CCVA design, implementation, and uptake. These suggestions are listed in Table 4.

Table 4. Summary of Recommended Next Steps

CATEGORY	ACTIVITY DESCRIPTION	EXAMPLE (IF GIVEN)
1. Guidance		
	A. Operationalize adaptive management • Using pilots • Within the USAID context • With Office of Acquisition and Assistance (Contracting Office) buy-in	
	A. How to navigate within the USAID system to manage adaptively, including examples	
	B. Develop a document that gives examples and provides models and indicators	Measuring Impact's *Measuring Efforts to Combat Wildlife Crime: A Toolkit*
	C. How to use different decision tools	Ethiopia case study
	B. What is the best practice among different "fit for purpose" models of CCVA (e.g., small and targeted vs. larger and broader in scope)? Includes: • Types of questions to ask in the CCVA • Types of data to use D. Assessment type	Intent: help designers determine in each case what the different types are that will fit the purpose
	E. Models, methods and information needed to effectively use available resources	
2. Tools		
	A. Identify high-priority vulnerabilities and interventions that clarify archetypes and understand assumptions/linkages	ATLAS Ethiopia research about decision tools
	B. How can the OS approach be used as a climate screening tool?	
3. Capacity Development		
	A. Use Situational Model and TOC in training materials on climate and health as a tool to parse out relationships/linkages/ assumptions	
	B. As a training tool, it could be useful to use a non-Natural Resource Management example so we can see how climate stressors affect a "non-climate" project instead of the TOC seeming like an inherently "climate" tool	
4. Pilots		
	A. Rethink what piloting is and the timeframes needed for adaptive management, understanding that all CCA is effectively a pilot because conditions change	Extend timeline for pilots to up to 10 years
	B. Comparative Analysis: Integrate climate into sectoral situation analysis and planning and see if you come up with something different than with stand-alone CCA situation analysis and planning	
	C. Go in with a more open view of vulnerability –both climate and non-climate stressors need to be balanced and considered	
5. Other		
	A. Consider capacities needed for prioritizing interventions within CCVA	

	(climate experts may not have the experience needed to facilitate discussion about the best interventions for a specific context)	

ANNEX I: MATERIALS FROM ATLAS CLIMATE ADAPTATION EXPERTS' WORKSHOP

PARTICIPANT LIST

Anderson, Glen	Abt Associates
Blaine, Tegan	USAID
Butcher, Anna	World Bank
Colborn, James	ATLAS Project
Cook, Jonathan	USAID
Donatti, Camila	Conservation International
Edwardsen, Matthew	Tetra Tech
Epanchin, Pete	USAID
Evans, Lara	USAID/DCHA/FFP
Frankel Reed, Jenny	USAID/GCC
Frankenberger, Tim	Tango International
Furlow, John	USAID/E3
Ganier, Karine	USAID Center for Resilience
Gurwick, Noel	USAID/E3/GCC
Herzer, Lauren	Wilson Center
Hyman, Eric	USAID/E3
Kushnir, Hadas	USAID
Martin, Shaun	WWF
McGray, Heather	WRI
Mershon, Andre	USAID
Miley, Danielle	USAID/GCC
Mutunga, Clive	USAID/GH
Ngugi, Moffatt	USAID/BFS
Nicholson, David	Mercy Corps
Pleuss, Liz	USAID/GH
Rearick, Kyle	USAID
Scicchitano, John	USAID/DCHA
Wilkerson, Marit	USAID/Africa

ATLAS CLIMATE ADAPTATION EXPERTS' WORKSHOP AGENDA

Time	Activity	Objectives
9:00 – 9:30	Introductions, expectations, review of agenda	
Session 1: What are the challenges in operationalizing CCVAs?		
9:30 – 10:45	Present 'working model' of theory of change for successful "uptake" of climate considerations into USAID program cycle Present results of case study analysis (CCVAs and evidence of uptake)	Explore and discuss the utility and applicability of available assessment approaches, methods and tools to meet climate-resilient development planning needs.
10:45 – 11:00	*Break*	
11:00 – 12:30	Work in groups to discuss results and agree on barriers to uptake (3 groups, time includes time for reporting back to plenary)	
12:30 – 1:30 Lunch		
Session 2: How can we improve the process to encourage uptake?		
1:30 – 2:45	Present recommendations from the assessment process	Evaluate tools to operationalize existing vulnerability assessment methods with a focus on obtaining actionable program development recommendations.
2:45 – 3:00	*Break*	
3:00 – 4:15	Work in groups to experiment with recommended tools	
Session 3: Suggestions for a way forward		
4:15 – 5:00	Plenary discussion on actionable recommendations and next steps	

WORKSHOP POWERPOINT PRESENTATION

The following pages contain the slide presentations from the climate adaptation experts' workshop on November 12, 2015.

USAID
FROM THE AMERICAN PEOPLE

ATLAS
Climate Change Adaptation, Thought Leadership and Assessments

Adaptation Experts' Workshop

Good Practice in Climate Vulnerability Assessments

November 12, 2015

Overview – Introductory session

- Opening remarks
- Introductions
- Objectives
- Agenda

Objectives

- Explore the utility and applicability of available assessment approaches to meet climate resilient development planning needs.
- Evaluate tools to operationalize existing vulnerability assessments with a focus on obtaining actionable program development recommendations.
- Share and discuss a working model of a theory of change for successful uptake of climate considerations into the USAID program cycle.
- Produce a set of recommendations for moving from vulnerability assessment to climate resilient programming and adaptive management that we can test going forward.

Agenda

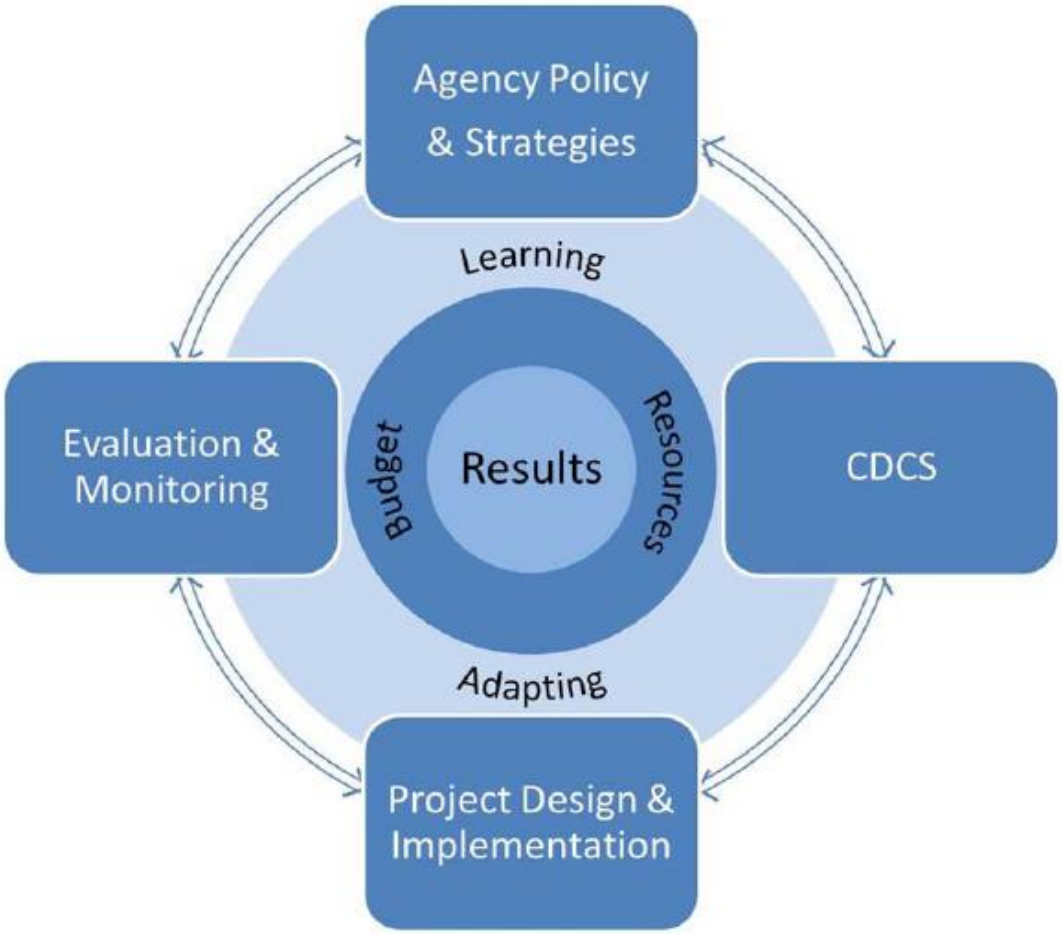
9:30-12:30	Session 1: What are the challenges in operationalizing CCVAs?
12:30-1:30	Lunch
1:30-4:15	Session 2: How can we improve the process to encourage uptake?
4:15-5:00	Session 3: Suggestions for a way forward

Session 1: What are the challenges in operationalizing CCVAs?

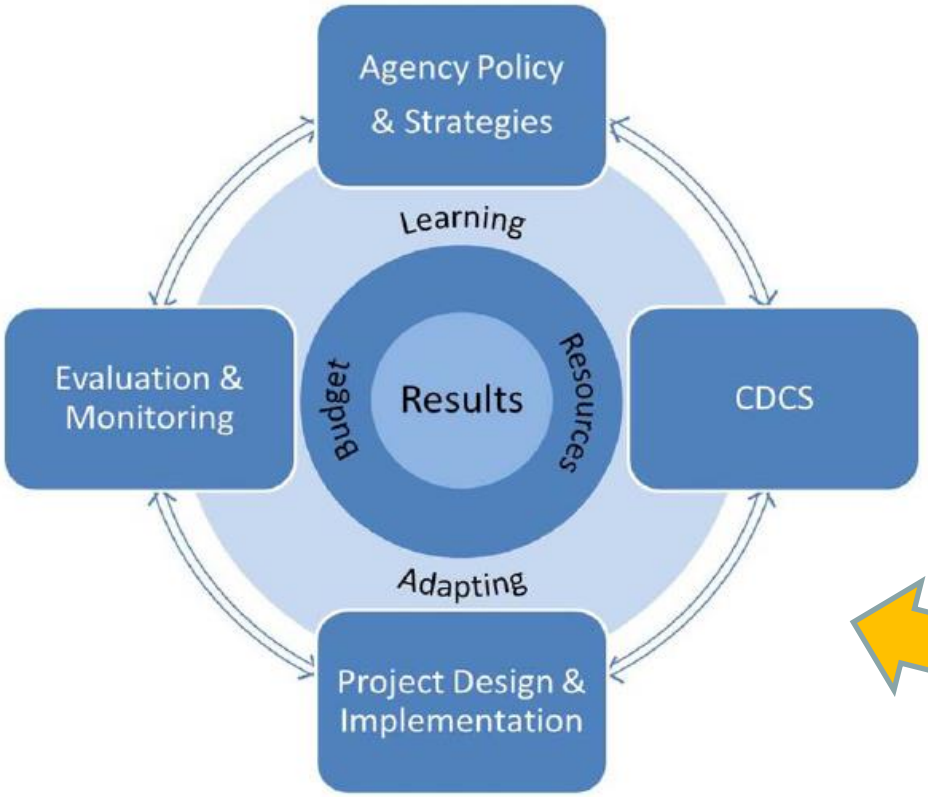
Overview of this presentation: The assessment of strategic uptake of CCVA results into adaptation programming

- ***Adaptive management***
- Methods
- Findings
- Summary of principal barriers to uptake

USAID program cycle

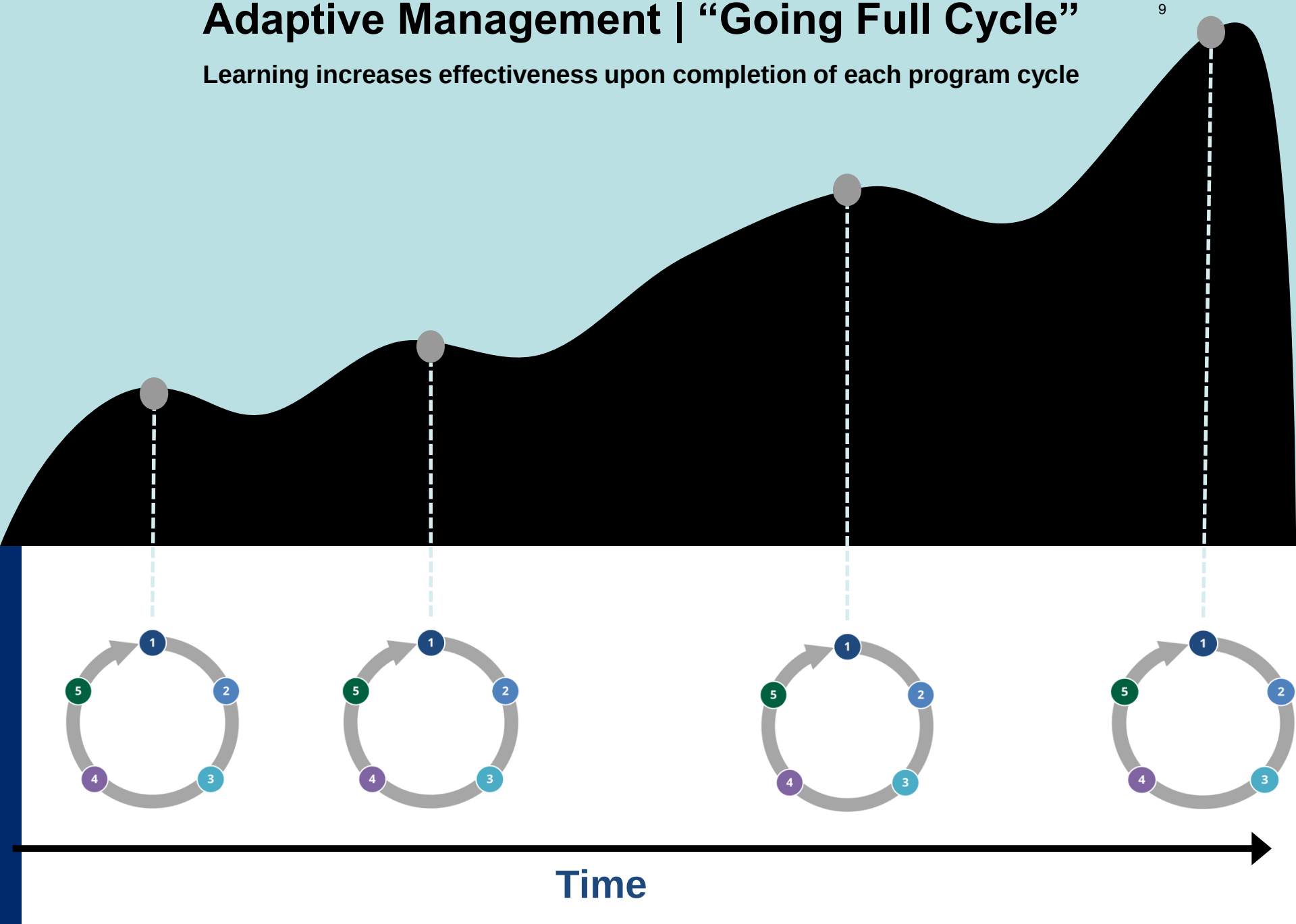


Using Open Standards tools to enhance program cycle



Adaptive Management | “Going Full Cycle”

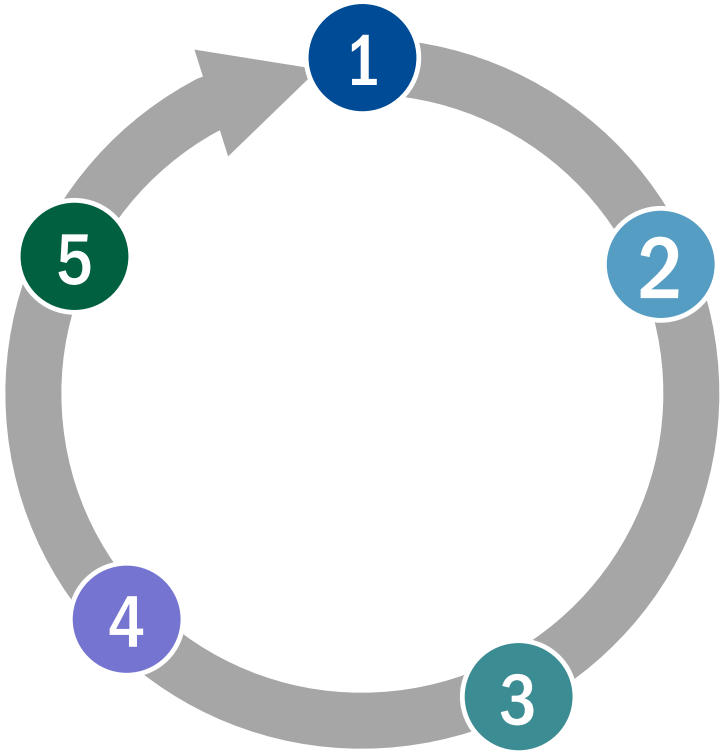
Learning increases effectiveness upon completion of each program cycle



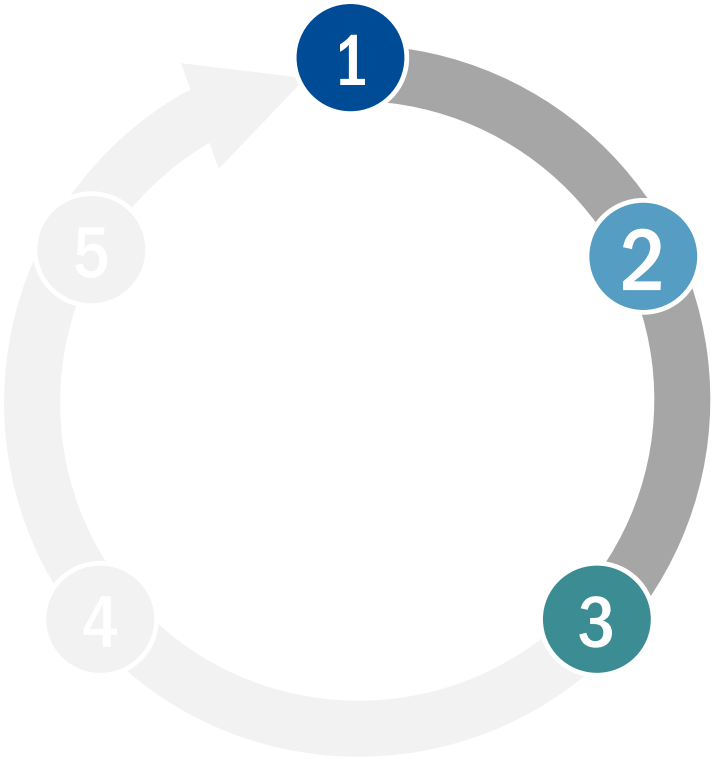
USAID
FROM THE AMERICAN PEOPLE

ATLAS
Climate Change Adaptation, Thought Leadership and Assessments

Full project (adaptive management) CYCLE



Incomplete CYCLE



1 **CONCEPTUALIZE/ ASSESS**

2 **DESIGN**

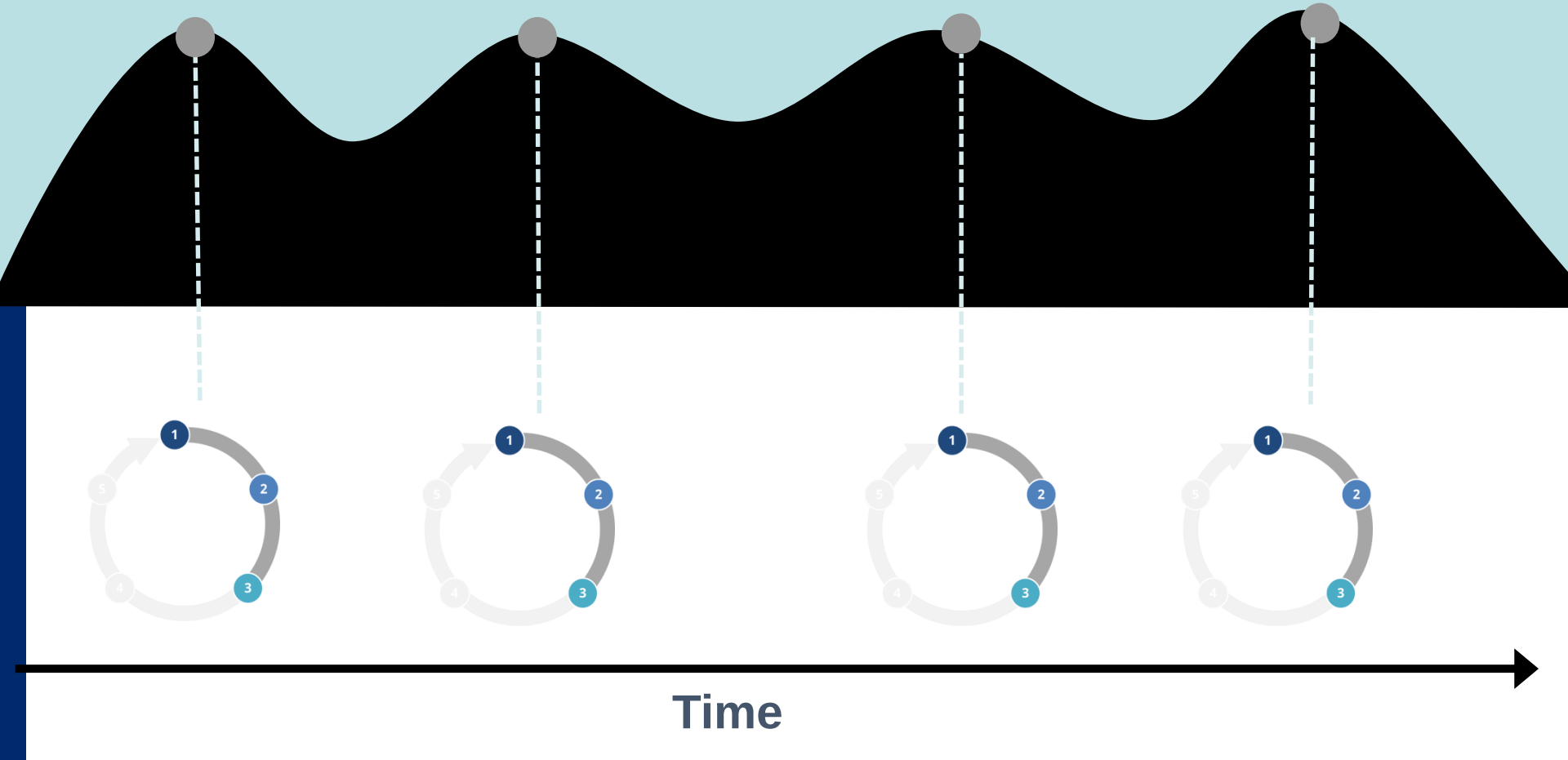
3 IMPLEMENT

4 EVALUATE

5 **LEARN AND ADAPT**

Incomplete Cycle

Little to no additional improvement and learning over time



What is adaptive management?

The integration of project or program planning, management, and monitoring to provide a framework for:

- Testing assumptions
- Adapting
- Learning

Adaptive management currently in USAID

Less recent…

- Project Design Guidance document
- Evaluation Policy

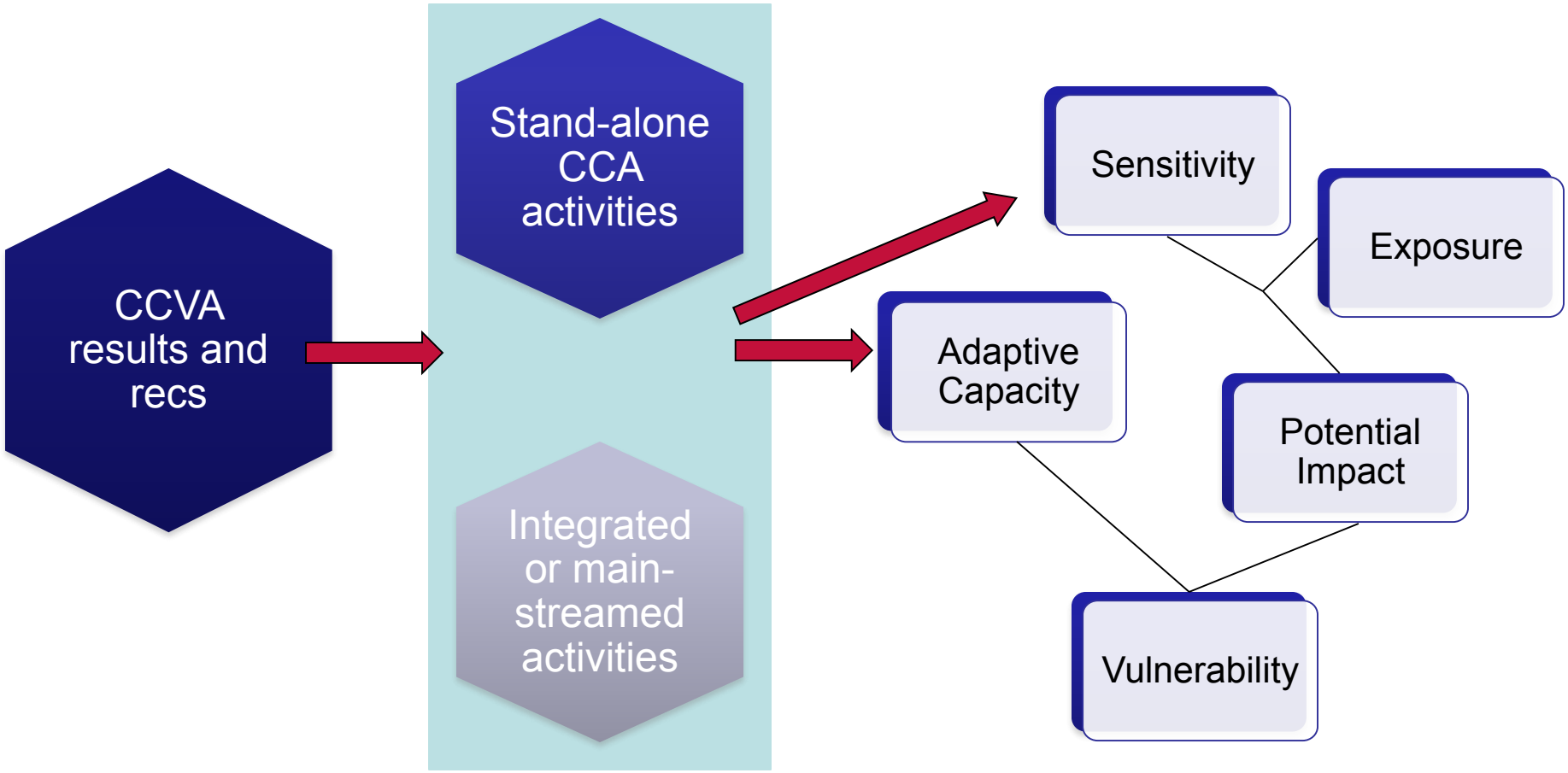
More recent…

- Collaborating, Learning, and Adapting (CLA)
- Program Cycle Learning Guide
- Monitoring, Evaluation, and Learning (MEL) Plan
- Revised ADS 200 Series
- Biodiversity Policy and Code

Assessment of strategic uptake of CCVA results into adaptation programming

- To provide guidance for integrating climate change risk management and adaptation into USAID project design and implementation

"Strategic uptake" defined



Methods

Step 1: Review of USAID lessons learned and best practices

Step 2: Build a theory of change

Step 3: Align assessment questions to theory of change

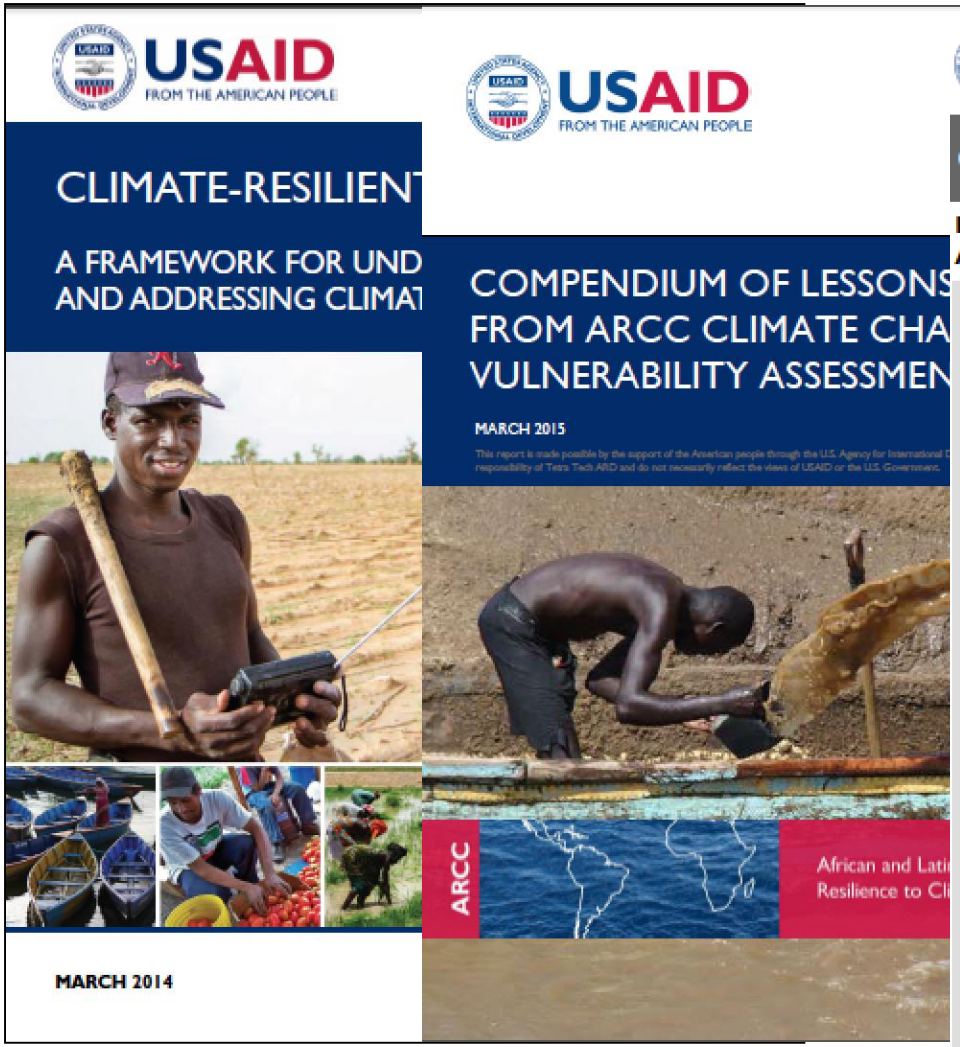
Step 4: Assessment of case studies through document review and key informant interviews

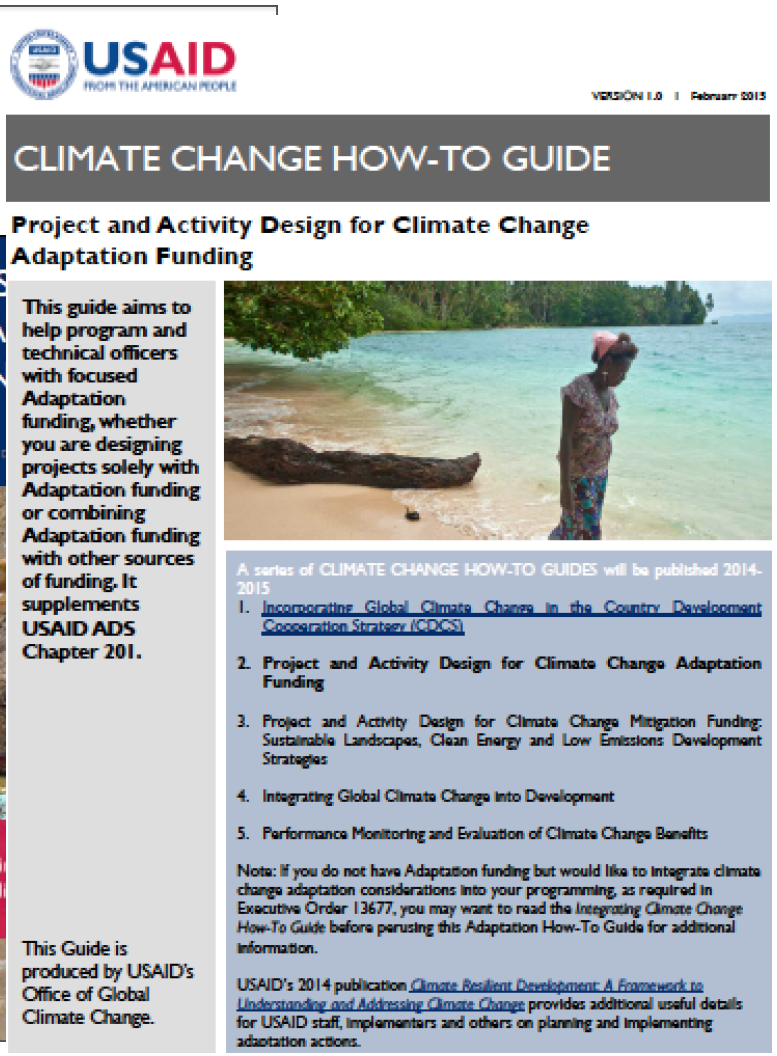
Step 5: Understanding the linkages (or lack) through the use of “situation model” diagrams

USAID
FROM THE AMERICAN PEOPLE

ATLAS
Climate Change Adaptation, Thought Leadership and Assessments

Step 1: Review of USAID lessons learned and best practices

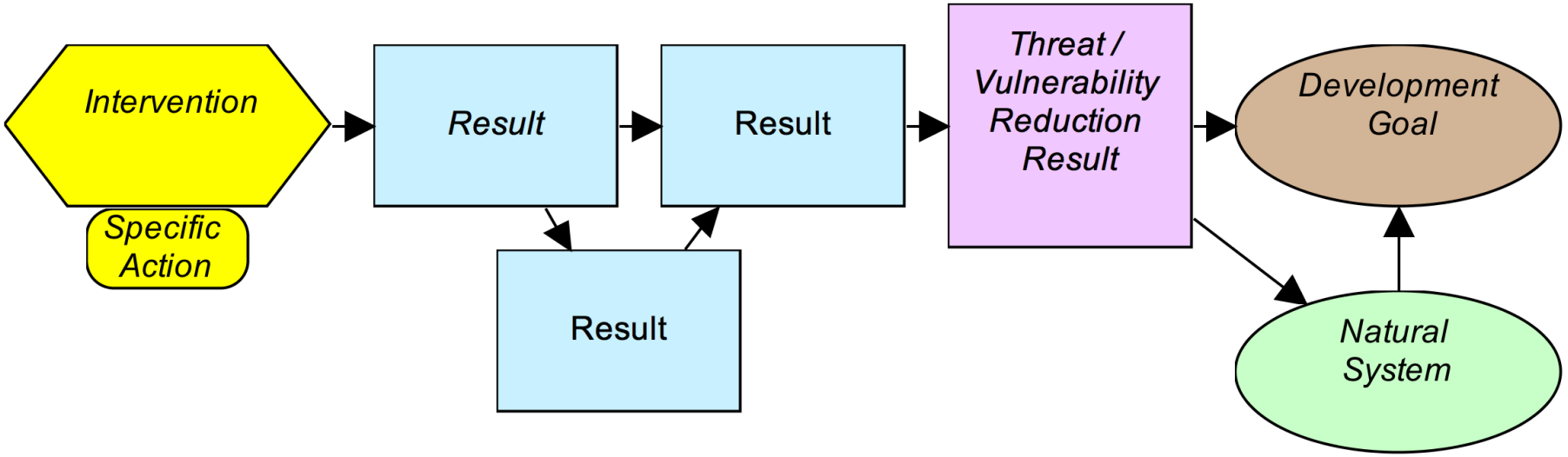




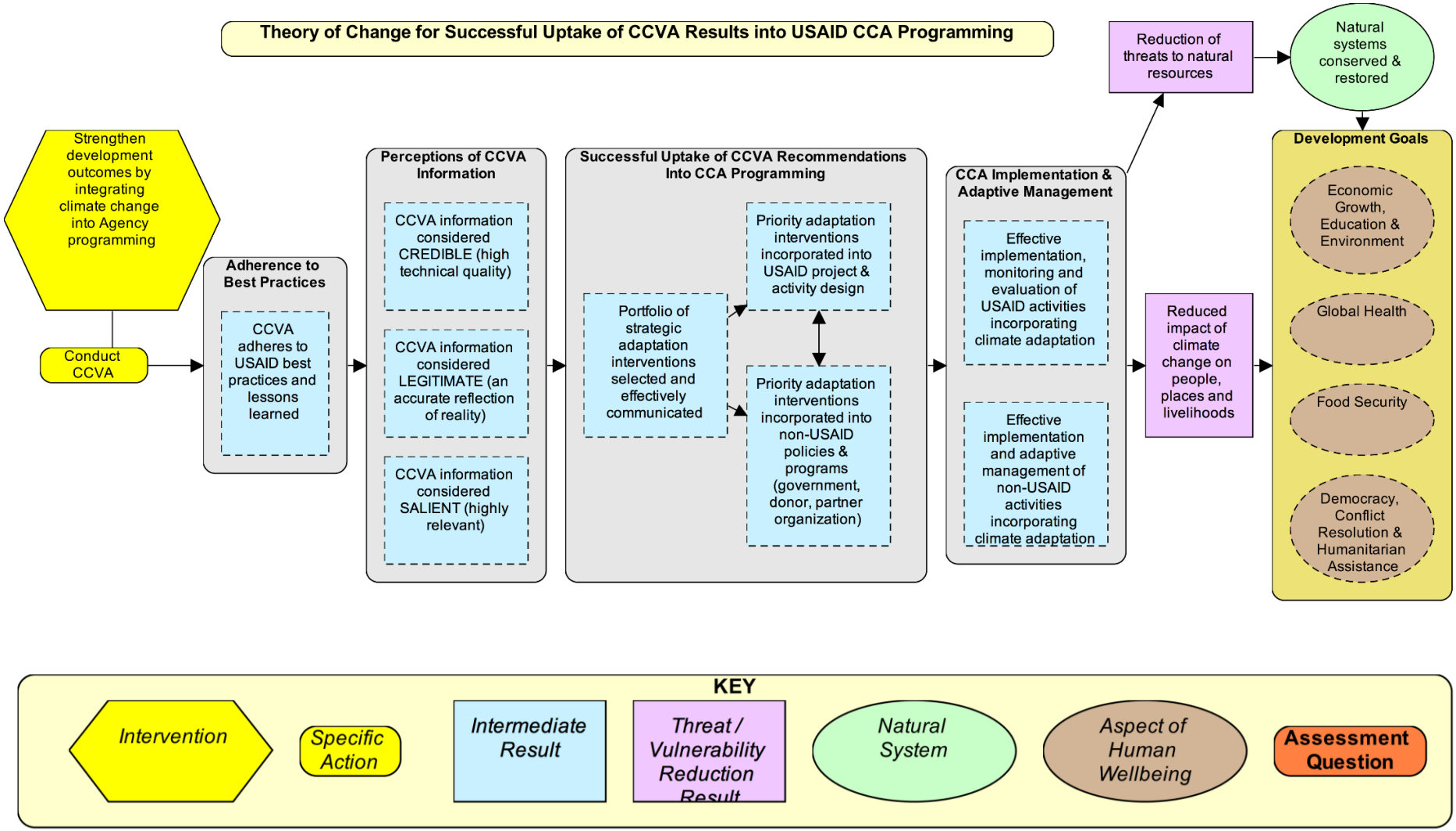
Step 2: Build a theory of change

A **theory of change**

- describes the assumptions about how a team believes an intervention will contribute to achieving a long-term result
- can be depicted graphically using a **results chain** – and can be tested!

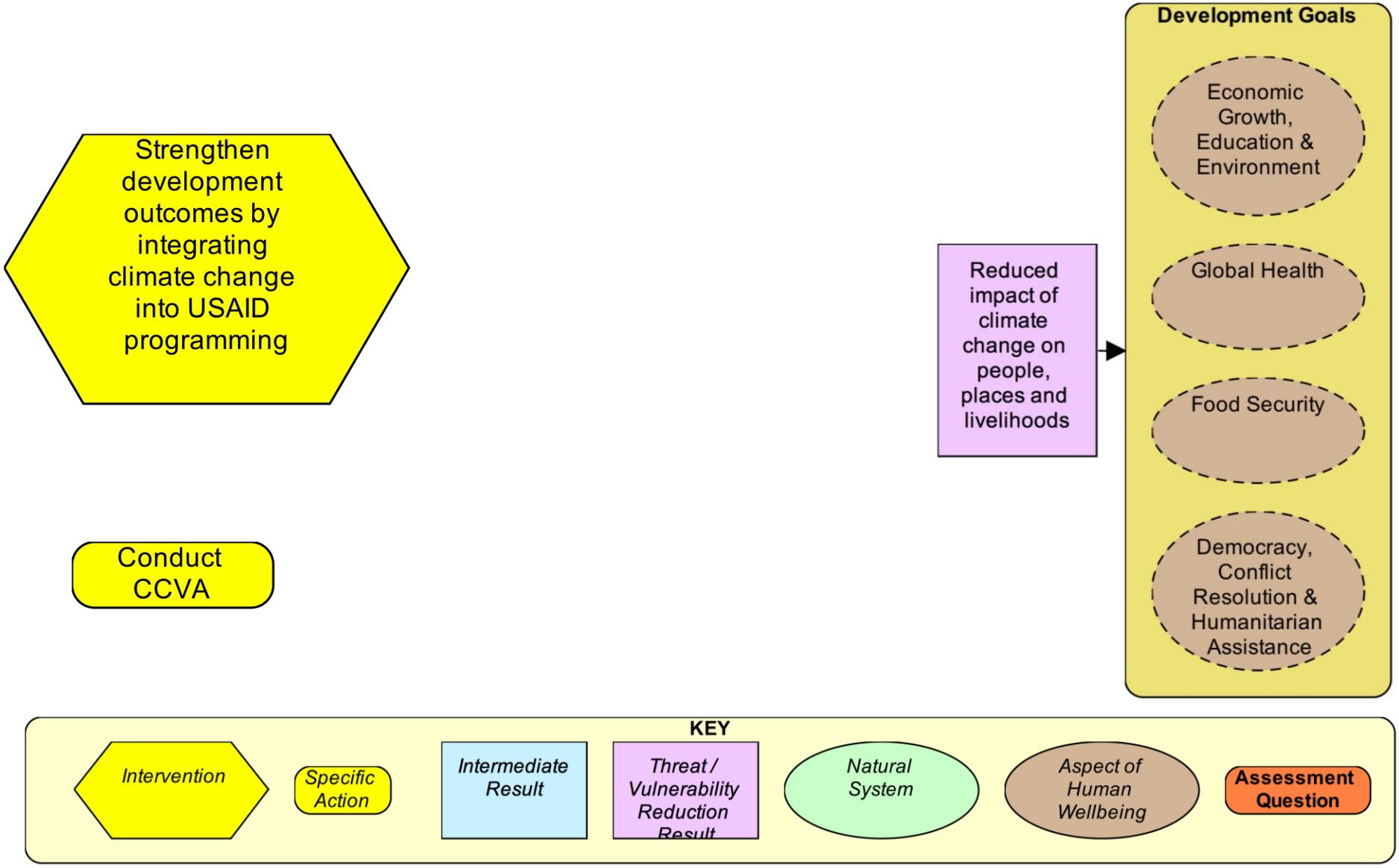


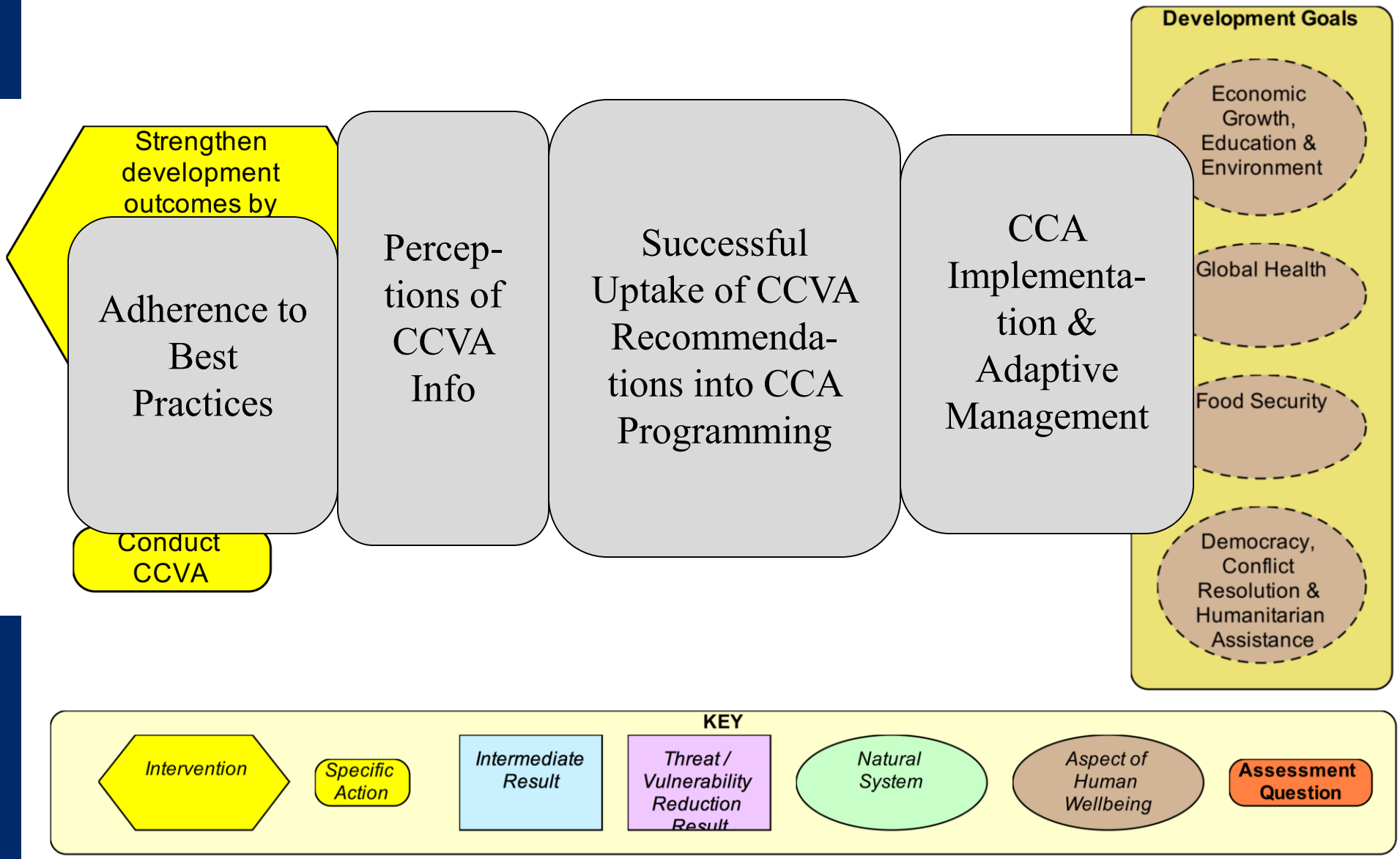
Step 2 continued: Build a theory of change



USAID
FROM THE AMERICAN PEOPLE

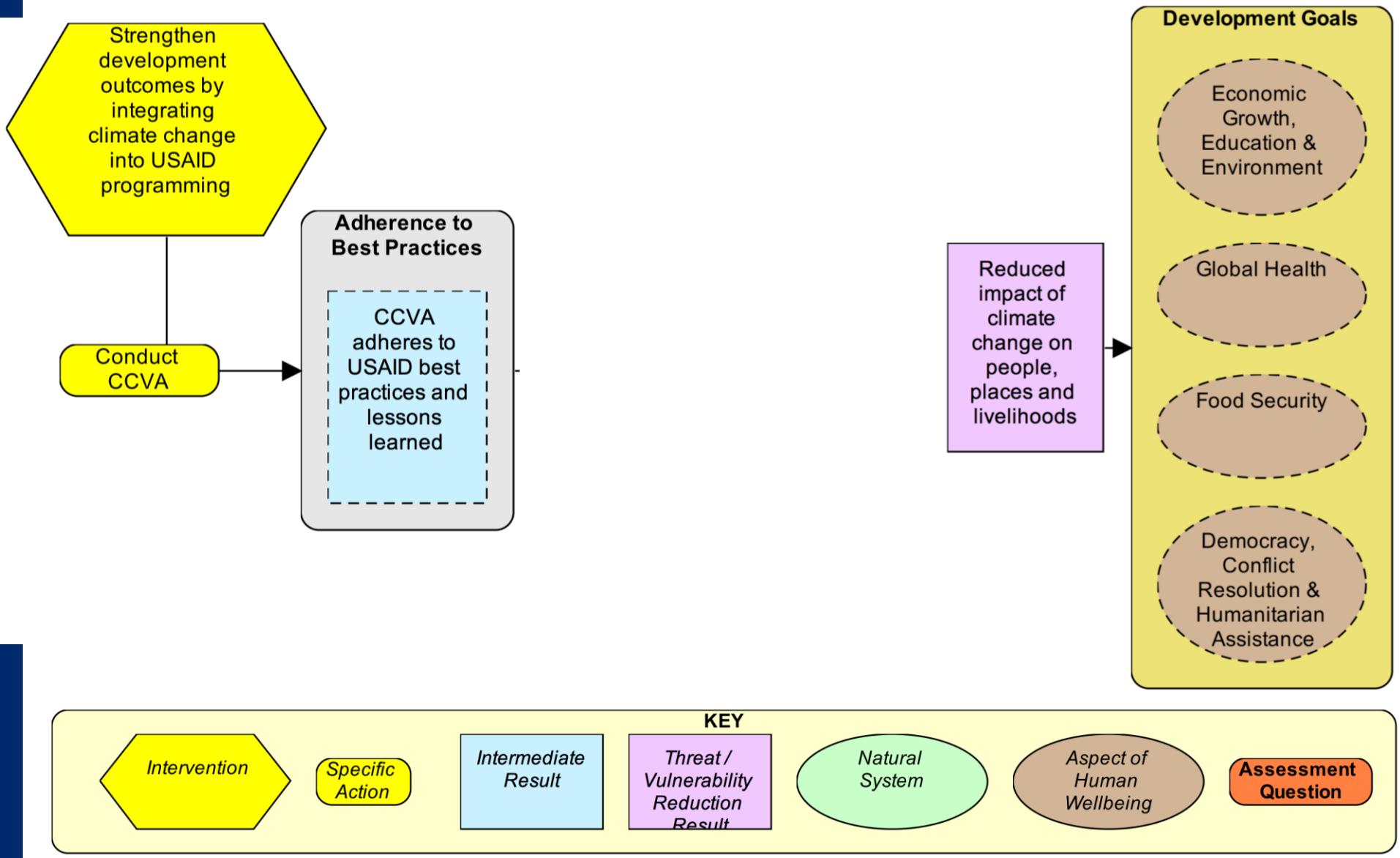
ATLAS
Climate Change Adaptation, Thought Leadership and Assessments

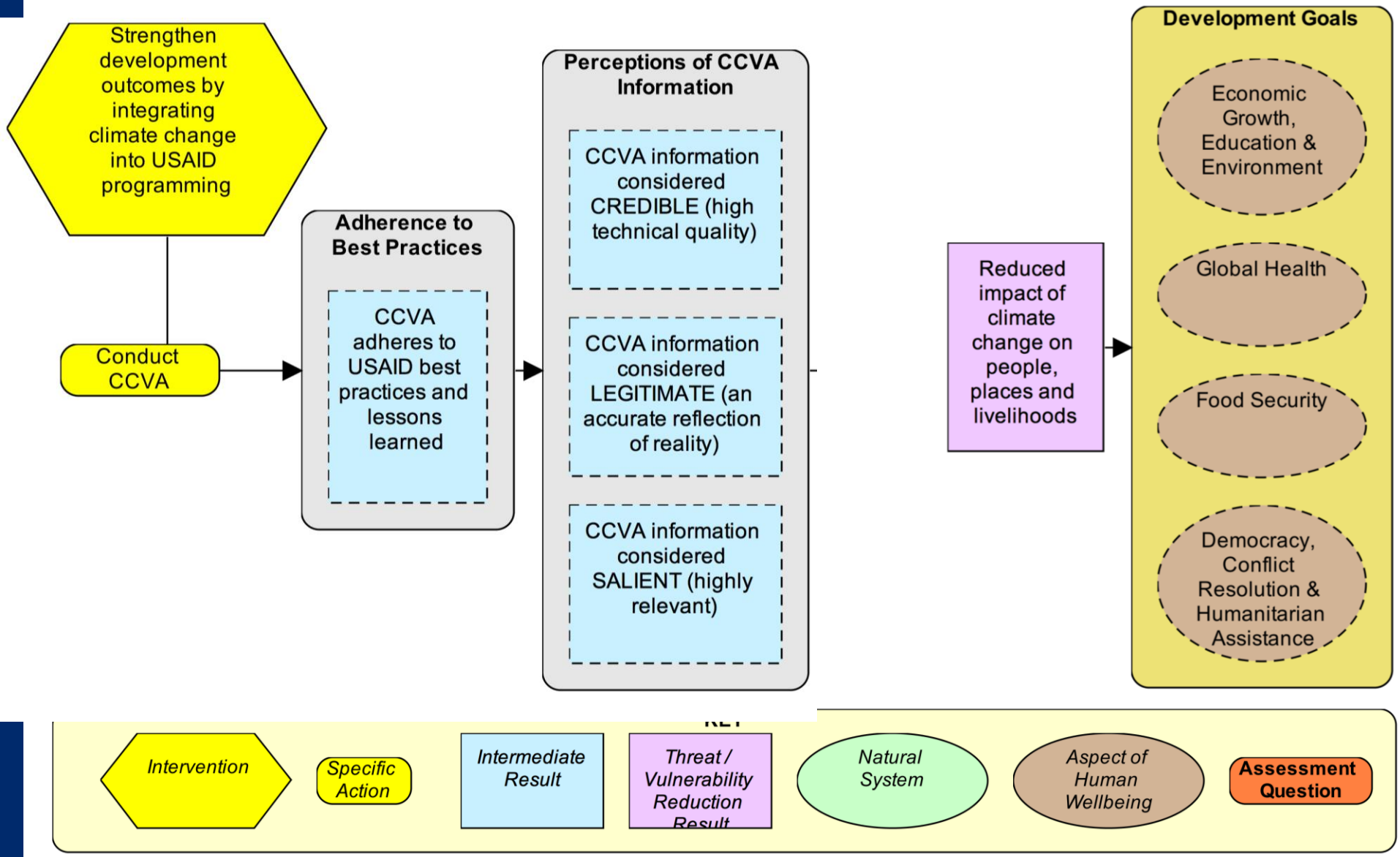



Strengthen development outcomes by
Conduct CCVA
Adherence to Best Practices
Percep-tions of CCVA Info
Successful Uptake of CCVA Recommenda-tions into CCA Programming
CCA Implementa-tion & Adaptive Management
Development Goals
Economic Growth, Education & Environment
Global Health
Food Security
Democracy, Conflict Resolution & Humanitarian Assistance
KEY
Intervention
Specific Action
Intermediate Result
Threat / Vulnerability Reduction Result
Natural System
Aspect of Human Wellbeing
Assessment Question

USAID
FROM THE AMERICAN PEOPLE

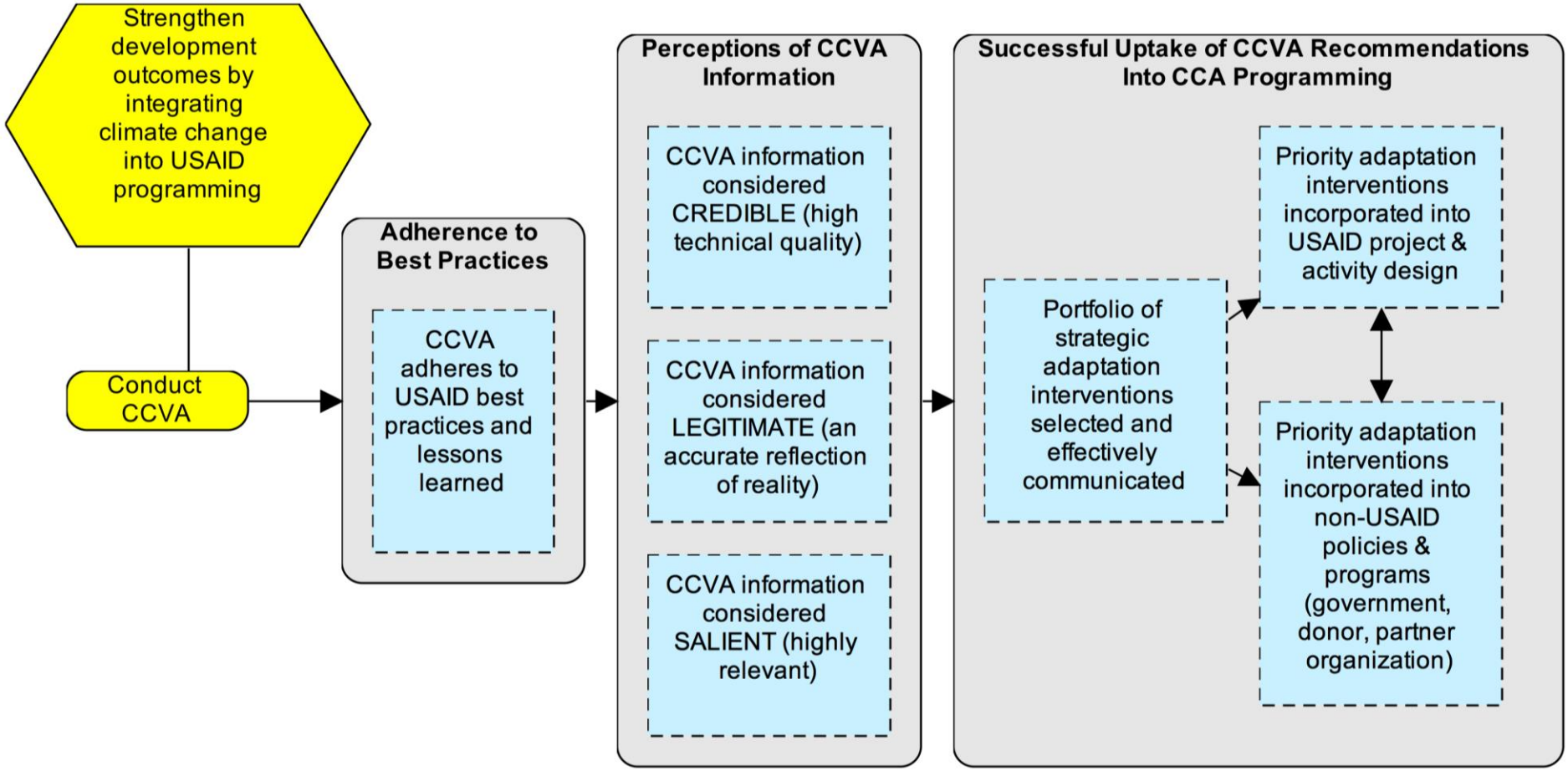
ATLAS
Climate Change Adaptation, Thought Leadership and Assessments

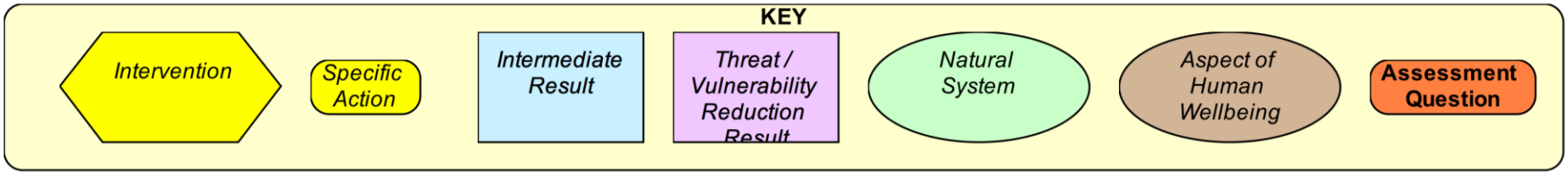


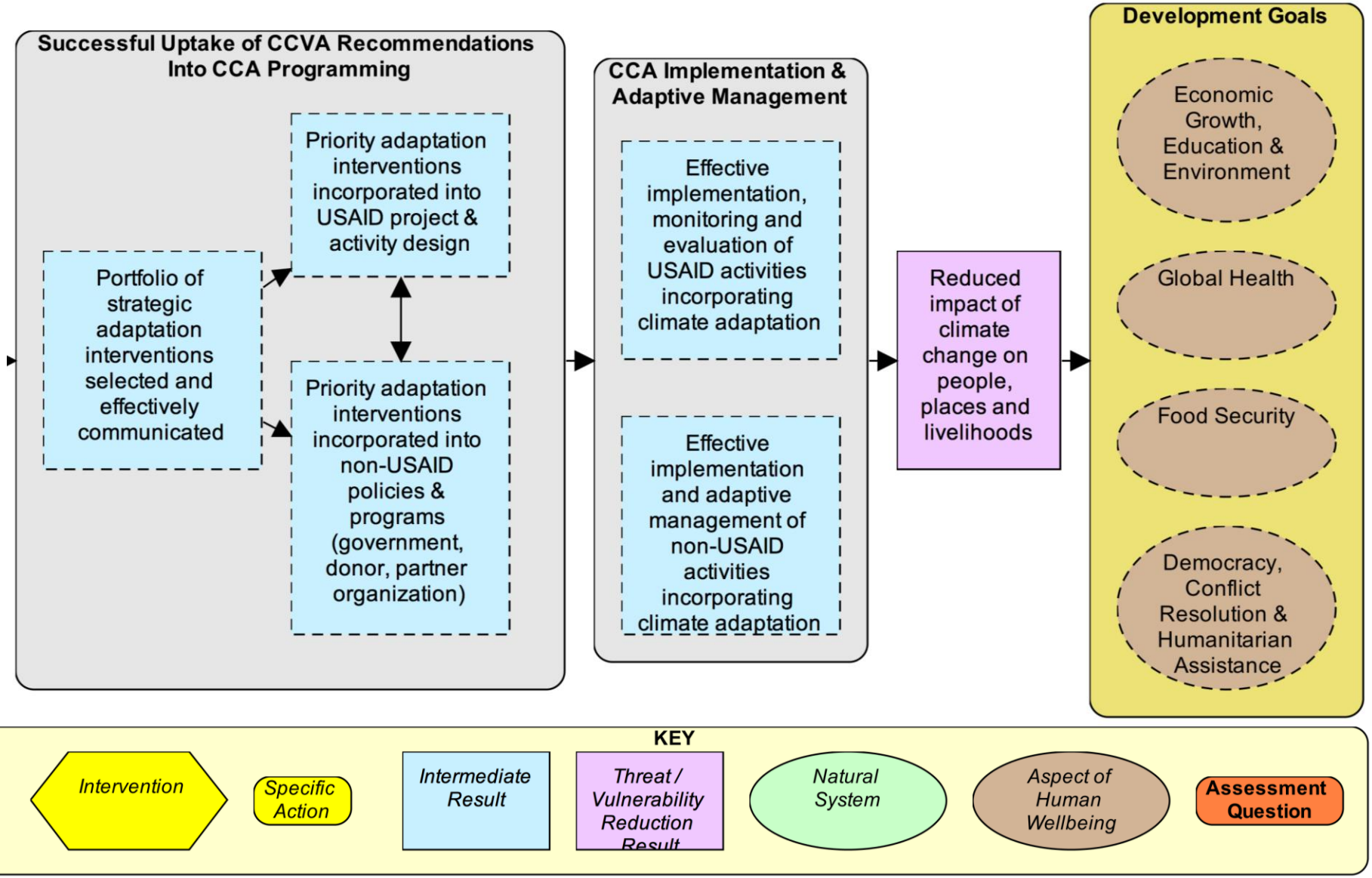

Strengthen development outcomes by integrating climate change into USAID programming
Conduct CCVA
Adherence to Best Practices
CCVA adheres to USAID best practices and lessons learned
Perceptions of CCVA Information
CCVA information considered CREDIBLE (high technical quality)
CCVA information considered LEGITIMATE (an accurate reflection of reality)
CCVA information considered SALIENT (highly relevant)
Reduced impact of climate change on people, places and livelihoods
Development Goals
Economic Growth, Education & Environment
Global Health
Food Security
Democracy, Conflict Resolution & Humanitarian Assistance
KEY
Intervention
Specific Action
Intermediate Result
Threat / Vulnerability Reduction Result
Natural System
Aspect of Human Wellbeing
Assessment Question

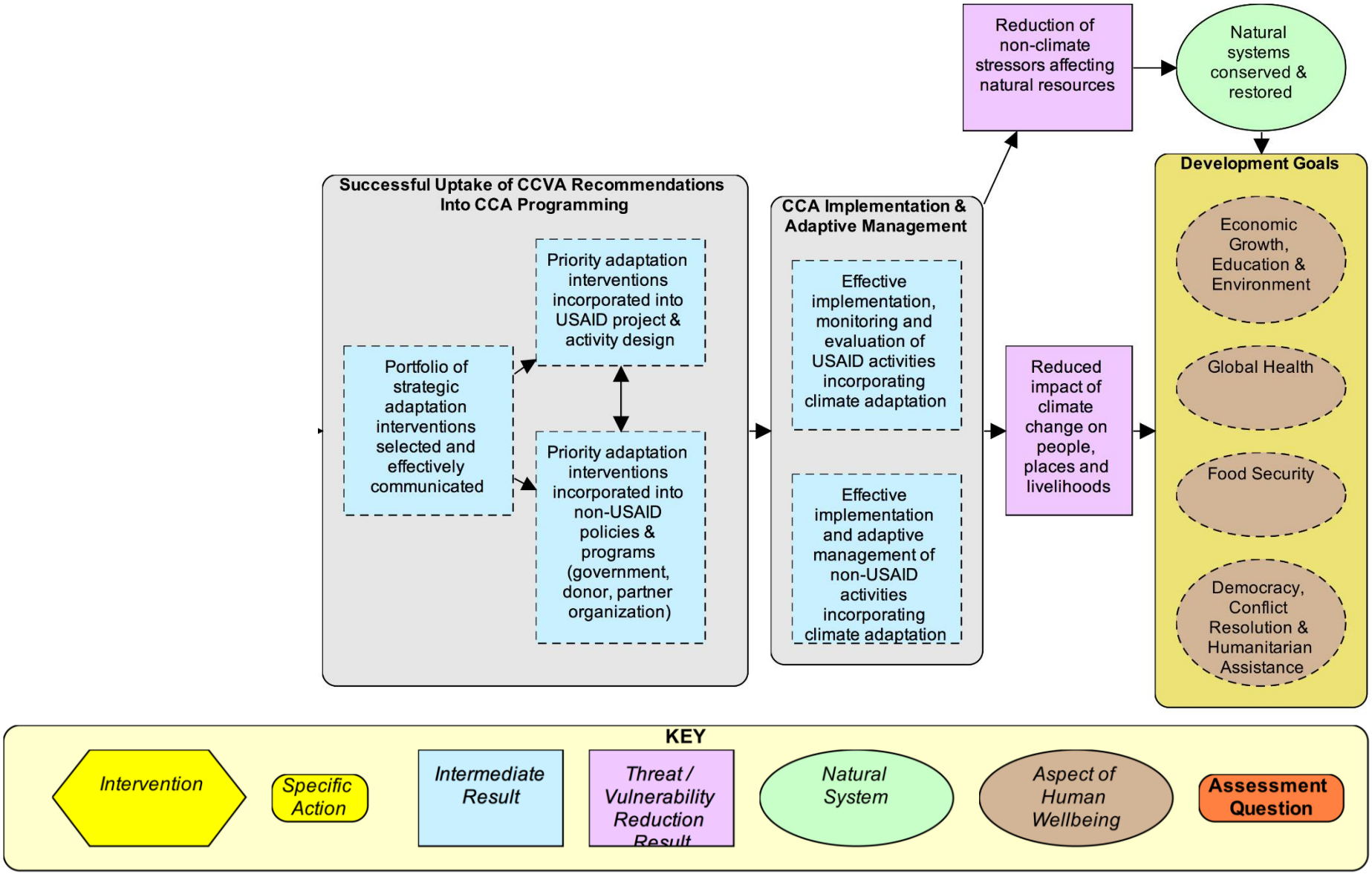
USAID FROM THE AMERICAN PEOPLE

ATLAS
Climate Change Adaptation, Thought Leadership and Assessments



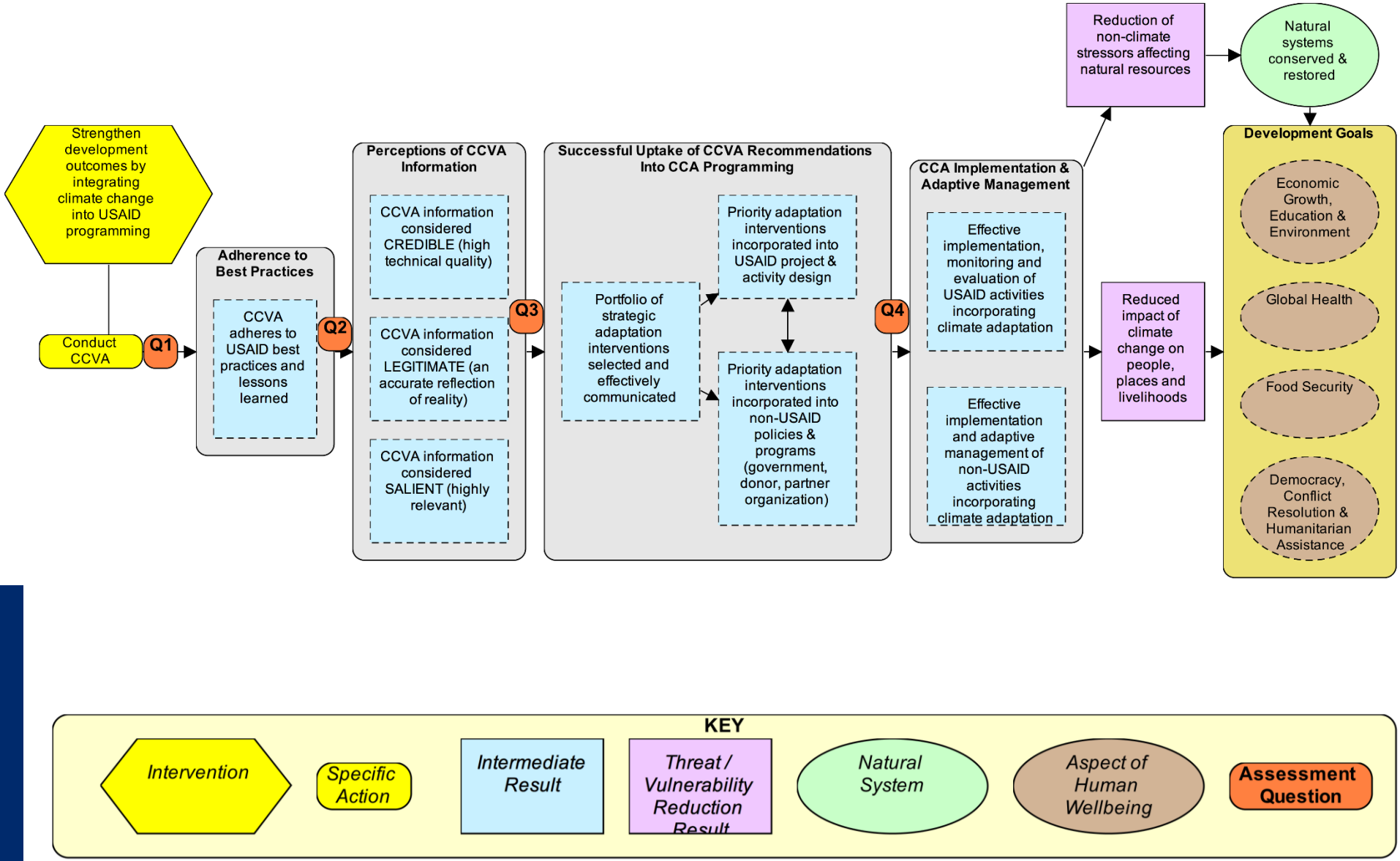



Successful Uptake of CCVA Recommendations Into CCA Programming
Portfolio of strategic adaptation interventions selected and effectively communicated
Priority adaptation interventions incorporated into USAID project & activity design
Priority adaptation interventions incorporated into non-USAID policies & programs (government, donor, partner organization)
CCA Implementation & Adaptive Management
Effective implementation, monitoring and evaluation of USAID activities incorporating climate adaptation
Effective implementation and adaptive management of non-USAID activities incorporating climate adaptation
Reduced impact of climate change on people, places and livelihoods
Development Goals
Economic Growth, Education & Environment
Global Health
Food Security
Democracy, Conflict Resolution & Humanitarian Assistance
KEY
Intervention
Specific Action
Intermediate Result
Threat / Vulnerability Reduction Result
Natural System
Aspect of Human Wellbeing
Assessment Question

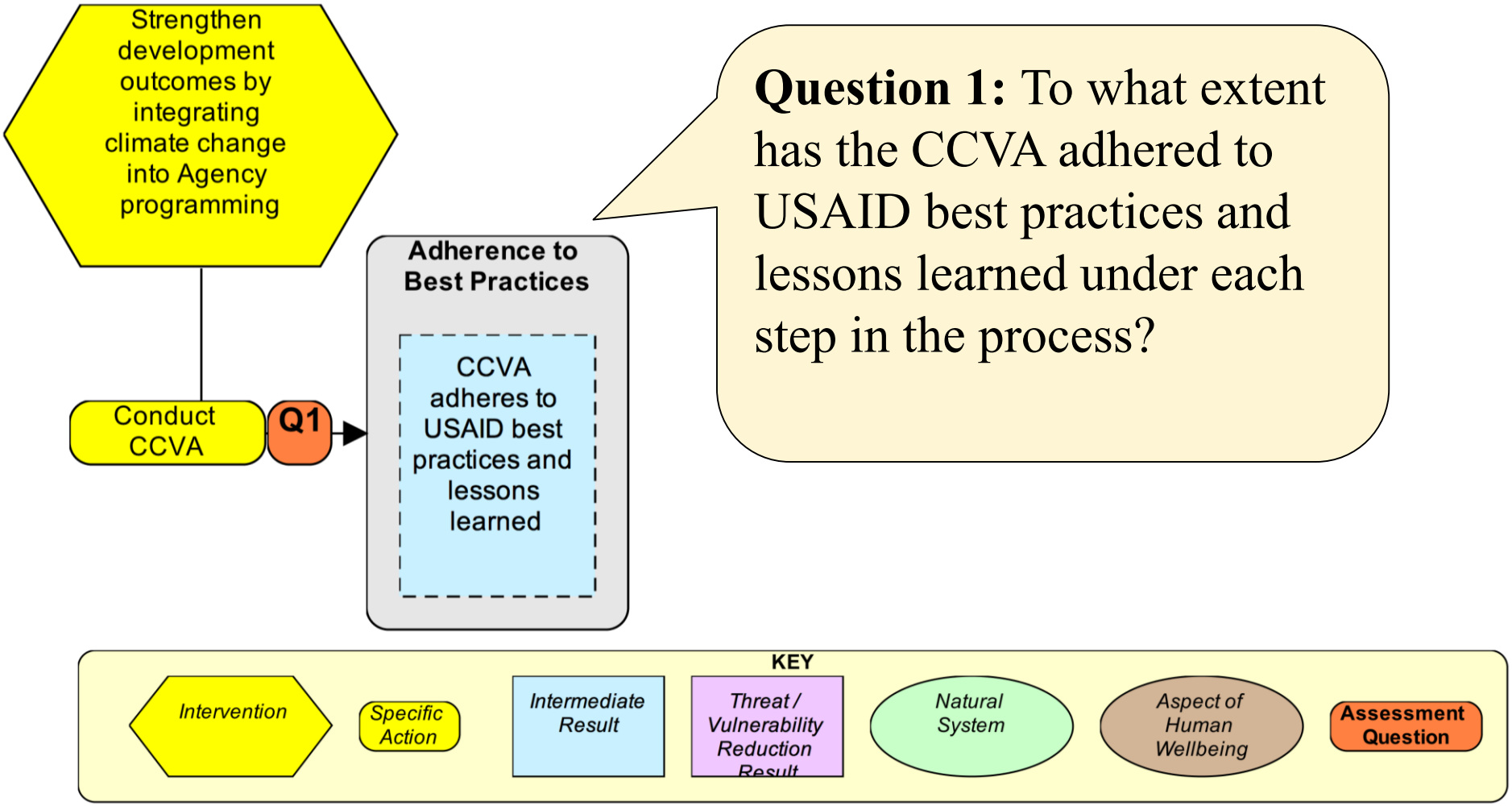

Reduction of non-climate stressors affecting natural resources
Natural systems conserved & restored
Development Goals
Economic Growth, Education & Environment
Global Health
Food Security
Democracy, Conflict Resolution & Humanitarian Assistance
Successful Uptake of CCVA Recommendations Into CCA Programming
Priority adaptation interventions incorporated into USAID project & activity design
Portfolio of strategic adaptation interventions selected and effectively communicated
Priority adaptation interventions incorporated into non-USAID policies & programs (government, donor, partner organization)
CCA Implementation & Adaptive Management
Effective implementation, monitoring and evaluation of USAID activities incorporating climate adaptation
Effective implementation and adaptive management of non-USAID activities incorporating climate adaptation
Reduced impact of climate change on people, places and livelihoods
KEY
Intervention
Specific Action
Intermediate Result
Threat / Vulnerability Reduction Result
Natural System
Aspect of Human Wellbeing
Assessment Question

USAID FROM THE AMERICAN PEOPLE

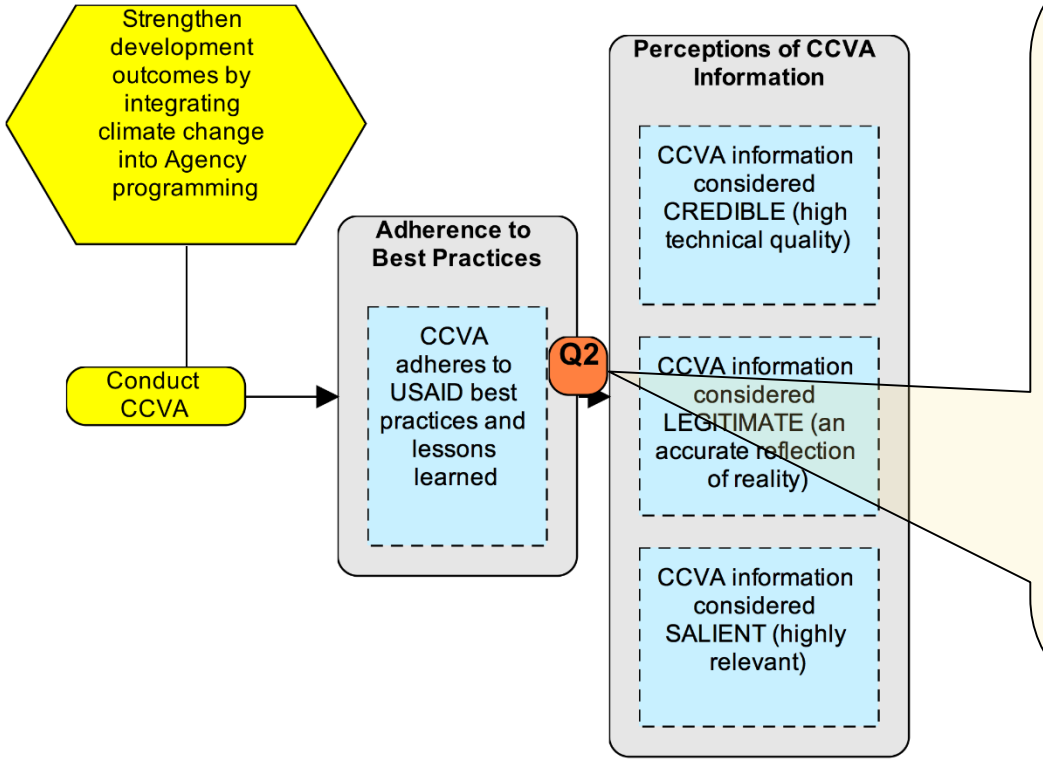
ATLAS
Climate Change Adaptation, Thought Leadership and Assessments



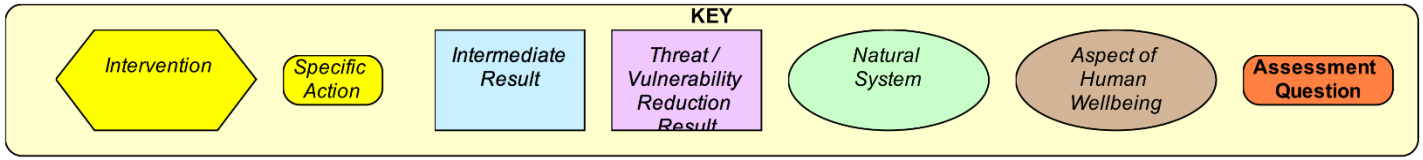
Step 3: Align assessment questions to theory of change



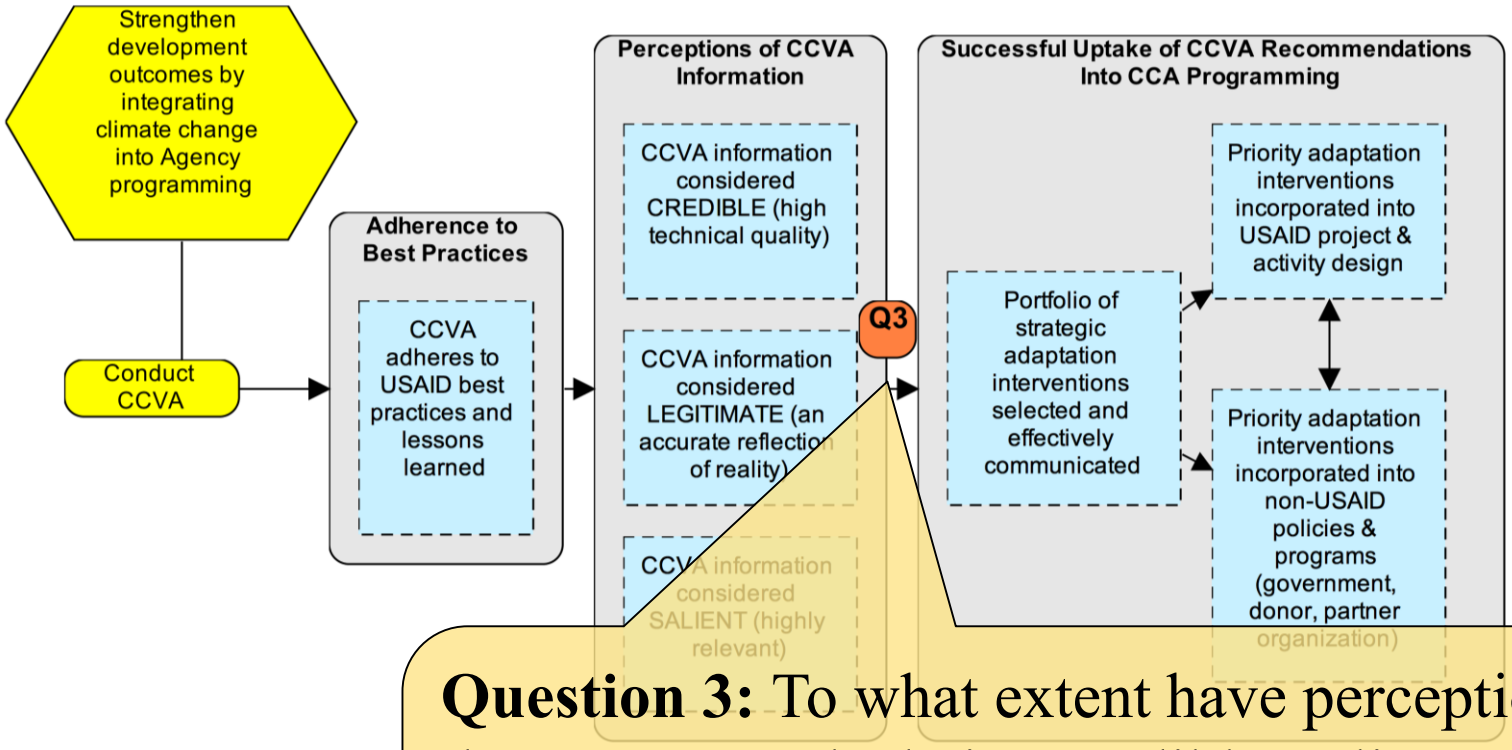
Step 3: Align assessment questions to theory of change



Question 2: To what extent has the adherence to best practices and lessons learned led to the perceptions of the CCVA being credible, salient, and legitimate?

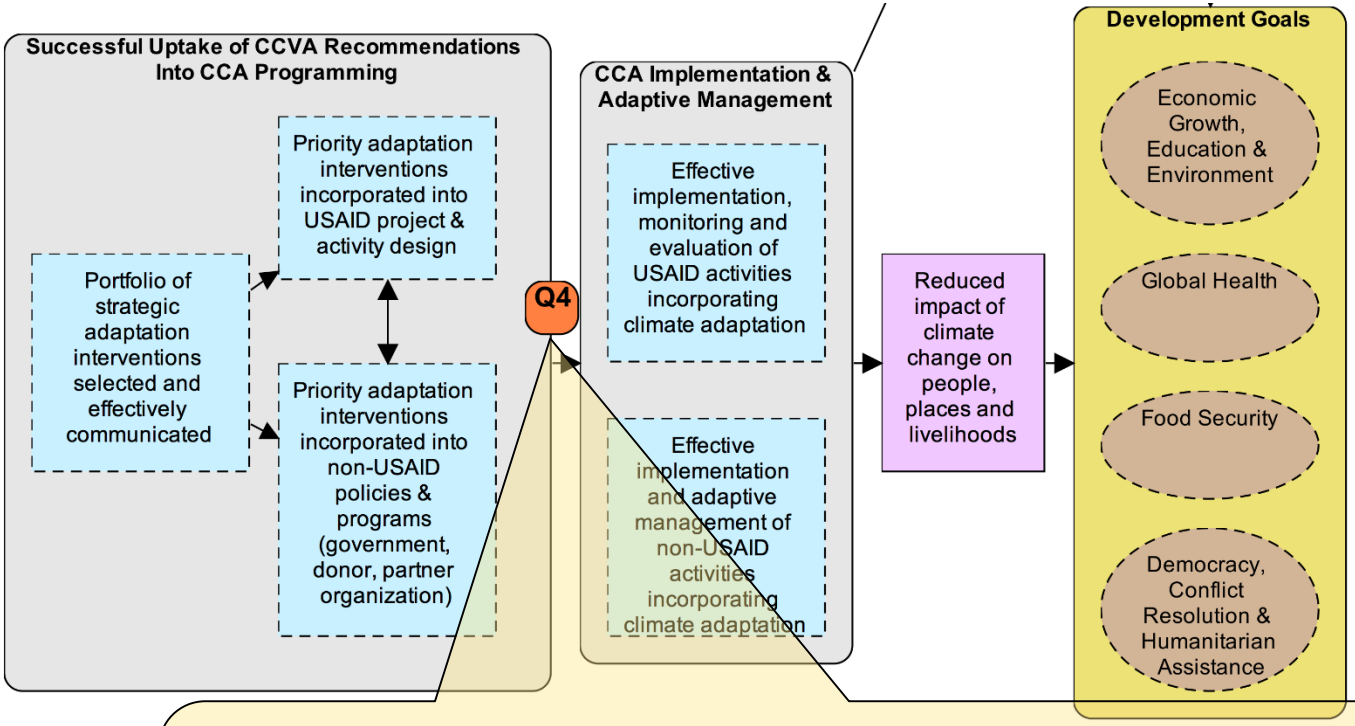


Step 3: Align assessment questions to theory of change



Question 3: To what extent have perceptions of the CCVA results being credible, salient, and legitimate led to uptake into programming?

Step 3: Align Assessment Questions to Theory of Change

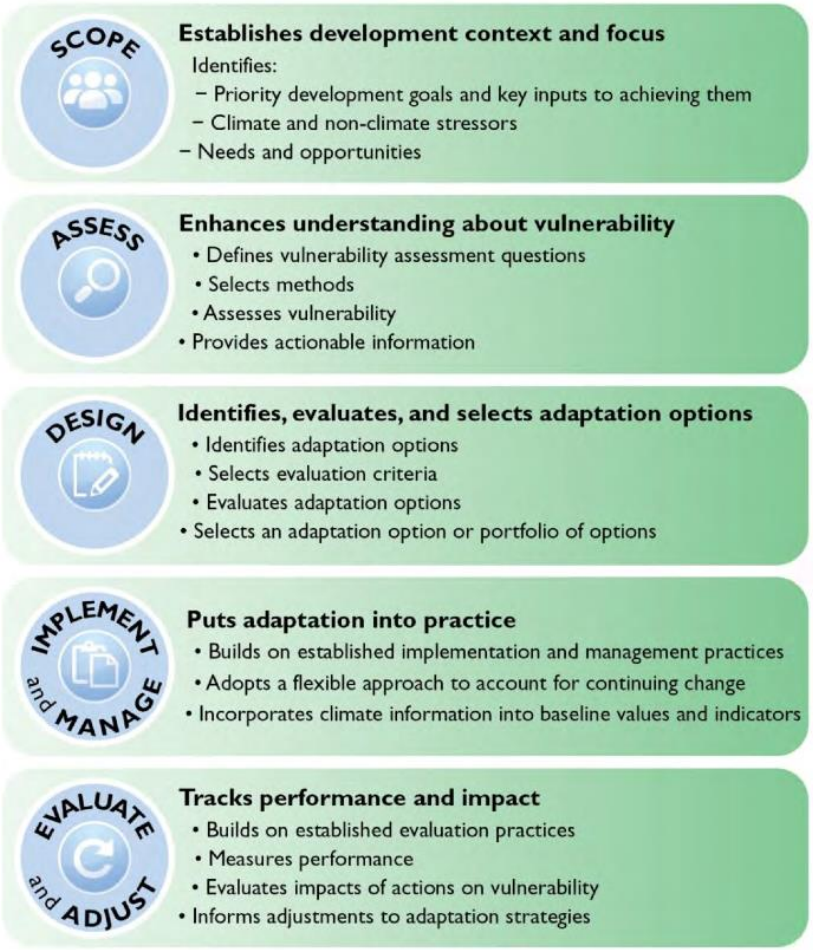


Question 4: To what extent has uptake of CCVA results into CCA programming led to strategic implementation of adaptation interventions to meet USAID development goals?

Step 4: Assess case studies through document review and key informant interviews

Geography	USAID Project	Sector	CCVA Date
Dominican Republic	African and Latin American Resilience to Climate Change (ARCC)	Watersheds and Coastal Resources	2013
Uganda	ARCC	Agriculture	2013
Malawi	ARCC	Agriculture	2013
Lower Mekong River Basin	ARCC	Agriculture	2013
Indonesia	Indonesia Urban Water Sanitation and Hygiene Project (IUWASH)	Water and Sanitation	2013
Southern Africa Limpopo River Basin	Resilience in the Limpopo River Basin (RESILIM)	Water	2014

Findings: Q1. Has CCVA adhered to USAID best practices?



Best practices organized according to the 5 steps of USAID's Climate Resilient Development Framework

Findings: Q1. Has CCVA adhered to USAID best practices?

Scope: establish development context and focus before conducting the CCVA

- All case studies:
  - ☑ had ample stakeholder input and participation
  - ☑ articulated and aligned development goals and related climate and non-climate stressors
  - ☑ demonstrated an understanding of the social and political context

Findings: Q1. Has CCVA adhered to USAID best practices?

Assess

- ☑ Included expert teams of climate change scientists, social scientists, topical experts and stakeholders
- ☑ Identified climate vulnerabilities and communicated findings in an accessible way
- ☑ Considered technically sound

Findings: Q1. Has CCVA adhered to USAID best practices?

Design

- ☑ Provided lists of initial adaptation options
- ☑ Selected subsets of actionable adaptation interventions for implementation

Findings: Q1. Has CCVA adhered to USAID best practices?

Implement, Manage, Evaluate & Adapt

- Not much evidence YET
- CCVAs completed in 2013 & 2014; most activities are just beginning implementation now

➢ BUT, M&E indicators not clearly linked to changes in adaptive capacity, sensitivity & vulnerability.

Findings: Q2. Has adherence to best practices led to perceptions of CCVA being credible, salient & legitimate?

Credibility – perceptions of technical quality

☑Considered of high technical quality, engaging regional experts and using best available data

☑Provided a marked improvement to existing knowledge in quality, quantity and downscaling of data

Findings: Q2. Has adherence to best practices led to perceptions of CCVA being credible, salient & legitimate?

Salience – perceived relevance of the information provided; providing the "right information, right on time"

☑High for all cases

☑Salience highest where objective was to inform a project design document, sectoral strategy or to support project implementation

- e.g., Uganda Feed the Future (FtF)

Findings: Q2. Has adherence to best practices led to perceptions of CCVA being credible, salient & legitimate?

Legitimacy – acceptance of findings as an accurate reflection of reality

☑Stakeholder involvement in decision-making contributed to perception of legitimacy

- RESILIM and IUWASH more stakeholder-driven throughout the process
- stakeholder involvement in 'design' lower for CCVAs, which developed primarily to inform internal USAID programming

Findings: Q3. Have credibility, salience & legitimacy led to uptake into CCA programming?

Uptake = evidence of CCVA results and recommendations being incorporated into USAID strategies, projects and activities

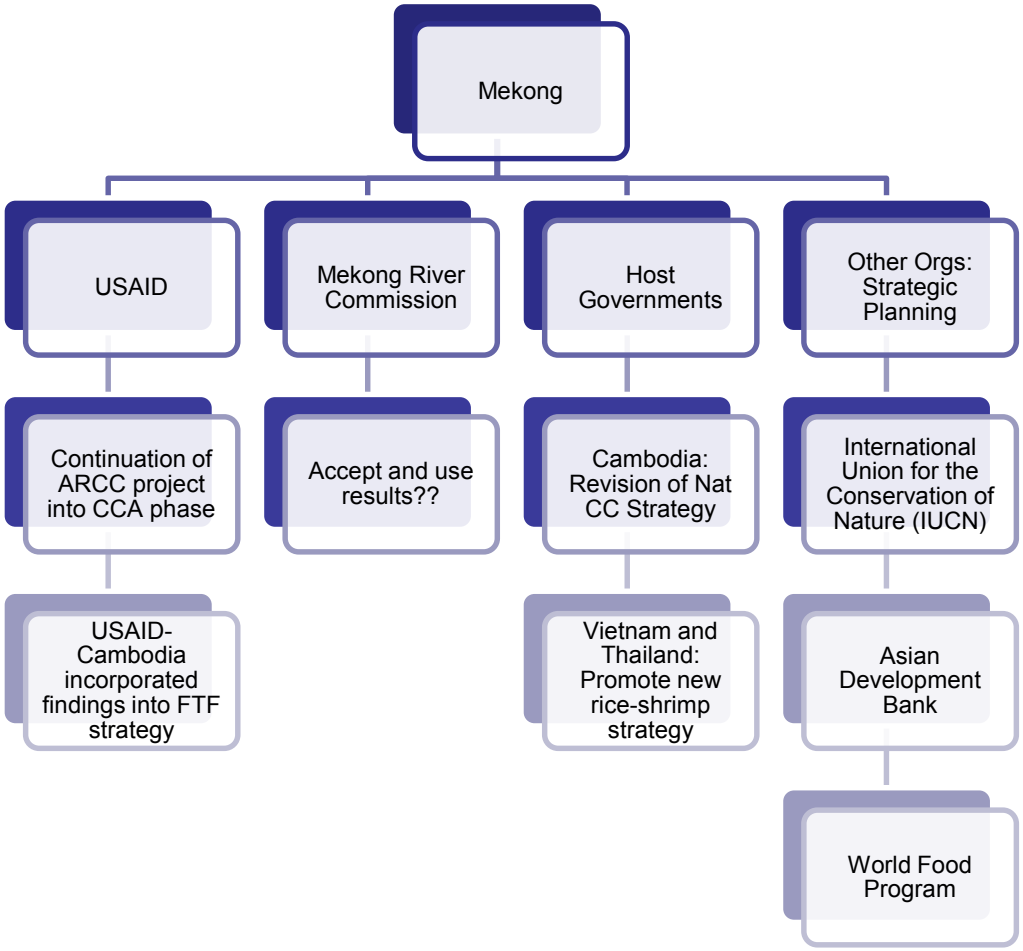
☑Uptake by entities outside of USAID

☑Uptake within target USAID sectors best when CCVA and CCA programming were linked *a priori*

– e.g. for RESILIM, Mekong ARCC, IUWASH

BUT, competing Mission priorities and lack of funding can limit uptake

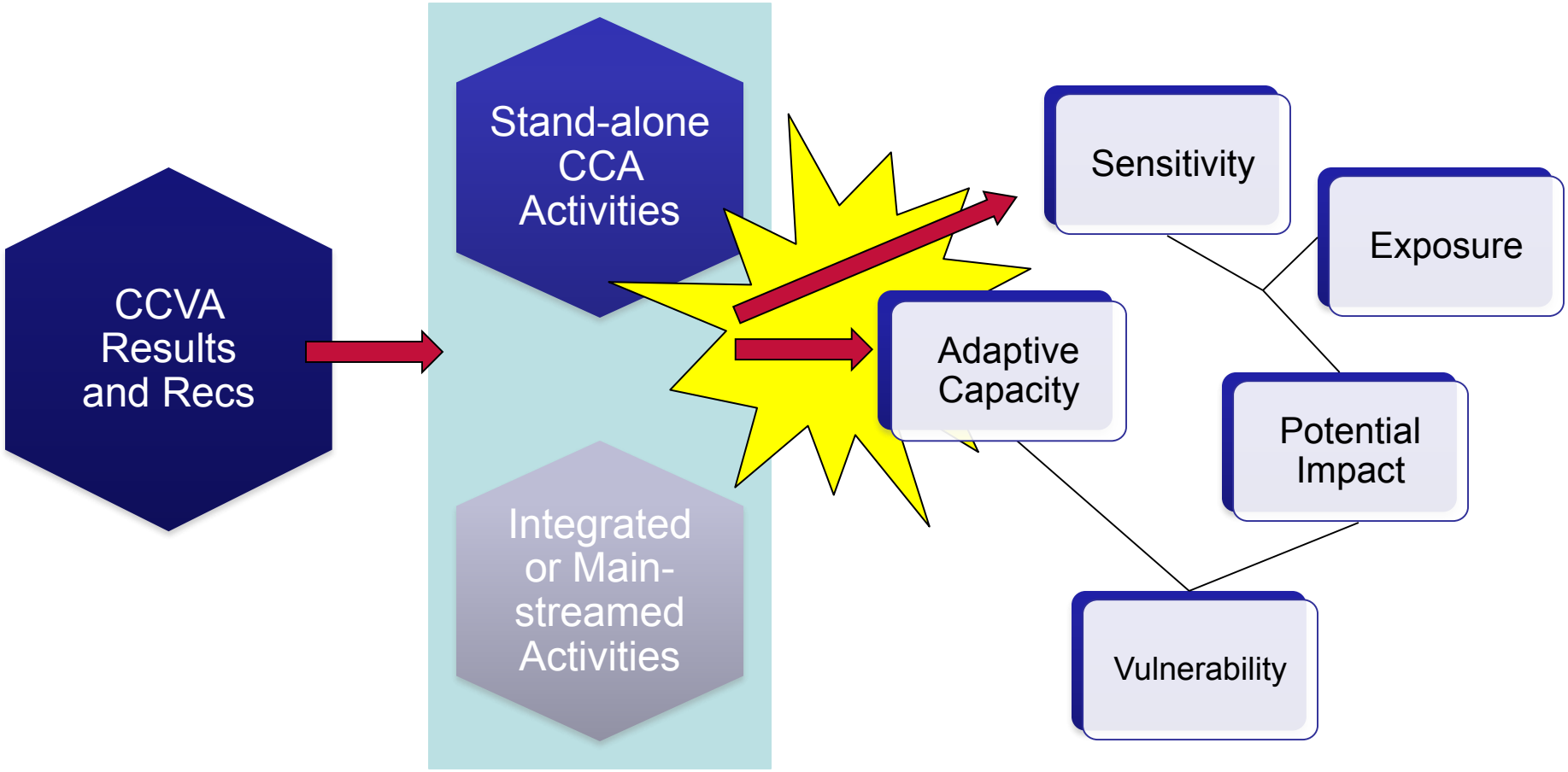
Findings: Q3. Have credibility, salience & legitimacy led to uptake into CCA programming?



Question 4: Has CCA programming led to strategic implementation of interventions?

- Adaptation interventions selected were clearly aligned to USAID development goals – *especially when there was a pathway defined a priori for uptake of CCVA results*
  - *e.g., IUWASH, RESILIM*

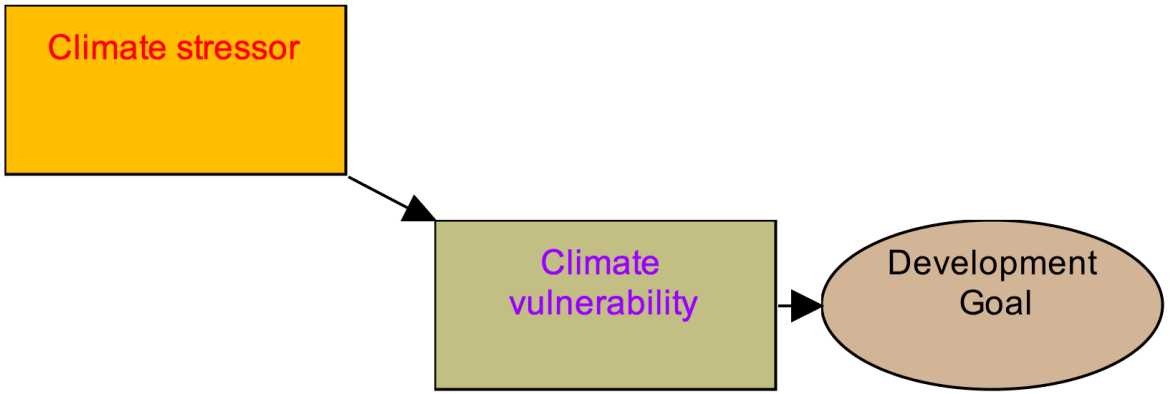
Question 4: Has CCA programming led to strategic implementation of interventions?



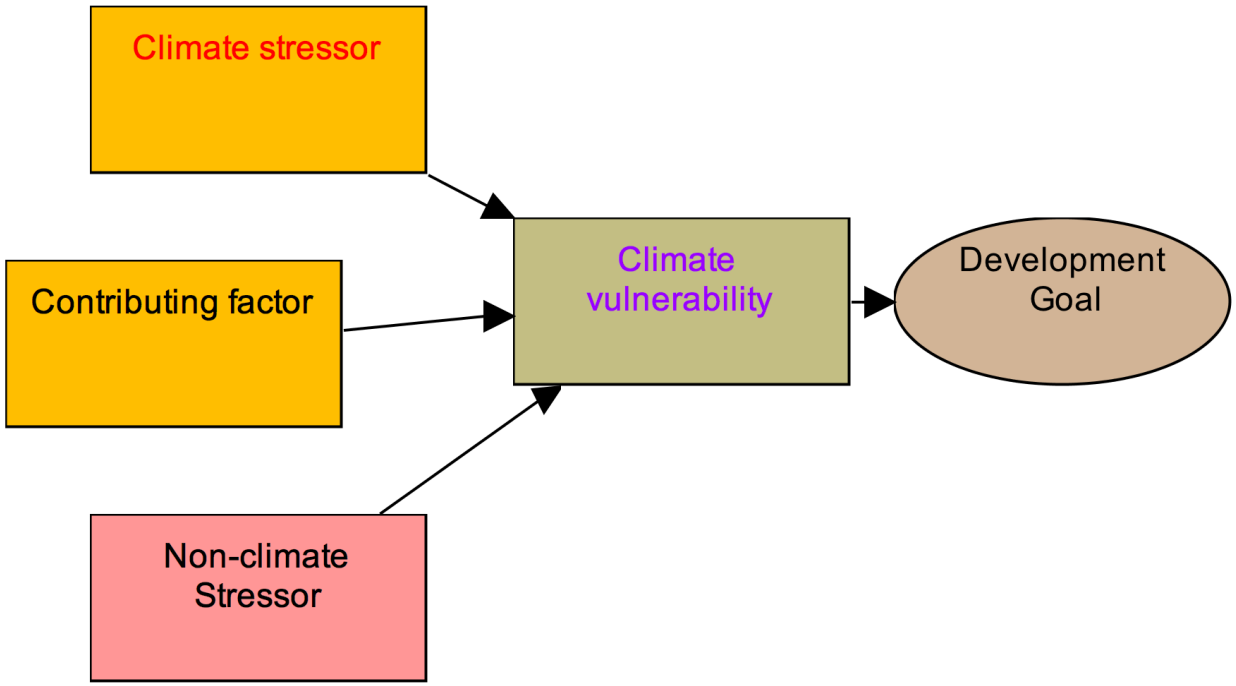
Question 4: Has CCA programming led to strategic implementation of interventions?

- Process and criteria for prioritizing and selecting interventions not clear
- No explicit link between the intervention and priority climate vulnerabilities
- Assumptions about what needs to happen for each intervention to ultimately reduce priority climate vulnerabilities were not clear
- Means to measure success towards reducing vulnerabilities, learn or adapt in order to increase effectiveness not clear

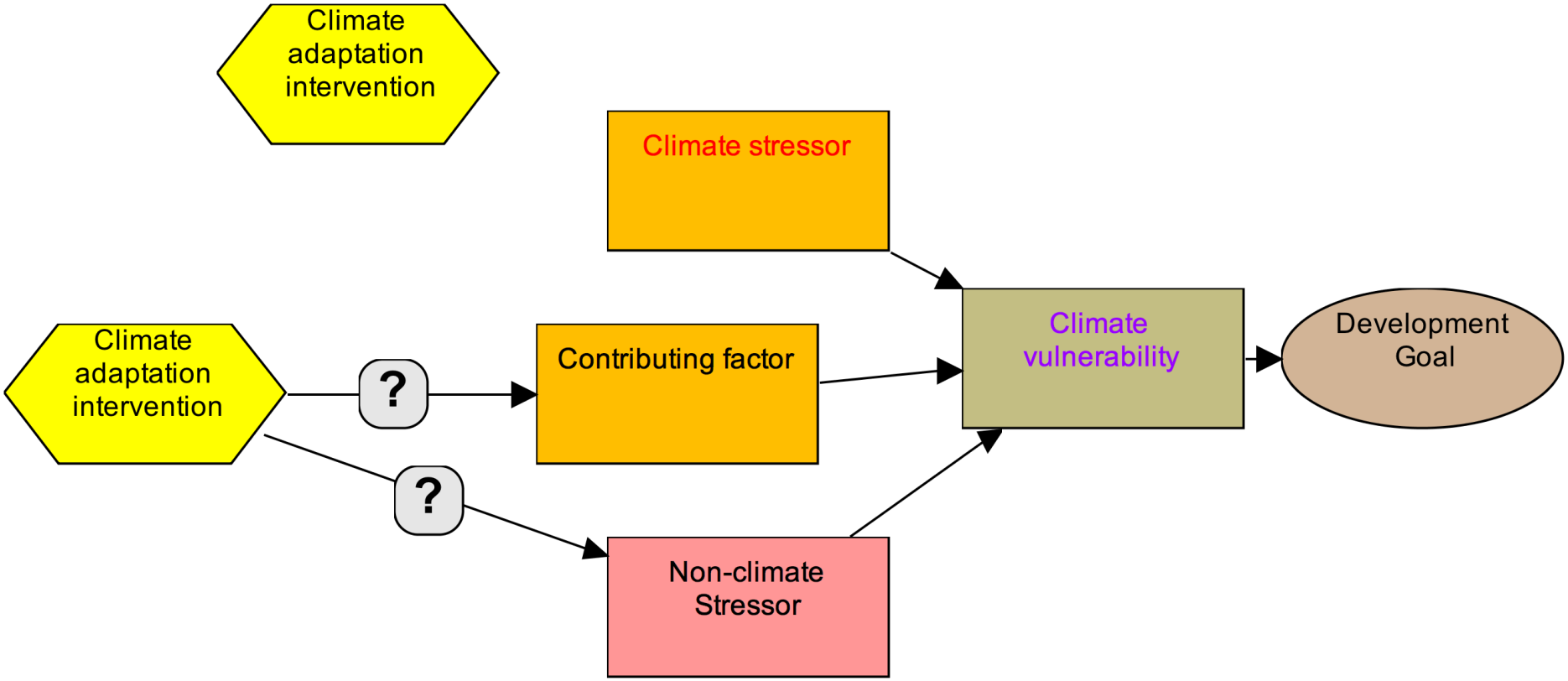
Question 4: Has CCA programming led to <u>strategic</u> implementation of interventions?



Question 4: Has CCA programming led to <u>strategic</u> implementation of interventions?



Question 4: Has CCA programming led to strategic implementation of interventions?



Principal barriers to strategic uptake

- No systematic method to evaluate if climate interventions are the most effective interventions, addressing highest vulnerabilities and/or drivers of vulnerability
- Assumptions about what needs to happen for each intervention to ultimately reduce priority climate vulnerabilities are not explicit
- No systematic way to measure short-, medium- and long-term results (including reduction of vulnerabilities), learn or adapt

Breakout group questions

1. In your experience, is this an important barrier? Why?
2. If yes, what examples have you seen of this barrier?
3. What solutions would you propose?
4. Are there other gaps/barriers that you consider important?

Principal barriers to strategic uptake

- Group 1: No systematic method to evaluate if climate interventions are the most effective interventions, addressing highest vulnerabilities and/or drivers of vulnerability
- Group 2: Assumptions about what needs to happen for each intervention to ultimately reduce priority climate vulnerabilities are not explicit
- Groups 3 & 4: No systematic way to measure short-, medium- and long-term results (including reduction of vulnerabilities), learn or adapt

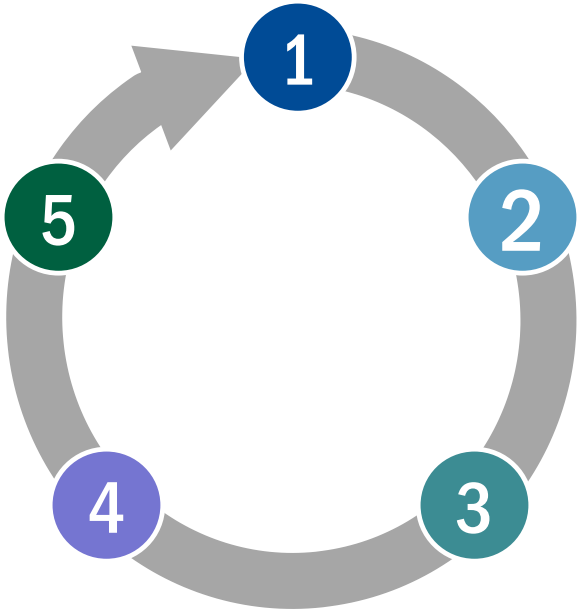
Session 2: How can we improve the process to encourage uptake?

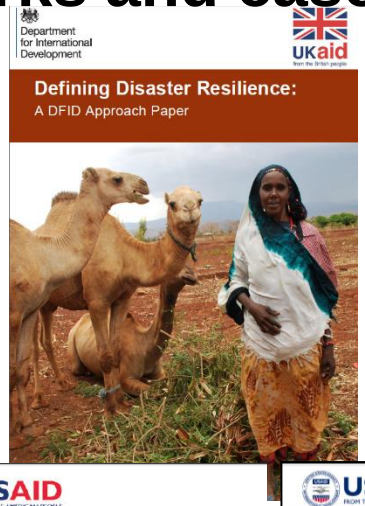
Recommendations for moving toward adaptive management of CCA

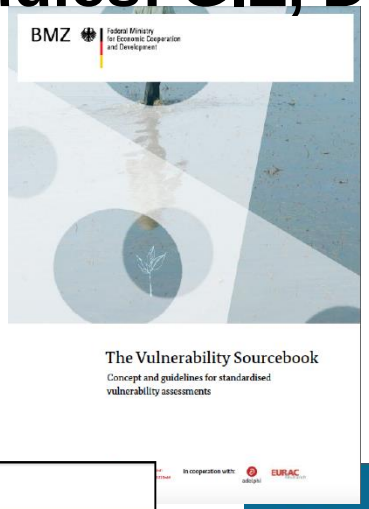
Overview of this presentation

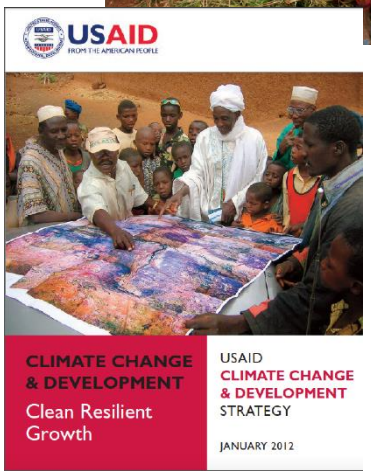
- Review other donor frameworks and identify adaptive management gaps/opportunities to enhance uptake
- Recommendations to support climate resilient programming and adaptive management that we can test going forward

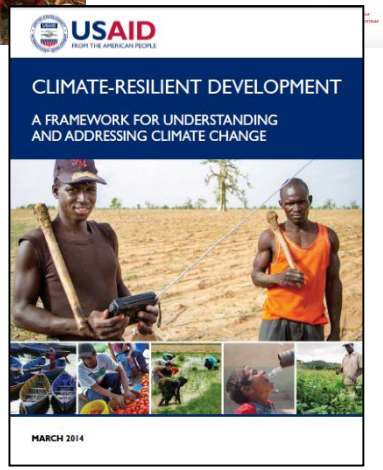
Review of CCA frameworks and case studies: GIZ, DFID World Bank, and USAID

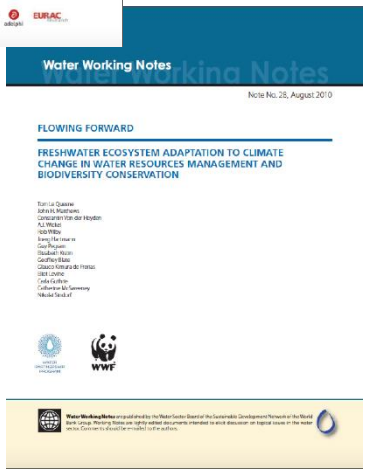












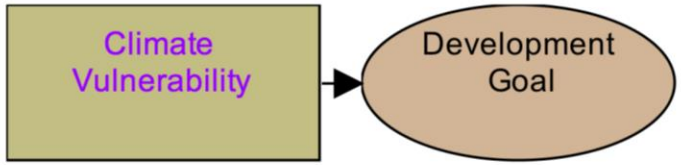
1 CONCEPTUALIZE/ ASSESS
2 DESIGN
3 IMPLEMENT
4 EVALUATE
5 LEARN AND ADAPT

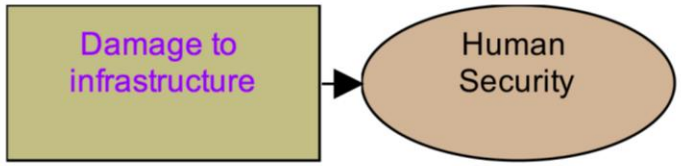
Recommendations for adaptive management

1. Enhance the scoping and assessment phase through tools like situation models
2. Improve systems to prioritize adaptation interventions
3. Use a theory of change approach to clearly articulate expected results for CCA
4. Clearly articulate specific goals and objectives for selected interventions
5. Align indicators and M&E plan to theory of change
6. Clarify desired analytical results of CCA interventions based on final theory of change

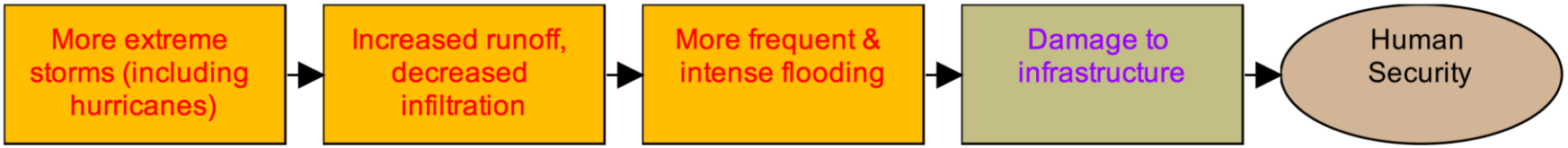
1. Enhance the scoping and assessment phase through tools like situation models

1. Enhance the scoping and assessment phase through tools like situation models

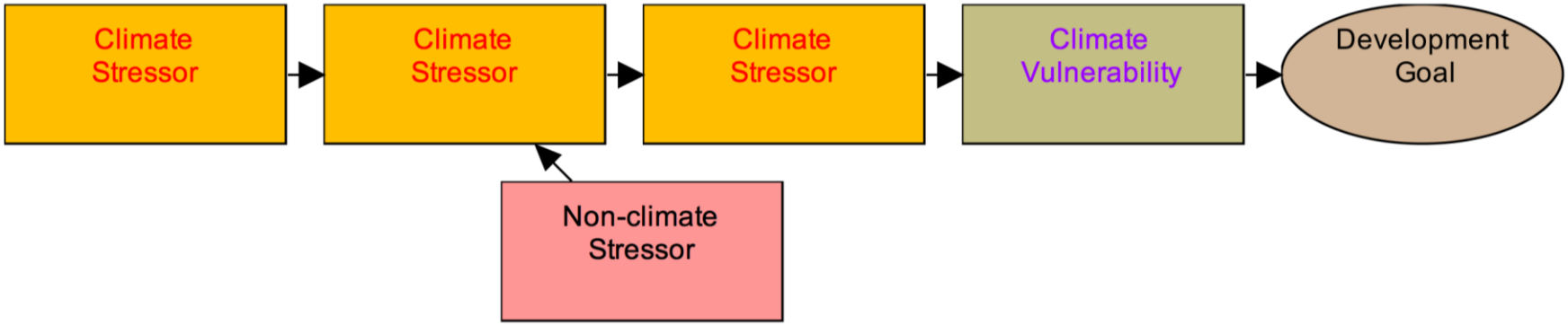


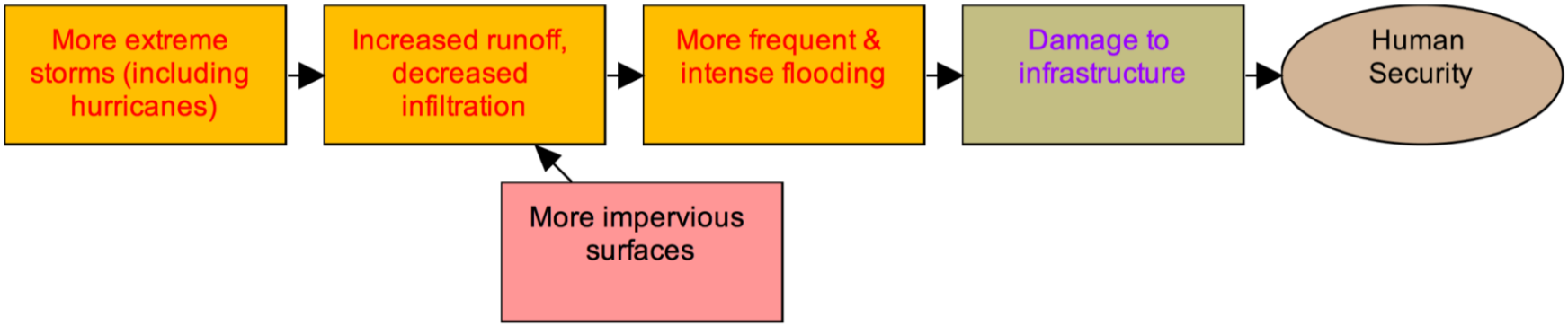


1. Enhance the scoping and assessment phase through tools like situation models

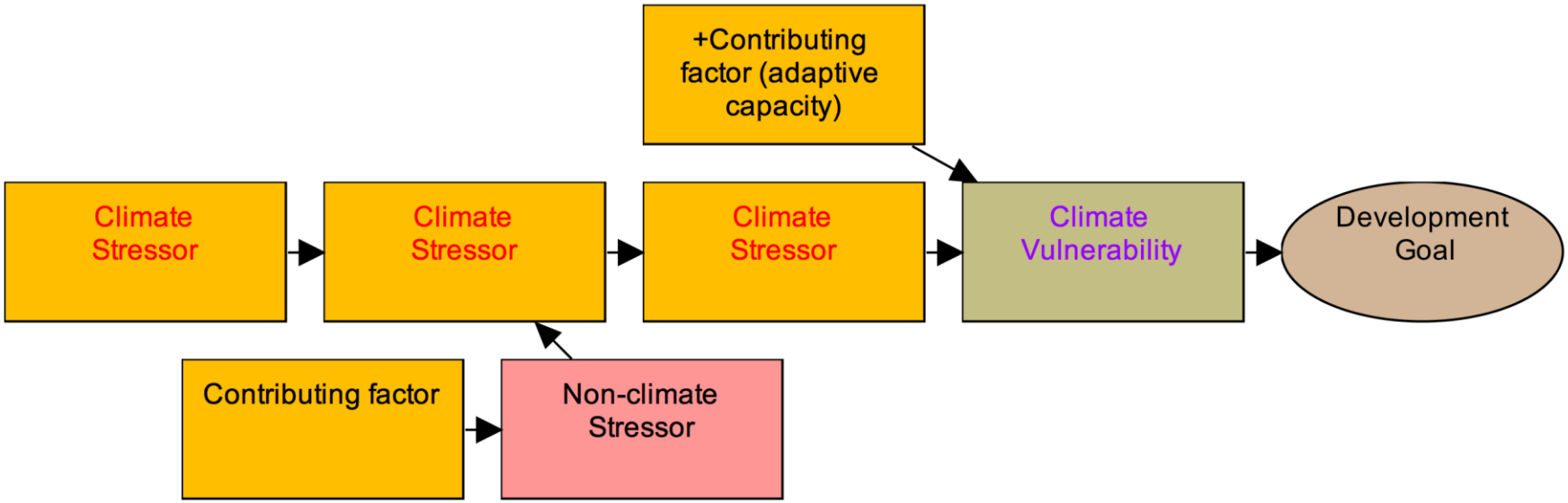


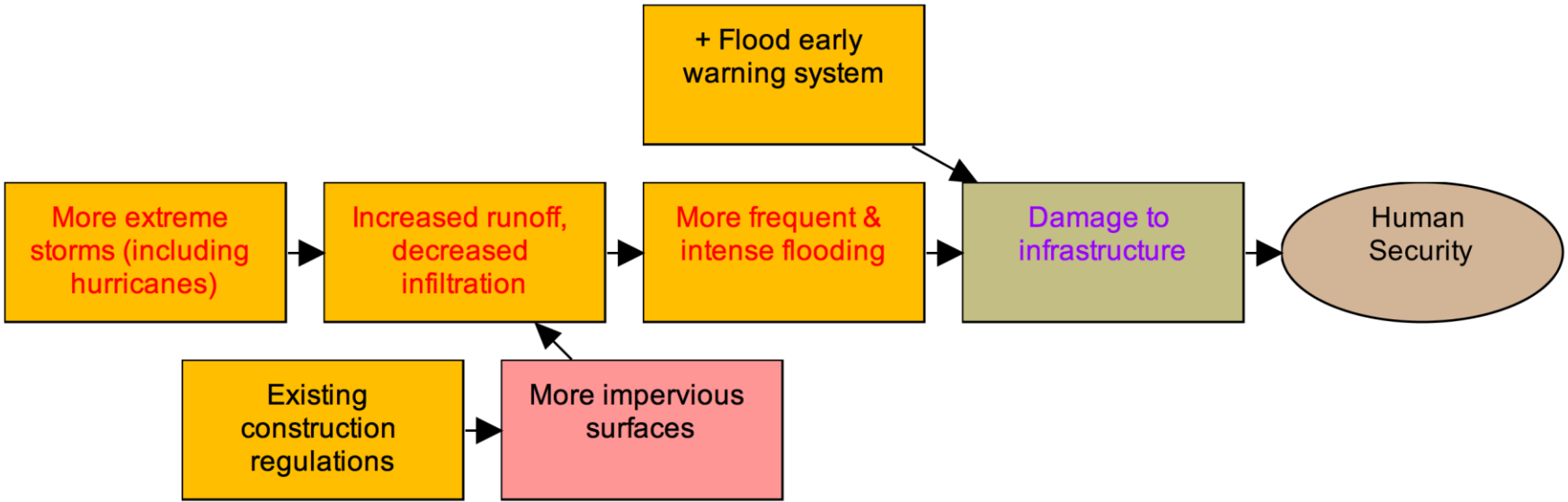
1. Enhance the scoping and assessment phase through tools like situation models





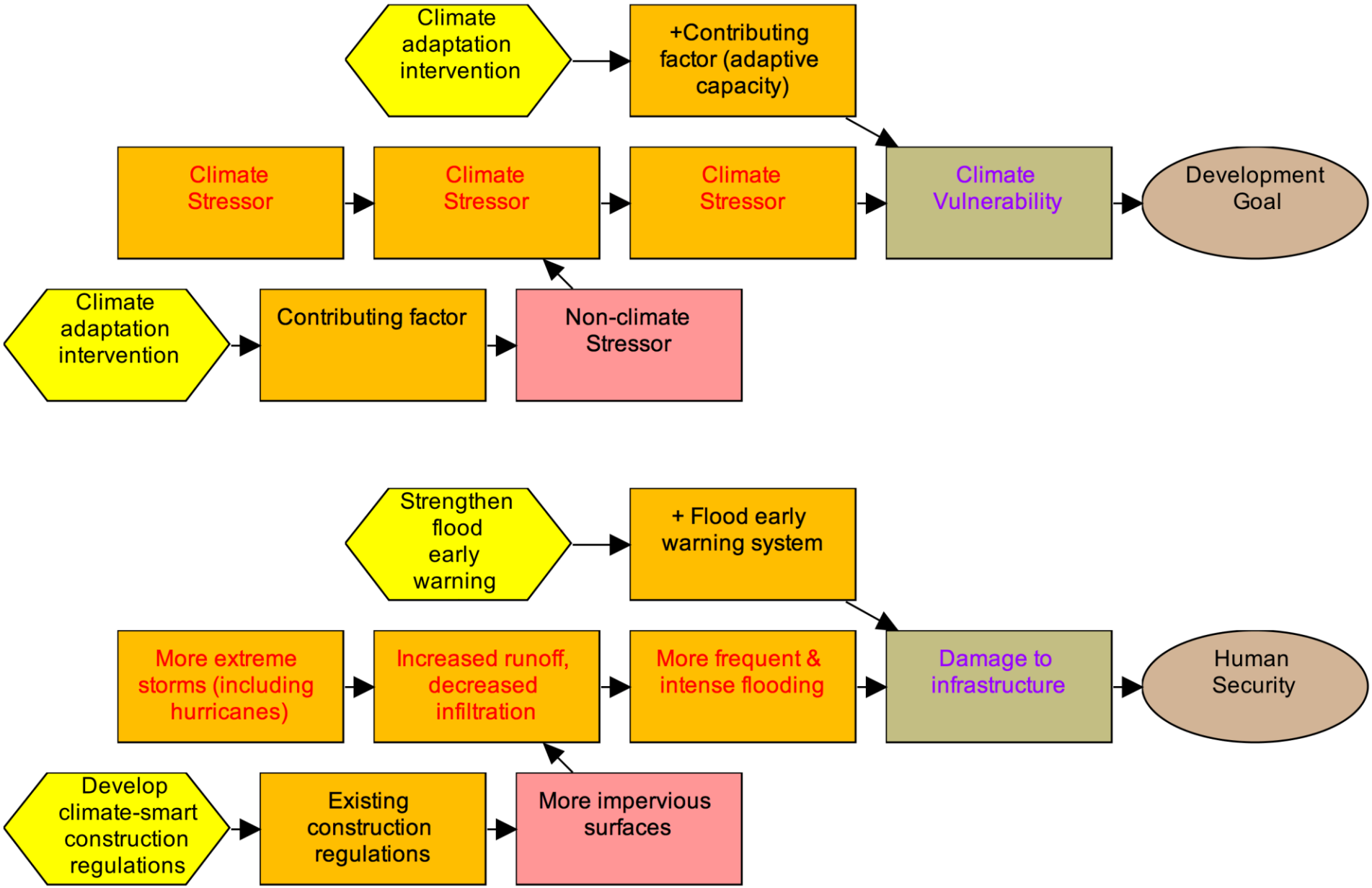
1. Enhance the scoping and assessment phase through tools like situation models





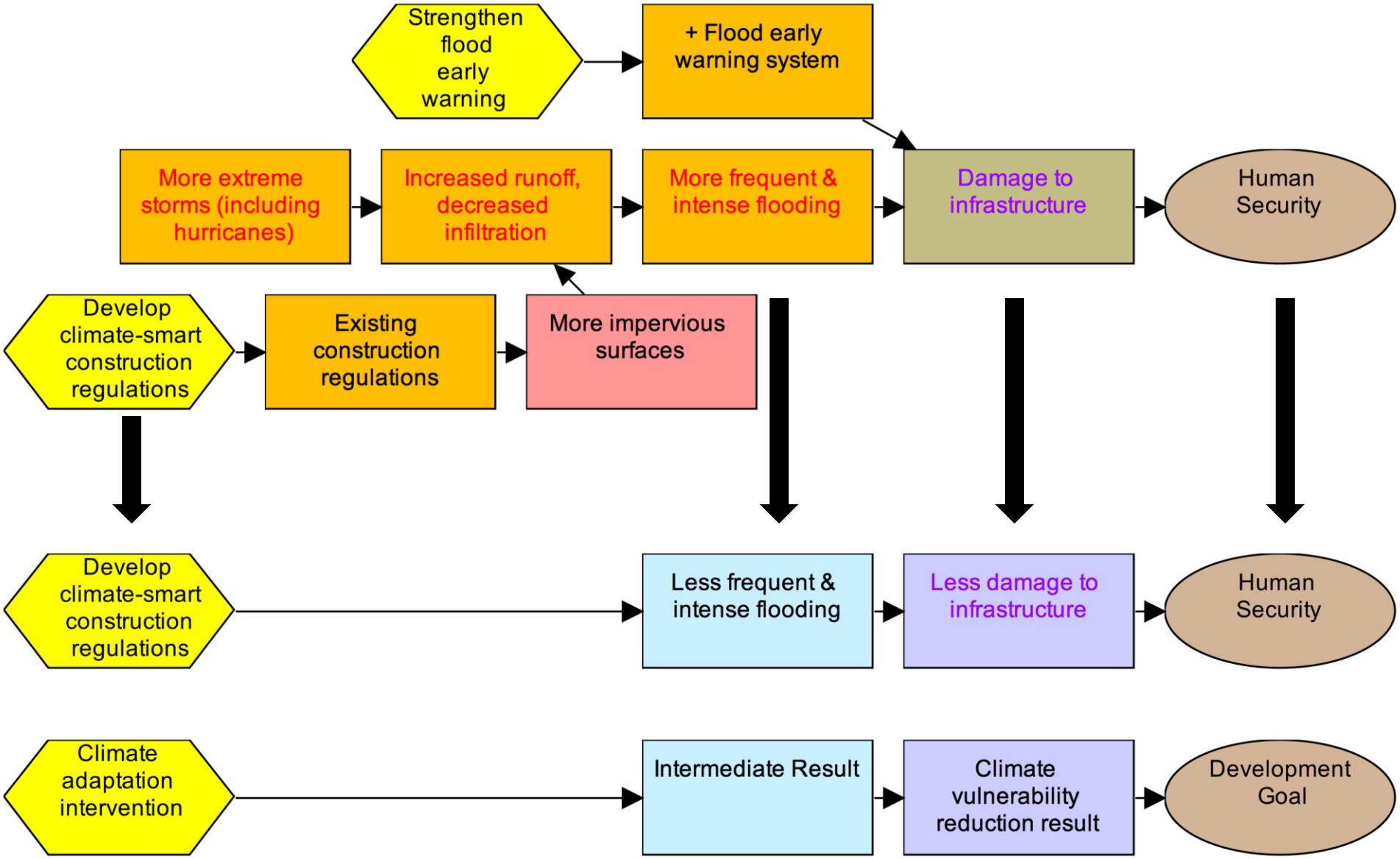
2. Improve systems to prioritize adaptation interventions

2. Improve systems to prioritize adaptation interventions

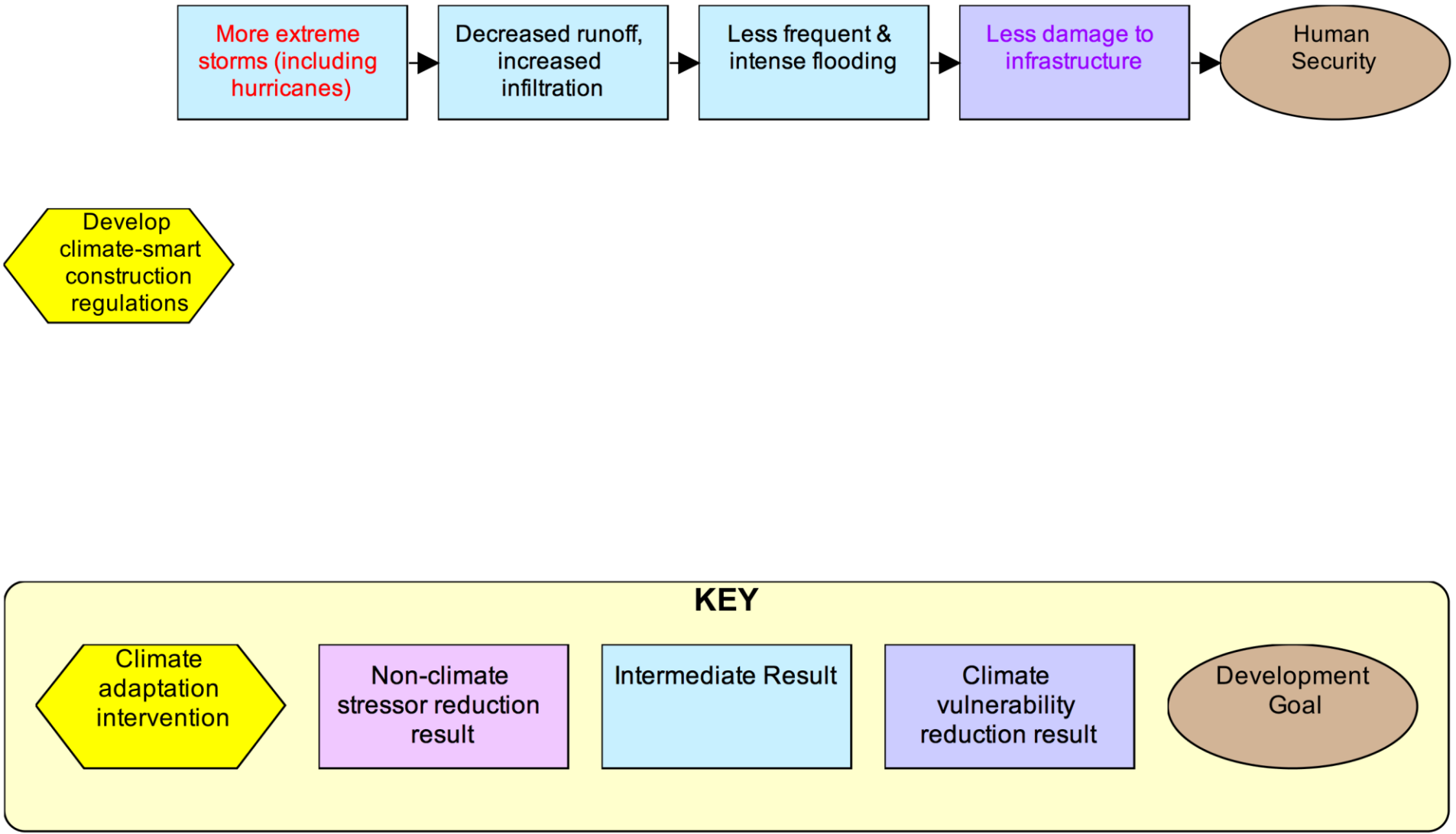


3. Use a theory of change approach to clearly articulate expected results for CCA

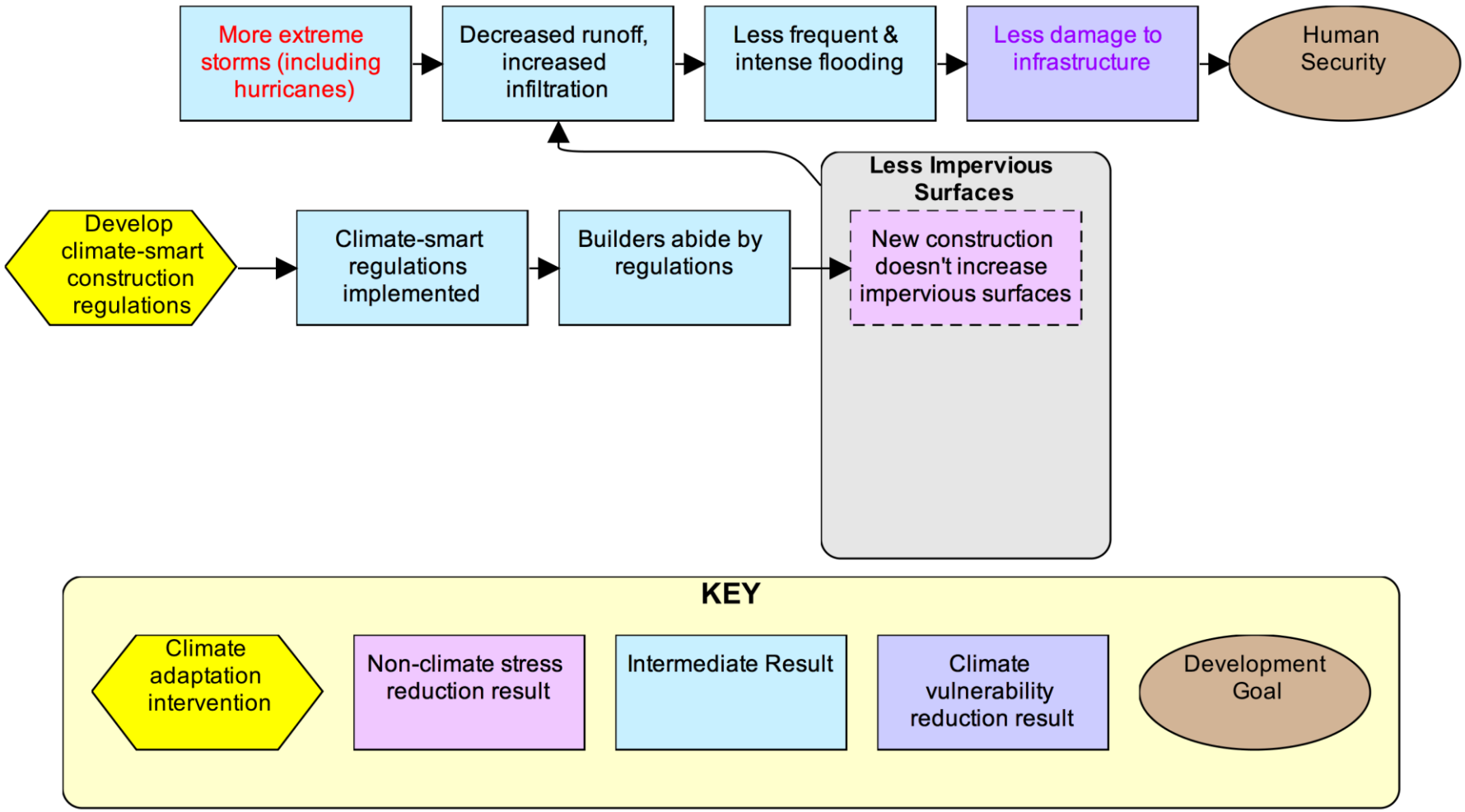
3. Use a theory of change approach to clearly articulate expected results for CCA



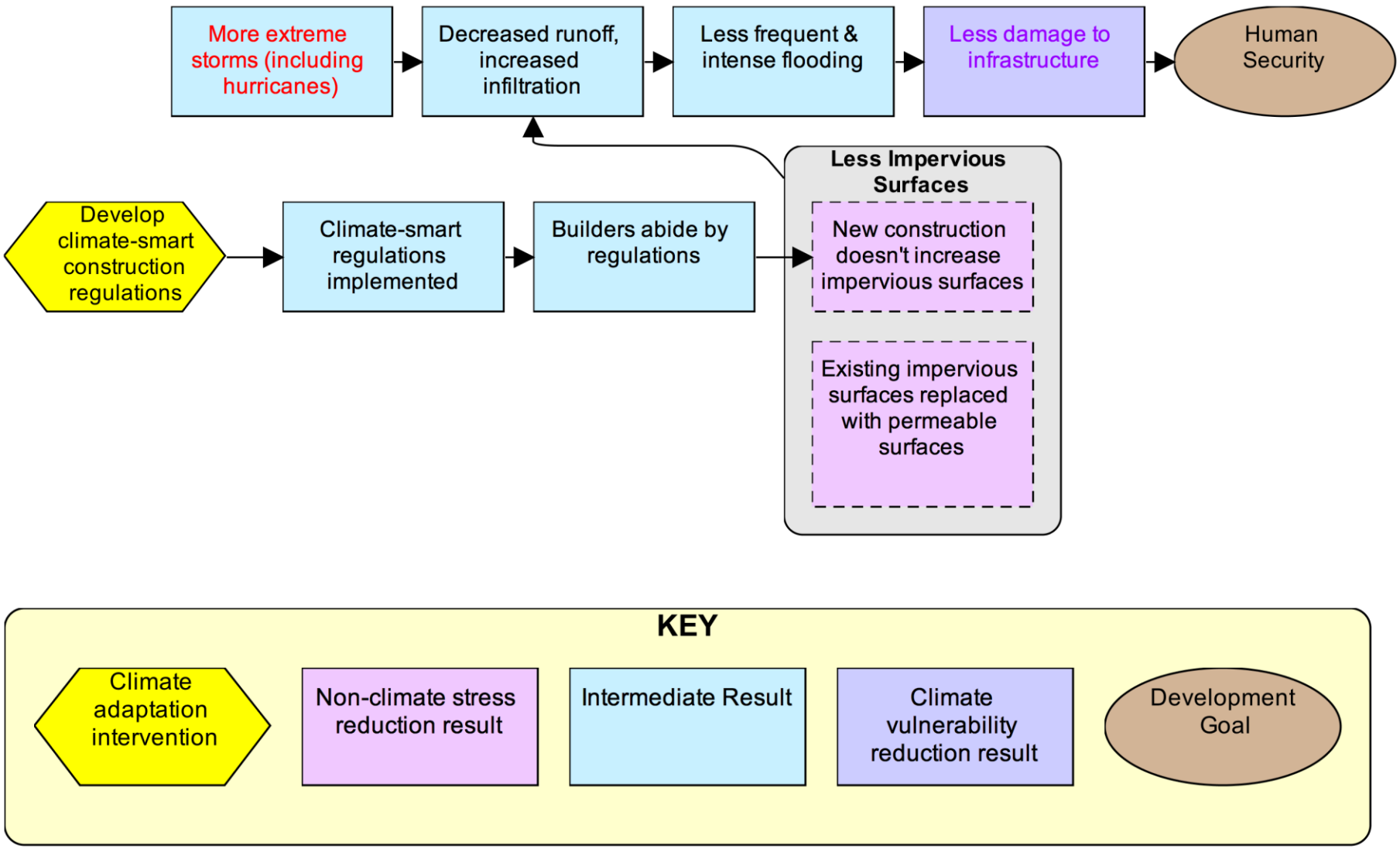
3. Use a theory of change approach to clearly articulate expected results for CCA



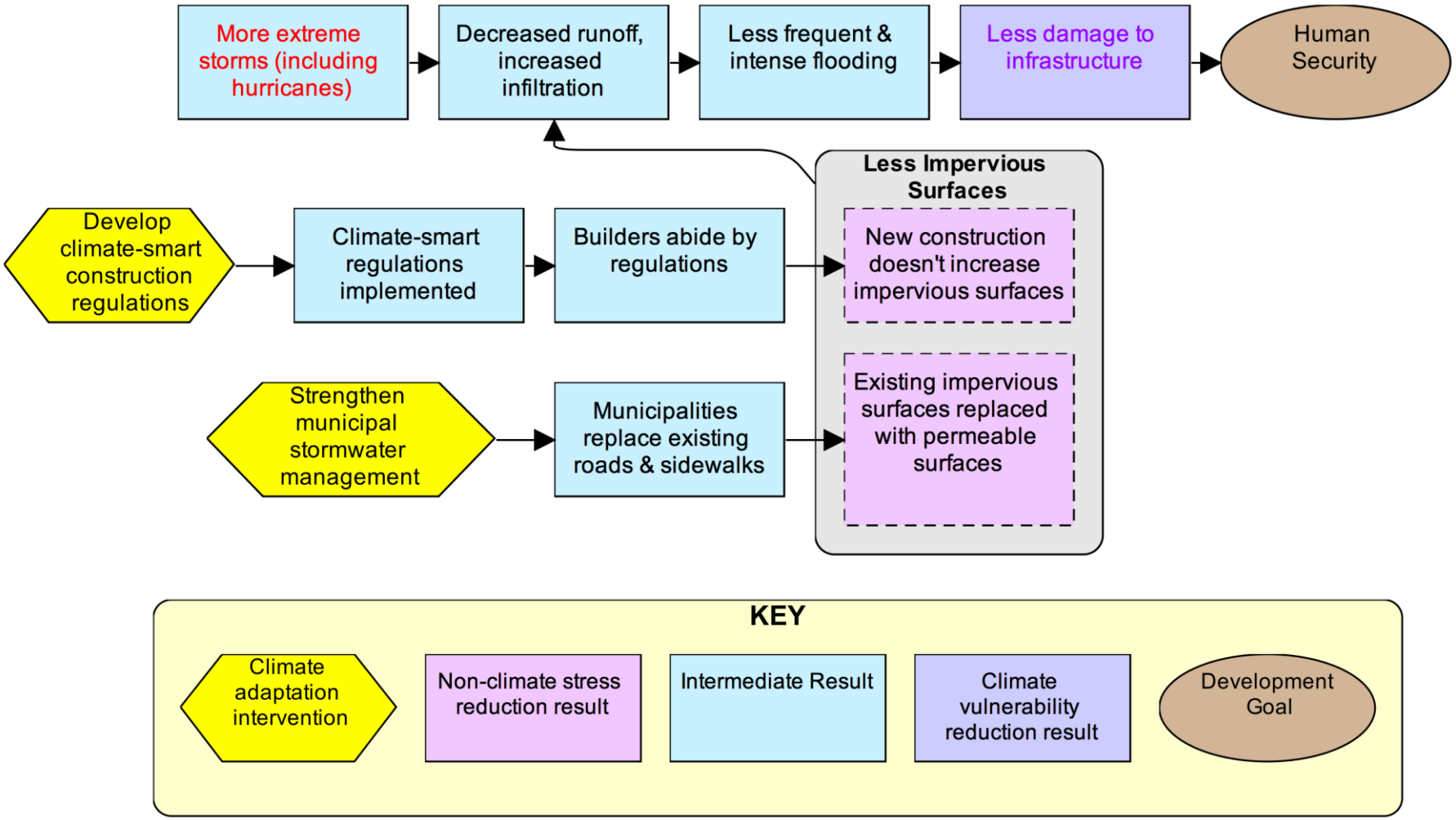
3. Use a theory of change approach to clearly articulate expected results for CCA



3. Use a theory of change approach to clearly articulate expected results for CCA



3. Use a theory of change approach to clearly articulate expected results for CCA

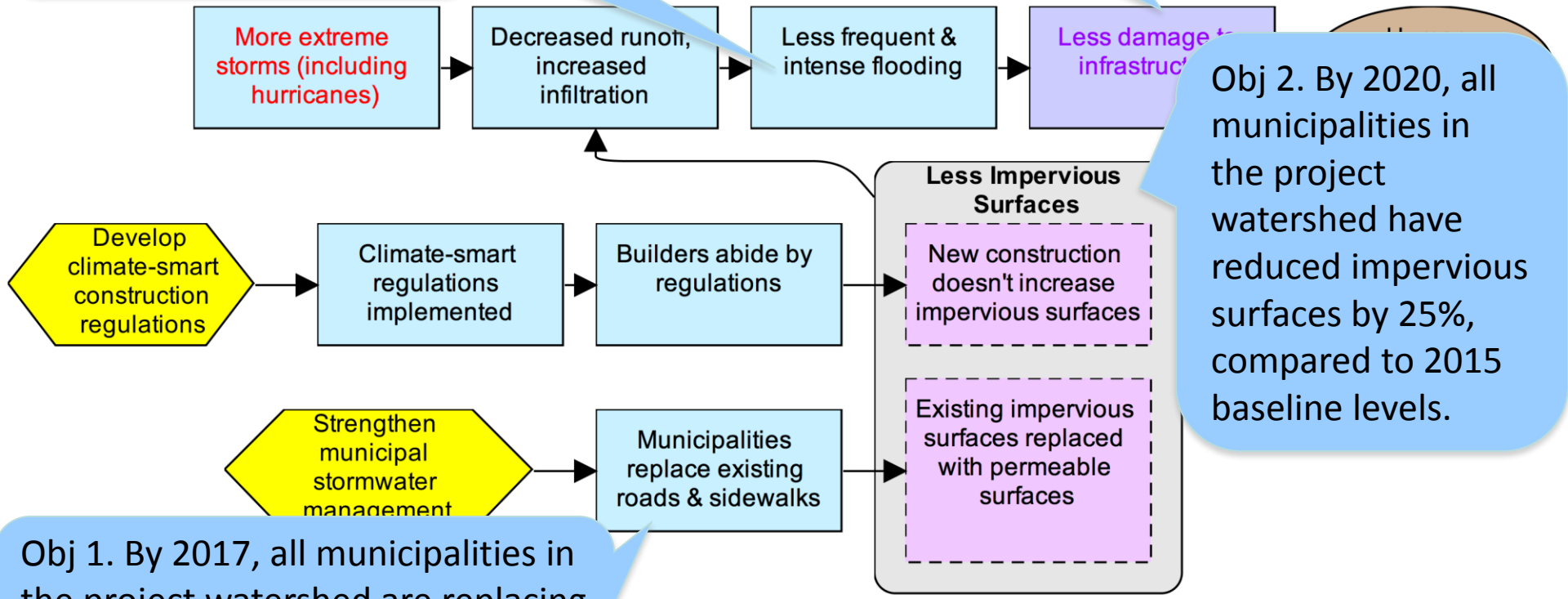


4. Clearly articulate specific goals and objectives for selected interventions

4. Clearly articulate specific goals and objectives for selected interventions

Obj 3. Beginning in 2021, the river level does not exceed the 100-year flood stage after intense rainstorms.

Obj 4. By 2021, there is no further damage due to flooding.



Obj 2. By 2020, all municipalities in the project watershed have reduced impervious surfaces by 25%, compared to 2015 baseline levels.

Obj 1. By 2017, all municipalities in the project watershed are replacing impervious surfaces with permeable surfaces.

5. Align indicators and M&E plan to theory of change

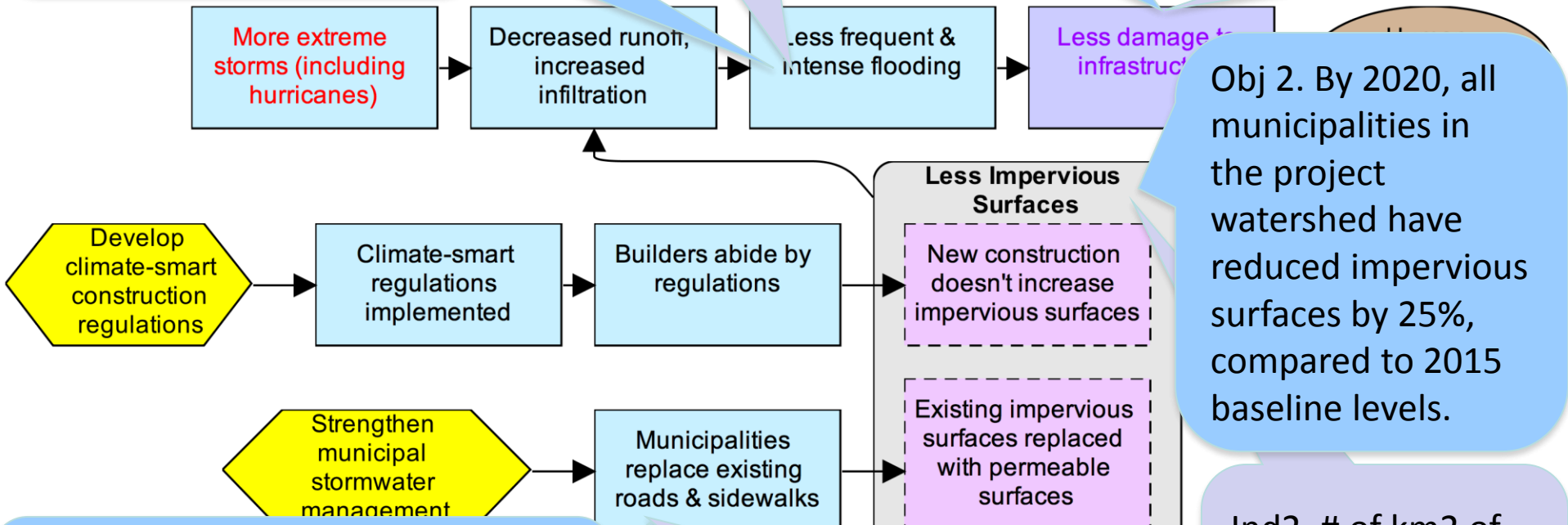
5. Align indicators and M&E plan to theory of change

Obj 3. Beginning in 2021, the river level does not exceed the 100-year flood stage after intense rainstorms.

Ind 3. area flooded after each intense rainstorm

Obj 4. By 2021, there is no further damage due to flooding.

Ind 4. cost and location of damage due to flooding after each intense rainstorm



Obj 2. By 2020, all municipalities in the project watershed have reduced impervious surfaces by 25%, compared to 2015 baseline levels.

Obj 1. By 2017, all municipalities in the project watershed are replacing impervious surfaces with permeable surfaces.

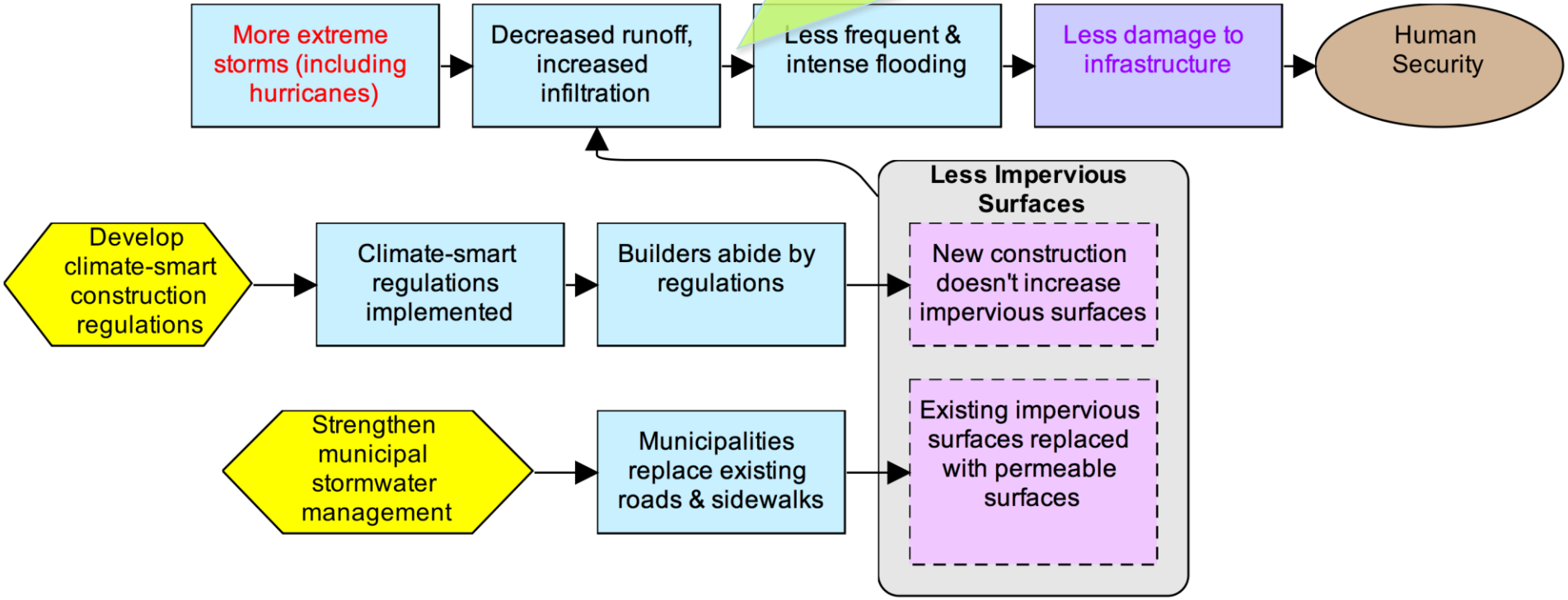
Ind1. # of municipalities that are replacing impervious roads & sidewalks

Ind2. # of km2 of impervious surface roads, parking lots & sidewalks

6. Clarify desired analytical results of CCA interventions based on final theory of change

6. Clarify desired analytical results of CCA interventions based on final theory of change

Learning Question: If municipalities reduce impervious surfaces (roads, sidewalks, parking lots), will it be possible to keep the river level within the 100-year flood stage after intense rainstorms?



Recommendations for adaptive management

1. Enhance the scoping and assessment phase through tools like situation models
2. Improve systems to prioritize adaptation interventions
3. Use a theory of change approach to clearly articulate expected results for CCA
4. Clearly articulate specific goals and objectives for selected interventions
5. Align indicators and M&E plan to theory of change
6. Clarify desired analytical results of CCA interventions based on final theory of change

Session 3: Suggestions for a way forward

U.S. Agency for International Development

1300 Pennsylvania Avenue, NW

Washington, DC 20523

Tel: (202) 712-0000

Fax: (202) 216-3524

www.usaid.gov